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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	32.069	34.684	50.817	-	50.817	49.099	53.085	47.084	45.701	0.000	312.539
016: <i>Close Combat Capabilities ENG DEV</i>	-	0.322	10.736	11.872	-	11.872	14.828	11.860	1.976	1.383	0.000	52.977
415: <i>Mine Neutral/Detection</i>	-	31.747	19.848	38.945	-	38.945	34.271	41.225	45.108	44.318	0.000	255.462
434: <i>Anti-Personnel Landmine Alternatives (NSD)</i>	-	0.000	4.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.100

A. Mission Description and Budget Item Justification

This program element (PE) provides for the Engineering and Manufacturing Development (EMD) and demonstration of networked munitions, countermine systems, and counter improvised explosive device capabilities. This PE also implements the National Landmine Policy to develop alternatives to the non-self-destructing counter mobility anti-personnel landmine systems. The PE contributes to area access and area denial (A2/AD) to support unified land operations and improve soldier survivability.

Project 016, Close Combat Capabilities provides for developing improvements to legacy dismounted lane breaching, specifically the Anti-Personnel Obstacle Breaching System (APOBS), and in so doing, provides a pathway to the next generation of dismounted lane breaching systems such as the Rapid Assault Lane Line Charge (RALLC) and the Dismounted Explosive Breaching System (DEBS). The efforts will address capability gaps identified during combat operations and will focus on weight reduction, improved scalability, collateral damage reduction, metallic content elimination, deployment accuracy improvement, and increased effectiveness against the current threat.

In FY 2018 this project includes Next Generation Advanced Bomb Suit (NGABS). This effort will increase the Warfighter lethality and mobility, by optimizing Soldier protection for Explosive Ordnance Disposal (EOD) personnel while effectively managing all life cycle aspects of Personal Protective Equipment (PPE).

Project 415, Mine Neutralization/Detection provides for development of next generation standoff, detection, and neutralization capability programs such as Husky Mounted Detection System (HMDS), Route Clearance & Interrogation System (RCIS), Vehicle Optics Sensor System (VOSS), Standoff Robotic Explosive Hazard Detection System (SREHD), formerly known as the Autonomous Mine Detection System (AMDS), Route Clearance Vehicles (RCV) and Enablers, Multi-Function Video Display (MVD) and Add on Armor (AoA) kits. It also supports development of Explosive Hazard Pre-Detonation (EHP) capability to neutralize/detonate a broad spectrum of improvised explosive hazards while on the move to support area access route clearance missions. Provides funding to the Tank Automotive Research Development Engineering Center (TARDEC) Software Engineering Center (SEC) to integrate enhancements and test Explosive Hazard Pre-Detonation (EHP) software releases incorporating support for MVD.

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For RCIS Type I, FY 2019 funding supports the continued incremental funding of two symbiotic EMD contracts that will digitize and automate the High Mobility Engineering Excavator (HMEE). EMD contract efforts include system design, integration, technical/test reviews, logistics development, testing and delivery of RCIS prototypes.						
Project 434, Spider Increment 1A will build upon the existing M7 Spider system. The M7 Spider system is a hand-emplaced, remotely controlled (Man-In-The-Loop) system that provides highly responsive terrain-shaping and protection capabilities. M7 Spider replaces persistent anti-personnel landmines, is compliant with US National Landmine policy, and has been fielded to US forces in support of Operation Enduring Freedom and currently being fielded to Engineers and Brigade Combat Teams in the Active and Army National Guard components. Additional capabilities will be developed to enhance the Spider Remote Control Station and demonstrate the ability to employ legacy Government-Off-The-Shelf (GOTS) lethal and non-lethal anti-personnel (AP) munitions and counter mobility obstacles. Spider Increment 1A will utilize an open system architecture to facilitate future munition integration.						
B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		39.630	34.684	39.117	-	39.117
Current President's Budget		32.069	34.684	50.817	-	50.817
Total Adjustments		-7.561	0.000	11.700	-	11.700
• Congressional General Reductions		-0.017	-			
• Congressional Directed Reductions		-6.276	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-1.268	-			
• Adjustments to Budget Years		-	-	11.700	-	11.700
Change Summary Explanation						
FY 2019 increase of \$11.700 million is attributed to Project 016, Close Combat Capabilities and the addition of the new Next Generation Advanced Bomb Suit development, and Project 415, Mine Neutral/Detection for an engineering change to HMDS Ground Penetrating Radar to add wire detection and infrared illumination.						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
016: Close Combat Capabilities ENG DEV	-	0.322	10.736	11.872	-	11.872	14.828	11.860	1.976	1.383	0.000	52.977
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This funding supports the materiel / technology development decision and the engineering and manufacturing development / full rate production decision reviews of Soldier Protection Equipment. Specifically, this funding supports the Next Generation Advanced Bomb Suit (NGABS). It leverages advancements in technology to continue improvements to hard and soft body armor components, helmets and other personal protective equipment for Explosive Ordnance Disposal (EOD) personnel.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Dismounted Lane Breaching System								0.322	2.000	-	-	-
Description: Develops materiel solutions that address operational issues with APOBS related to its weight, lack of scalability, collateral damage, residual metallic debris, deployment accuracy, and effectiveness.												
FY 2018 Plans: Finalize design; Award contract for qualification hardware; Build qualification hardware; Finalize test plans; Begin preparation for qualification testing.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY 18 will finalize design, test plans and award contract for qualification hardware. FY19 and beyond will have \$0.												
Title: Next Generation Advanced Bomb Suit (NGABS)								-	8.736	11.872	-	11.872
Description: Funding line is new to PM Solider Protection and Individual Equipment (SPIE) in FY18. The objective of this effort is to increase the Warfighter lethality, modularity, and mobility, by optimizing Soldier protection for Explosive Ordnance Disposal (EOD) personnel.												
FY 2018 Plans: The Material Development Decision (MDD) and Milestone B (MS B) has been moved from 4th QTR FY18 into FY19 due to the state of technology maturation.												
FY 2019 Base Plans:												

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Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV			
B. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total			
Obtain a Material Development Decision (MDD) and Milestone B (MS B) decision in FY18 in order to enter into the Engineering and Manufacturing Development phase of the Next Generation Advanced Bomb Suit (NGABS) with the objective of developing for the EOD Soldiers a full body protective ensemble that integrates the latest technological advances in ergonomic design and material science to improve survivability from fragmentation, blast, impact, thermal hazards, and small arms fire based primarily on the design concepts of the Soldier Protection System. The mission of this program is to enhance the tactical utility and applicability of this bomb suit concept by incorporating modularity/scalability and sensor technologies which was not the case in legacy designs. Award a competitive contract for the development of an integrated Suit & Helmet (S&H) and Sensors and Display (S&D) 4th QTR FY19.											
FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase in Next Generation Advanced Bomb Suit portfolio is due to upcoming Milestone B / MDD approval and forecast and testing requirements.											
Accomplishments/Planned Programs Subtotals				0.322	10.736	11.872	-	11.872			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• 121017: NGABS OMA	-	-	0.000	-	0.000	7.700	7.700	13.100	12.700	0.000	41.200
Remarks											
D. Acquisition Strategy											
The DLBS acquisition strategy is for developing product improvements such as making the system lighter and more module to the Antipersonnel and Obstacle Breaching System. These improvements will then be incorporated into the technical data package for future procurements.											
The Next Generation Advanced Bomb Suit (NGABS) Program is a single-step to full capability acquisition program utilizing full and open competition to ensure best value to the Army. Acquisition strategy for this program is a traditional development program that include an Engineering and Manufacturing Development phase ranging in duration from 12 to 48 months due to the level of design complexity and testing required. MS B / MDD is now scheduled for FY18 and MS C for FY22.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dismounted Lane Breaching System - Program Management	MIPR	PM CCS : Picatinny Arsenal, NJ	0.100	-		0.100		-		-		-	0.000	0.200	-
NGABS	Allot	PM SPE : Fort Belvoir	-	-		0.736		0.850		-		0.850	0.000	1.586	-
Subtotal			0.100	-		0.836		0.850		-		0.850	0.000	1.786	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dismounted Lane Breaching System - Preliminary Design Efforts	MIPR	ARDEC : Picatinny Arsenal, NJ	0.185	-		-		-		-		-	0.000	0.185	Continuing
Dismounted Lane Breaching System - Type Classification Activities	MIPR	ARDEC : Picatinny Arsenal, NJ	-	-		0.687		-		-		-	0.000	0.687	-
Dismounted Lane Breaching System - Rocket Design	MIPR	NSWC : Indian Head, MD	0.315	-		-		-		-		-	0.000	0.315	-
Dismounted Lane Breaching System - Type Classification Activities	MIPR	NSWC : Indian Head, MD	-	-		0.168		-		-		-	0.000	0.168	-
NGABS - Product Development	C/FFP	TBD : Various	-	-		5.000		8.022		-		8.022	0.000	13.022	-
Subtotal			0.500	-		5.855		8.022		-		8.022	0.000	14.377	N/A

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Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev						Project (Number/Name) 016 / Close Combat Capabilities ENG DEV			
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dismounted Lane Breaching System - Trade Studies, SOW and Test Plan Prep	MIPR	ARDEC : Picatinny Arsenal, NJ	0.859	-		-		-		-		-	Continuing	Continuing	Continuing
Dismounted Lane Breaching System - Configuration Management	MIPR	NSWC : Dahlgren, VA	0.106	-		0.045		-		-		-	0.000	0.151	-
NGABS Support Costs	MIPR	TBD : Various	-	-		1.000		1.000		-		1.000	0.000	2.000	-
Subtotal			0.965	-		1.045		1.000		-		1.000	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dismounted Lane Breaching System - Qualification Test	MIPR	Yuma Proving Ground : Yuma, AZ	-	0.322	Jun 2017	1.000		-		-		-	0.000	1.322	-
NGABS Test & Evaluation	MIPR	TBD : Various	-	-		2.000		2.000		-		2.000	0.000	4.000	-
Subtotal			-	0.322		3.000		2.000		-		2.000	0.000	5.322	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			1.565	0.322		10.736		11.872		-		11.872	Continuing	Continuing	N/A
Remarks															

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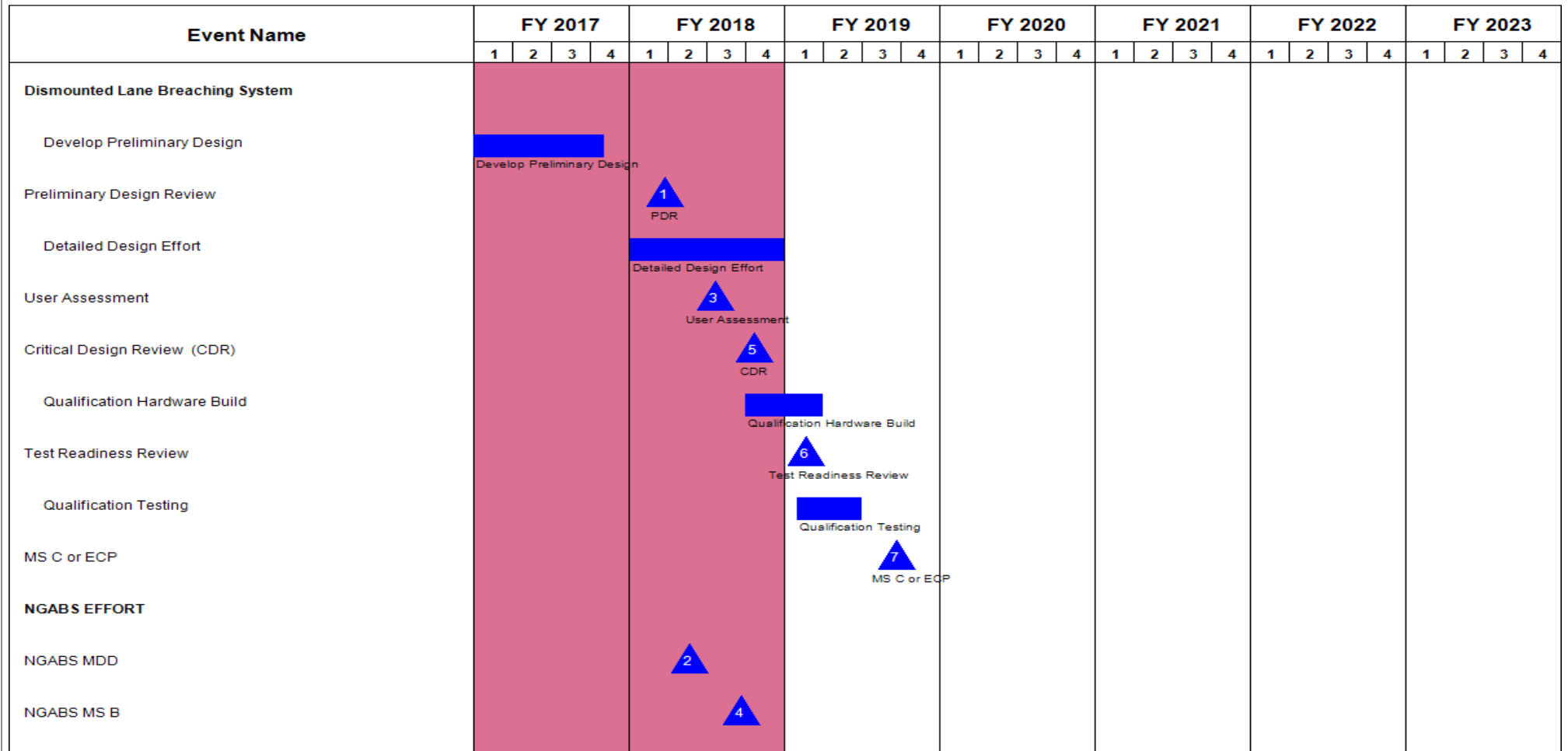
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604808A / Landmine Warfare/Barrier -
Eng Dev

Project (Number/Name)
016 / Close Combat Capabilities ENG DEV



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 016 / <i>Close Combat Capabilities ENG DEV</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NGABS Developmental Testing																												
NGABS MS C																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 016 / Close Combat Capabilities ENG DEV	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Dismounted Lane Breaching System	1	2016	1	2020
Develop Preliminary Design	4	2016	4	2017
Preliminary Design Review	1	2018	1	2018
Detailed Design Effort	1	2018	4	2018
User Assessment	3	2018	3	2018
Critical Design Review (CDR)	4	2018	4	2018
Qualification Hardware Build	4	2018	1	2019
Test Readiness Review	1	2019	1	2019
Qualification Testing	1	2019	2	2019
MS C or ECP	3	2019	3	2019
NGABS EFFORT	1	2017	4	2024
NGABS MDD	2	2018	2	2018
NGABS MS B	3	2018	3	2018
NGABS Developmental Testing	1	2019	4	2021
NGABS MS C	1	2022	1	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 415 / Mine Neutral/Detection			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
415: Mine Neutral/Detection	-	31.747	19.848	38.945	-	38.945	34.271	41.225	45.108	44.318	0.000	255.462
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for Engineering Manufacturing and Development (EMD) for the next generation of capabilities to detect, identify and neutralize hybrid threats and explosive hazards such as Improvised Explosive Devices (IEDs) and landmines. These capabilities are a Family of Systems (FOS) encompassing handheld, vehicle mounted, small robotic mounted, aerial platform mounted and area access, and neutralization systems operating in manned, remotely controlled, semi-autonomous or fully autonomous modes. Continued development of this FOS is necessary to support Route Clearance Platoons located within both Engineer Companies and Brigade Engineering Battalion Brigade Combat Teams.

The Husky Mounted Detection System (HMDS) is a counter-explosive device capability that provides standoff detection and marking of metallic encased caches and metallic and low-metallic antitank landmines, unexploded ordnance, trigger mechanisms, and improvised explosive devices (IEDs) in support of route and area-clearance operations. HMDS is a mission equipment package mounted on the Husky route clearance vehicle. The program was restructured in Sep 2016 to align with emerging shallow buried Wire Detection (WD) capabilities integrated onto the HMDS Increment A1 configuration (includes Ground Penetrating Radar (GPR)). These changes are necessary to adapt to changing IED threats. WD Technology will be fully integrated through Engineering Change Proposals (ECPs) beginning in FY18. Prototypes developed under the concluded HMDS Increment A2 effort may be leveraged in development of future capabilities. Future capabilities may include detection of deep buried IEDs and caches, and semi-autonomous control of the Husky vehicle and HMDS from inside a follow-on vehicle.

Route Clearance & Interrogation System (RCIS) consists of two semi-autonomous vehicles, RCIS Type I and RCIS Type II, and includes designated control vehicles and Operator Control Units (OCUs) which provide a standoff capability to detect and neutralize the full spectrum of explosive hazards. RCIS Type I and Type II are being procured as separate increments. Type I integrates a semi-autonomous kit onto a High Mobility Engineering Excavator (HMEE) for remote control from a Buffalo Mine Protected Clearance Vehicle (MPCV). RCIS Type I semi-autonomous kit will be integrated onto the HMEE and be capable of interrogating and classifying explosive hazards. Type II integrates a semi-autonomous kit on a route clearance lead Medium Mine Protected Vehicle (MMPV) for operation from another MMPV. The RCIS Type II semi-autonomous kit will be able to detect, neutralize and proof explosive hazards. An OCU will be integrated into a Buffalo MPCV for Type I and an MMPV for Type II. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons.

For RCIS Type I, FY 2019 funding supports the continued incremental funding of two symbiotic EMD contracts that will digitize and automate HMEE. EMD contract efforts include system design, integration, technical/test reviews, logistics development, testing and delivery of RCIS prototypes.

The Vehicle Optics Sensor System (VOSS) provides a telescoping, gyro-stabilized, high-resolution, triple sensor (daylight, night-vision, and thermal-imaging) surveillance system to optically detect from standoff distances, explosive hazards (IEDs and landmines) and their trigger sources. VOSS will be mounted on the MMPV Type I for Explosive Ordnance Disposal (EOD) and MMPV Type II for Engineers. VOSS will integrate and qualify a Geo-location capability, and develop and integrate a new, less costly, more reliable, sustainable and durable Infrared (IR) camera. VOSS will not require any FY2019 base funding.

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<p>The Multifunction Video Display (MVD) provides view/control capability of the enablers (Interrogation Arms, VOSS, Man Transportable Robotic System (MTRS), Drivers Vision Enhancement, Vehicle Situational Awareness Cameras) in the MMPV Type II to all Operators. New capabilities will be added into that display to view and control future Unmanned Ground Vehicle Systems (UGVs) programs Route Clearance & Integration System (RCIS) and Husky Mounted Detection System (HMDS), Explosive Hazard Pre-Detonation (EHP) Roller and view Unmanned Aerial Vehicles video feeds. Additional software will need to be developed to add these capabilities. In addition, a new capability to push the video feeds of all of the enablers (Interrogation Arms, VOSS, Man Transportable Robotic System, Drivers Vision Enhancement and Vehicle Situational Awareness Cameras) from various vehicles within a Route Clearance Patrol will be developed.</p> <p>Route Clearance Vehicle (RCV) & Enabler Improvements: Develop the hardware used to improve POR RCVs and Enablers</p> <ul style="list-style-type: none"> - Develop product upgrades to MMPV Type II Interrogation Arm so it can be operated by the MVD. - Next Generation HMDS A2 to include Deep Buried Detection on the Husky and semi-autonomous control capability on the Husky and MMPV Type II - Explosive Hazard Pre-Detonation (EHP) hardware upgrades - Develop Interrogation Arm upgrades to the Buffalo MPCV - Route Clearance Vehicle Acceleration Study - Vehicle C4I Convergence - Forward Reconnaissance and Explosive Hazard Detection (FREHD) Vehicle Integration <p>Force Protection Improvements/Add On Armor (AoA) to execute system level design cycle for Rocket Propelled Grenade (RPG) and explosive formed projectiles (EFP) AoA kits for Husky and Buffalo. Kits will be developed so that RPG and EFP protection can be installed at the same time. In order to do this lighter weight design solutions will be developed.</p> <p>Explosive Hazard Pre-Detonation (EHP) capability to include a debris blower, Wire Neutralization System (WNS) and Mine Roller to neutralize/detonate a broad spectrum of improvised explosive hazards while on the move, to support route clearance mission.</p> <p>TARDEC Software Center (SEC) provides support for the Explosive hazard Pre-Detonation (EHP) Roller, updating software throughout Test and Evaluation (T&E) and Low Rate Initial Production (LRIP) activities. The SEC will continue development of the EHP Roller software to integrate EHP Roller functionality with Multi-Visual Display (MVD). In addition, the SEC will develop a Software Integration Lab (SIL) to support integration as well as maintenance and troubleshooting improvements.</p> <p>Standoff Robotic Explosive Hazard Detection System (SREHD), formerly known as the Autonomous Mine Detection System (AMDS), provides increased survivability through mine and explosive hazards stand-off detection, marking and neutralization capability for the dismounted soldier. It provides area access and freedom of movement for the Commander. SREHD consists of payload modules to be mounted on man-portable unmanned ground vehicles. The payloads are for surface laid and buried threats to include mines and explosive hazards. SREHD transitioned from Technical Development to Engineering and Manufacturing Development (EMD) in FY 2014. This capability allows a soldier to remain in a protective posture while detecting and neutralizing a wide variety of hybrid and conventional explosive threats.</p>		

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Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection				
FY2019 Base funding of \$38.945 million includes \$27.681 million to support the continued development of the Husky Mounted Detection System (HMDS); \$9.350 million to support development and testing of RCIS Type I & II; \$0.500 million to support continued MVD development; \$0.425 million to support RCV and Enabler improvements; and \$0.989 million to support SREHD Developmental Testing (DT) corrective actions and Initial Operational Test and Evaluation (IOT&E) planning.						
Explosive Hazard Protection for Mounted Clearance (EHPMC) provides a solution to mitigate capability gaps in force protection and system survivability to defeat improvised explosive devices and explosive hazards. Specific capability gaps include: limited vehicle force protection and system survivability capabilities and capability to extract casualties from the vehicles; and lack of capability to protect Soldiers heads, necks, and backs from the effects of explosive hazards blasts while seated inside vehicles, suppress external vehicle fires, and disconnect towed vehicles in emergency situations.						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: HMDS Program Management Support Description: Husky Mounted Detection System (HMDS) Program Management Support FY 2018 Plans: Development of program documentation, acquisition package for Engineering Change Proposals (ECP), Type Classification/Materiel Release Activities, and development of logistics products. FY 2019 Base Plans: Will fund PMO Core and Matrix Support FY 2018 to FY 2019 Increase/Decrease Statement: Increase is to support the continued development of the Husky Mounted Detection System (HMDS) through Engineering Change Proposals (ECPs). Provide engineering services to mature emerging capabilities.		4.169	0.534	1.818	-	1.818
Title: HMDS Ground Penetrating Radar (GPR) Description: HMDS Ground Penetrating Radar (GPR)		0.203	-	-	-	-
Title: HMDS Ground Penetrating Radar		2.286	-	-	-	-
Title: HMDS GPR: Engineer Change Proposal (ECP) to add Wire Detection and Infrared Illumination Description: HMDS A1 Tactical GPR: Engineer Change Proposal (ECP) to add Wire Detection and Infrared Illumination FY 2018 Plans:		2.597	5.975	21.190	-	21.190

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B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Engineering Change Proposal (ECP) to add Wire Detection (WD) and Infrared Illumination (IR) to HMDS GPR, conduct post award kick off meeting, requirements review and design review. FY 2019 Base Plans: Will continue with ongoing ECP efforts for Wire Detection, Infrared Illumination and Mission Computer Upgrade FY 2018 to FY 2019 Increase/Decrease Statement: Increase is to support the continued development of the Husky Mounted Detection System (HMDS) through Engineering Change Proposals (ECPs). Provide engineering services to mature emerging capabilities.						
Title: HMDS A1 Trainer: Add Wire Detection and develop logistics materials Description: HMDS A1 Trainer: Add Wire Detection and develop logistics materials		0.440	-	-	-	-
Title: HMDS Testing and Test Support activities Description: HMDS Testing and Test Support activities FY 2018 Plans: Risk Reduction and ECP testing FY 2019 Base Plans: Will continue Risk Reduction and ECP testing FY 2018 to FY 2019 Increase/Decrease Statement: Increase is to support the continued development of the Husky Mounted Detection System (HMDS) through Engineering Change Proposals (ECPs). Provide engineering services to mature emerging capabilities.		-	0.491	4.673	-	4.673
Title: RCIS Type I and Type II Description: Route Clearance & Interrogation System (RCIS) Type I and RCIS Type II provide standoff capability to detect and neutralize the full spectrum of explosive hazards. FY 2018 Plans: RCIS Type I: Delta HMEE prototypes; RCIS EMD contract award for Semi-Autonomous Control (SAC) System development, Preliminary Design Review, Reset/Recap Buffalos MPCV, Award of the Delta HMEE EMD contract. RCIS funding \$7.931 million. FY 2019 Base Plans:		11.593	7.931	9.350	-	9.350

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 415 / Mine Neutral/Detection				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
RCIS Type I: Will support the incremental funding of two ongoing symbiotic EMD contracts; Semi-Autonomous Control (SAC) and Delta HMEE (digitization of the platform). EMD contract efforts include system design, integration, technical/test reviews, logistics development, testing and delivery of RCIS prototypes. FY 2018 to FY 2019 Increase/Decrease Statement: Funding requirements increase in FY 2019 as contractor performance spans a year compared to a partial year in FY 2018.						
Title: VOSS Geo-Location Capability & Infrared Camera Replacement Description: Vehicle Optics Sensor System (VOSS) capability to determine location of explosive hazards and IR Camera Replacement FY 2018 Plans: Geo-location close-out and finalization of technical data to be furnished to Tobyhanna Army Depot for fabrication of integration kit items and cables. Complete IR Camera specifications, technical information and requirements. Independently validate technical data package. FY 2018 to FY 2019 Increase/Decrease Statement: VOSS does not require any funding in FY19.		2.177	0.876	-	-	-
Title: Multifunction Video Display (MVD) Description: Multifunction Video Display (MVD). Digital display used to control and view RCV enablers FY 2018 Plans: Continuing Support for MVD SIL at NVESD for development of additional enabler (Interrogation Arm software development for control functionality). FY 2019 Base Plans: Will continue Support for MVD SIL at Night Vision and Electronic Sensors Directorate (NVESD) for development of additional enabler (Interrogation Arm software development for control functionality). FY 2018 to FY 2019 Increase/Decrease Statement: MVD major test activities wrap up in FY18 so support only required to develop future capabilities in FY19		0.750	0.750	0.500	-	0.500
Title: RCV & Enabler Improvements Description: Develop the hardware used to improve POR RCVs.		-	-	0.425	-	0.425

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2019 Base Plans: Will continue to: - Develop Interrogation Arm upgrades for the Buffalo Mine Protected Clearance Vehicle (MPCV). Demonstration of these upgrades will be performed. - Develop product upgrades to the Medium Mine Protected Vehicle (MMPV) Type II Interrogation Arm so it can be operated by the MVD. - Next Generation HMDS A2 to include Deep Buried Detection on the Husky and semi-autonomous control capability on the Husky and MMPV Type II - Explosive Hazard Pre-Detonation (EHP) hardware upgrades							
FY 2018 to FY 2019 Increase/Decrease Statement: Not applicable (both years zero dollars)							
Title: Add on Armor (AoA) Description: Development AoA efforts for Route Clearance Vehicles (RCV) to include Rocket Propelled Grenade (RPG) and Explosive Formed Projectiles (EFP) for Husky and Buffalo. FY 2018 Plans: Prototype of Husky EFP AoA Kit FY 2018 to FY 2019 Increase/Decrease Statement: Funding not available in FY19 to develop future Add-On Armor Kits. Additional funding to be provided in FY20.			0.091	0.137	-	-	-
Title: Software Engineering Center (SEC) Description: TARDEC SEC provides support for the Explosive Hazard Pre-Detonation (EHP) Roller, updating software throughout Test and Evaluation (T&E) and Low Rate Initial Production (LRIP) activities. FY 2018 Plans: Enhanced Explosive Hazard Pre-Detonation EHP Software for LRIP T&E activities. FY 2018 to FY 2019 Increase/Decrease Statement: Software support transitioning from RDTE to OPA bill as EHP achieves Milestone C.			-	0.100	-	-	-
Title: Standoff Robotic Explosive Hazard Detection (SREHD) (Formerly AMDS) Description: Standoff Robotic Explosive Hazard Detection (SREHD) (AMDS)			7.441	3.054	0.989	-	0.989

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B. Accomplishments/Planned Programs (\$ in Millions)											
						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
<i>FY 2018 Plans:</i> Conduct Corrective Action Plans (CAPS) as a result of Developmental Testing (DT) and Conduct Initial Operational Testing and Evaluation (IOT&E)											
<i>FY 2019 Base Plans:</i> Will conduct Initial Operational Test and Evaluation (IOT&E)											
<i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> IOT&E will conclude in the fourth quarter of FY 2019											
Accomplishments/Planned Programs Subtotals						31.747	19.848	38.945	-	38.945	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• R64001: <i>HUSKY MOUNTED DETECTION SYSTEM (HMDS)</i>	0.274	21.695	40.834	-	40.834	53.741	75.450	45.454	43.980	0.000	281.428
• R68102: <i>GRND STANDOFF MINE DETECTN SYSM (GSTAMIDS)BLK 1</i>	39.350	32.442	29.883	16.000	45.883	37.123	36.479	31.269	6.749	0.000	229.295
• DA0924: <i>Modification Of In Svc Equip</i>	189.456	148.587	78.507	186.377	264.884	80.864	59.713	66.333	71.186	0.000	881.023
• R68260: <i>AREA MINE DETECTION SYSTEM (AMDS)</i>	10.500	10.571	11.594	0.001	11.595	24.951	10.194	-	-	0.000	67.811
• 606: <i>Cntrmn/Barrier Adv Dev</i>	-	4.149	2.968	-	2.968	12.144	16.802	11.859	9.880	0.000	57.802
• M80400: <i>Robotic Combat Support System (RCSS)</i>	3.531	4.516	4.029	4.850	8.879	12.315	9.891	18.601	18.975	0.000	76.708
• E50510: <i>DEMO KIT, BLASTING: Munition Array Charge, XM335</i>	-	1.586	2.350	-	2.350	2.800	-	-	-	0.000	6.736
Remarks											
D. Acquisition Strategy											
The Husky Mounted Detection System (HMDS) program is pursuing an acquisition approach that delivers capability increments - Increment A, Configuration 1 (A1) to the Warfighter by leveraging the Quick Reaction Capability (QRC) Ground Penetrating Radar (GPR) currently deployed in support of Operation Enduring Freedom (OEF)											

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<p>and Operation Inherent Resolve (OIR). In FY2019, the program will continue to execute an Engineering Change Proposals (ECP) to add a wire detection capability to address evolving threat, and Infrared illumination to enable nighttime operation. A second ECP to improve operational availability of the HMDS during inclement weather and address obsolescence and Cyber Security deficiencies will begin in FY19.</p> <p>The Route Clearance & Interrogation System (RCIS) program executes an Engineering Manufacturing and Development (EMD) phase for Type I systems with an OEM contract award for Delta High Mobility Engineering Excavator (HMEE) support and a contract award to one EMD contractor for the Semi-Autonomous Control (SAC) Kit in FY 2018. The SAC Kit award will be based on a source selection from full and open competition. The SAC EMD contract awardee will execute Preliminary Design Review (PDR), design, integration, and build phase of seven Semi-Autonomous Capability (SAC) kits, integrated onto six vehicles, with one kit available for engineering and System Integration Lab (SIL) evaluations. These assets will be used for the Government to execute a full Pre-Production Qualification Test (PPQT) and be evaluated against Capability Production Document (CPD) and performance specification requirements. Production and Technical Data Package (TDP) procurement options on the EMD contract take advantage of competition to assist in cost reduction. The RCIS Type I program Lifecycle Cost Estimate (LCCE), and associated budget request, was updated based on costs associated with modifying the base HMEE platform to accept the SAC kit, changes in the acquisition strategy and alignment of development and test activities in support of a production decision. To support EMD, ALUGS is funding Reset/Recap of up to six Buffalo Mine Protected Clearance Vehicle (MPCV) test assets at Letterkenny Army Depot. These will be provided to the SAC contractor for Operator Control Unit (OCU) integration.</p> <p>The Vehicle Optics Sensor System (VOSS) program is pursuing an acquisition approach which harvests Quick Reaction Capability (QRC) procured systems for refresh and insertion into the Program of Record (POR). In FY 2018 VOSS will transition a qualified Geo-location capability and full technical data package for Government fabrication / manufacture, and complete requirements, interfaces and technical data to enable integration of a less costly, more sustainable and durable IR Camera. There are no planned activities in FY 2019.</p> <p>EHP Debris Blower was procured as a COTS item from a commercial vendor in FY 2016. EHP Roller and EHP Wire Neutralization System (WNS) will be procured starting in FY 2018. MVD will be procured through a sole source contract FY 2017. Spiral development of software upgrades to MVD will be procured in FY 2018. MMPV Type II Interrogation Arm Engineer Change Proposals/upgrades would be procured in the out years once the user identifies the upgrades needed.</p> <p>The Standoff Robotic Explosive Hazard Detection System (SREHD) (formerly known as AMDS) is currently in the Engineering Manufacturing Development (EMD) phase and is being developed to provide standoff detection, marking, and neutralization of explosive hazards (e.g., landmines, improvised explosive devices (IED), booby-traps (explosive), and unexploded ordnance (UXO)) in complex and urban terrain, including confined areas and subterranean environments (e.g., buildings, bunkers, tunnels, etc.). The EMD phase consists of a preliminary design phase, which culminates with the Preliminary Design Review (PDR), a Risk Reduction Test (RRT) to evaluate the preliminary design, a critical design phase, which culminates with the Critical Design Review (CDR), integration with the Talon IV chassis and the Remote Activation Munition System (RAMS), a prototype build of 11 systems, which will be used for integration activities and to conduct the Government Development Test (DT), and a Logistics Demonstration (LogDemo). Transition to Low Rate Initial Production (LRIP) is scheduled to occur in the 3rd Quarter of FY 2018 under PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335, for the neutralization capability, as well under OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) for the detection and marking capabilities. Initial Operational Test and Evaluation (IOT&E) will start in the 4th Quarter of FY 2019 and conclude in the 1st Quarter of FY 2020 with LRIP assets. Award of the Full Rate Production (FRP) contract is scheduled to occur in the 2nd Quarter of FY 2020.</p>		

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E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 415 / Mine Neutral/Detection					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management - HMDS	MIPR	PM CCS : Picatinny Arsenal, NJ	32.507	-		-		-		-		-	0.000	32.507	-
HMDS System Engineering & Program Management	MIPR	PM Terrestrial Sensors : Fort Belvoir, VA	-	1.280		0.470		1.818	Jan 2019	-		1.818	Continuing	Continuing	Continuing
HMDS PMO SETA	SS/CPFF	TBD : TBD	-	0.400		0.064		-		-		-	Continuing	Continuing	-
Program Management - RCIS Type I	MIPR	PM FP : Warren, MI	2.829	1.360	Mar 2017	1.810		1.085	Oct 2018	-		1.085	Continuing	Continuing	-
Program Management - MTRS Inc II	MIPR	PM FP : Warren, MI	1.604	2.122	Jun 2017	-		-		-		-	0.000	3.726	-
VOSS Geo-location and new Infrared Camera	MIPR	PM Ground Sensors : Ft. Belvoir, VA	0.361	0.130		0.143		-		-		-	0.000	0.634	-
Program Management - SREHD (Formerly AMDS)	Allot	PM CCS : Picatinny Arsenal, NJ	3.504	0.222	Mar 2017	0.440	Mar 2018	0.044	Mar 2019	-		0.044	Continuing	Continuing	-
Subtotal			40.805	5.514		2.927		2.947		-		2.947	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS Inc A2 ? Integration of Deep Buried Detection and Wire Detection	SS/CPFF	NIITEK Dulles : VA	38.736	2.286		-		-		-		-	0.000	41.022	-
HMDS A1 Dev of Engineering Change Proposal w/ Wire Detect and InfraRed	SS/FFP	Chemring Sensors & Electronic Systems (CSES) : Dulles, VA	-	2.597		5.975		20.298	Jan 2019	-		20.298	Continuing	Continuing	Continuing
HMDS A1 Dev of Trainer WD, Test Kit Fabrication	SS/CPFF	NITEK : Dulles, VA	-	0.440		-		-		-		-	0.000	0.440	-

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Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 415 / Mine Neutral/Detection					
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS - TADSS	C/FFP	TBD - executed through PEO STRI : TBD	4.849	-		-		-		-		-	0.000	4.849	-
HMDS Systems Engineering Support	MIPR	CECOM : Various	-	-		-		0.892	Nov 2018	-		0.892	0.000	0.892	-
RCIS Type I	SS/FFP	J C Bamford : Pooler, GA	7.433	1.800		1.571		1.810	Nov 2018	-		1.810	0.000	12.614	Continuing
RCIS Type I test assets	MIPR	Letterkenny Army Depot : Letterkenny, PA	0.961	1.291		-		-		-		-	0.000	2.252	-
RCIS Type I SAC	C/CPIF	TBD : TBD	-	-		3.350	May 2018	4.631	Nov 2018	-		4.631	Continuing	Continuing	-
MTRS Inc II	C/FFP	PM FP, PdM UGV : Warren, MI	-	2.566	Sep 2017	-		-		-		-	0.000	2.566	-
VOSS Geo-location and Infrared Camera	C/CPFF	Various : Ft. Belvoir, VA	2.220	1.127		0.295		-		-		-	0.000	3.642	-
Multi-Function Video Display	C/CPFF	NVESD : Fort Belvoir, VA	3.472	0.250		0.250		0.500	Oct 2018	-		0.500	3.047	7.519	3.047
RCV & Enablers Improvements - MMPV Type II Interrogation Arm	C/CPFF	KRC : Houghton, MI	1.233	-		-		-		-		-	0.000	1.233	-
Buffalo MPCV Interrogation Arm Improvements	C/CPFF	KRC : Houghton, MI	-	-		-		0.425	Nov 2018	-		0.425	0.000	0.425	-
SREHD (Formerly AMDS) Engineering and Manufacturing Development (EMD)	C/CPIF	Carnegie Robotics LLC : Pittsburgh, PA	27.387	2.443	Jan 2017	1.150	Jan 2018	-		-		-	Continuing	Continuing	-
Subtotal			86.291	14.800		12.591		28.556		-		28.556	Continuing	Continuing	N/A

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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS - Test Support	C/FFP	USI : Newport News, VA	1.421	-		-		-		-		-	0.000	1.421	-
HMDS - Tech Support	C/FFP	MANTECH : Fairfax, VA	1.473	0.233		0.175		-		-		-	Continuing	Continuing	-
HMDS	MIPR	NVESD/CERDEC : Fort Belvoir, VA	12.433	0.260		-		-		-		-	Continuing	Continuing	-
HMDS - Information Assurance	FFRDC	MITRE : McLean, VA	0.720	0.150		-		-		-		-	0.000	0.870	-
HMDS - LOG DEMO	C/CPFF	FIBERTEK : TBD	0.381	-		-		-		-		-	0.000	0.381	-
HMDS	MIPR	PM FP, PdM ALUGS : Warren, MI	4.429	-		-		-		-		-	0.000	4.429	-
HMDS - Cost Analysis	C/CPFF	CACI : va	0.048	-		-		-		-		-	0.000	0.048	-
HMDS	MIPR	PEO STRI : Orlando, FL	2.329	0.200		-		-		-		-	0.000	2.529	-
HMDS	MIPR	CECOM : Aberdeen, MD	4.064	0.400		-		-		-		-	Continuing	Continuing	-
HMDS - Test Data Plan Analysis	SS/CPFF	IDA : Alexandria, VA	0.910	0.360		-		-		-		-	0.000	1.270	-
HMDS	MIPR	MSCoE : Ft. Leonard Wood, MO	0.119	0.115		-		-		-		-	Continuing	Continuing	-
HMDS	MIPR	Various : Various locations	2.873	-		-		-		-		-	0.000	2.873	-
HMDS	MIPR	Product Realization Directorate (PRD)/CERDEC : Aberdeen, MD	1.543	0.360		-		-		-		-	Continuing	Continuing	-
HMDS	MIPR	ARDEC : Picatinny Arsenal, NJ	2.425	0.614		-		-		-		-	0.000	3.039	-
HMDS	MIPR	ADM : Edgewater, MD	1.206	-		-		-		-		-	0.000	1.206	-
HMDS	MIPR	AMRDEC : Redstone Arsenal, AL	1.021	-		-		-		-		-	0.000	1.021	-

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Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS	MIPR	TARDEC : Warren, MI	0.545	-		-		-		-		-	0.000	0.545	-
RCIS Type I	MIPR	TARDEC, TACOM : Warren, MI	6.636	0.882	Mar 2017	1.150		1.364	Oct 2018	-		1.364	Continuing	Continuing	-
Robotics Interoperability	MIPR	PM FP, PdM ALUGS : Warren, MI	3.960	-		-		-		-		-	0.000	3.960	-
MTRS Inc II	Various	PM FP, PdM UGV : Warren, MI	8.705	1.441	Aug 2017	-		-		-		-	0.000	10.146	-
VOSS Geo-location and Infrared Camera	MIPR	Various : Various	2.720	-		0.379		-		-		-	0.000	3.099	-
Multi-function Video Display	C/CPFF	NVESD/CERDEC : Fort Belvoir, VA	2.797	0.500		0.500		-		-		-	0.000	3.797	-
Add on Armor (AoA) Husky RPG Kit	MIPR	TARDEC : Warren, MI	0.283	-		-		-		-		-	0.000	0.283	-
AoA Husky AoA Kit	MIPR	TARDEC : Warren, MI	-	0.091		0.137		-		-		-	0.000	0.228	-
EHP Roller Development	MIPR	TARDEC : Warren, MI	0.400	-		-		-		-		-	0.000	0.400	-
EHP Blower Camera Upgrade	MIPR	TARDEC : Warren, MI	0.050	-		-		-		-		-	0.000	0.050	-
SREHD (Formerly AMDS)	MIPR	Various : Various	9.092	2.303	Jan 2017	0.890	Jan 2018	0.240	Jan 2019	-		0.240	Continuing	Continuing	-
Subtotal			72.583	7.909		3.231		1.604		-		1.604	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS	MIPR	ATEC : Alexandria, VA	4.486	-		0.316		3.781	Mar 2019	-		3.781	Continuing	Continuing	Continuing
HMDS	MIPR	CECOM : Various	-	-		-		0.892	Nov 2018	-		0.892	0.000	0.892	-

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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
RCIS Type I	MIPR	ATEC : Aberdeen, MD	1.739	-		0.050		0.460	Nov 2018	-		0.460	0.000	2.249	-
MTRS Inc II	MIPR	TARDEC, Various : Warren, MI	1.000	0.131	Mar 2017	-		-		-		-	0.000	1.131	-
VOSS Geo-location and new Infrared Camera	MIPR	ATEC : Alexandria, VA	3.893	0.920		0.059		-		-		-	Continuing	Continuing	Continuing
Multi-Function Video Display	WR	KRC : Houghton, MI	1.100	-		-		-		-		-	0.000	1.100	-
RCV & Enabler Improvements ?MMPV Type II Interrogation Arm.	MIPR	TARDEC : Warren, MI	0.367	-		-		-		-		-	0.000	0.367	-
Add on Armor (AoA) Husky RPG	MIPR	ATEC : Aberdeen, MD	0.100	-		-		-		-		-	0.000	0.100	-
Add on Armor Buffalo EFP	MIPR	ATEC : Aberdeen, MD	0.300	-		-		-		-		-	0.000	0.300	-
Add-on Armor	MIPR	ARL : Adelphi, MD	0.100	-		-		-		-		-	0.000	0.100	-
Software Engineering Center (SEC)	MIPR	TARDEC : Warren, MI	-	-		0.100		-		-		-	0.000	0.100	-
SREHD (Formerly AMDS)	MIPR	ATEC : Various	1.868	2.473	Aug 2017	0.574	Aug 2018	0.705	Aug 2019	-		0.705	Continuing	Continuing	-
Subtotal			14.953	3.524		1.099		5.838		-		5.838	Continuing	Continuing	N/A
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			214.632	31.747		19.848		38.945		-		38.945	Continuing	Continuing	N/A
Remarks															

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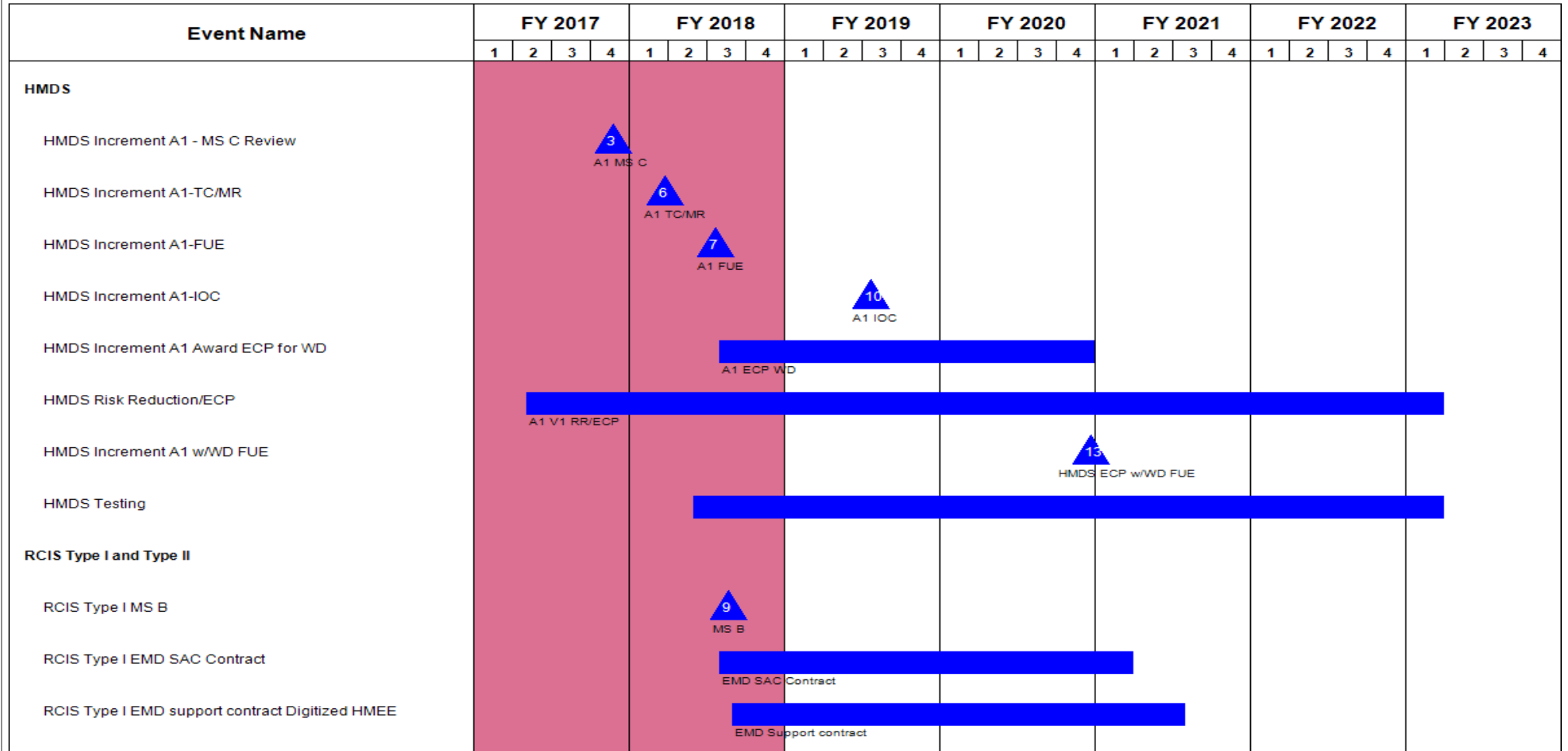
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity
2040 / 5

R-1 Program Element (Number/Name)
PE 0604808A / Landmine Warfare/Barrier -
Eng Dev

Project (Number/Name)
415 / Mine Neutral/Detection



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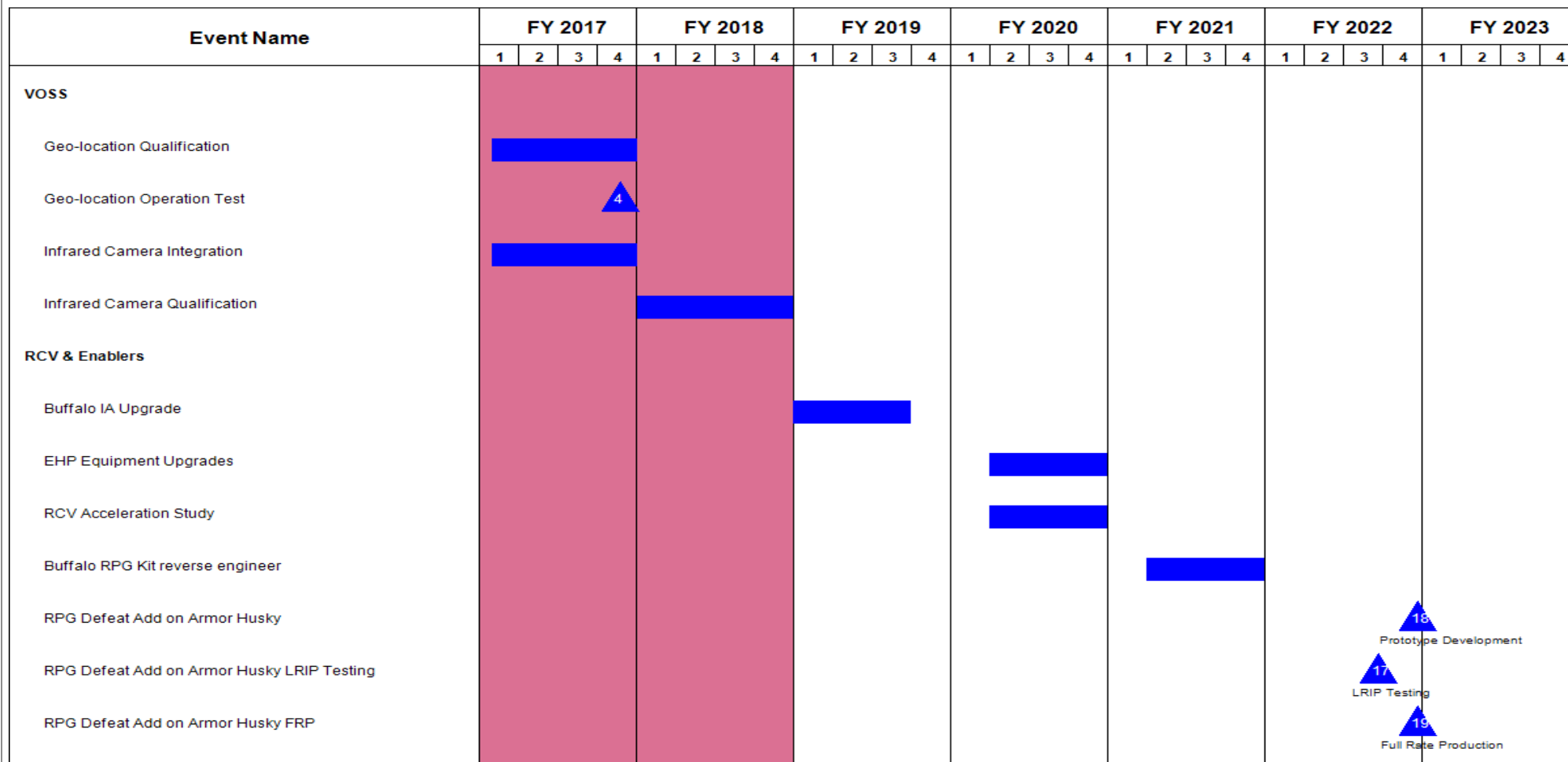
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev		Project (Number/Name) 415 / Mine Neutral/Detection	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
RCIS Type I Testing																												
RCIS Type I MS C																												
RCIS Type I Low Rate Initial Production (LRIP)																												
RCIS Type I Full Rate Production (FRP)																												
RCIS Type I Fielding																												
RCIS Type II MDD																												
RCIS Type II MS B Documentation Development																												
RCIS Type II MS B																												
RCIS Type II EMD contract																												
MTRS																												
MTRS PDR																												
MTRS Inc II MS B/C																												
MTRS Inc II Contract Award																												

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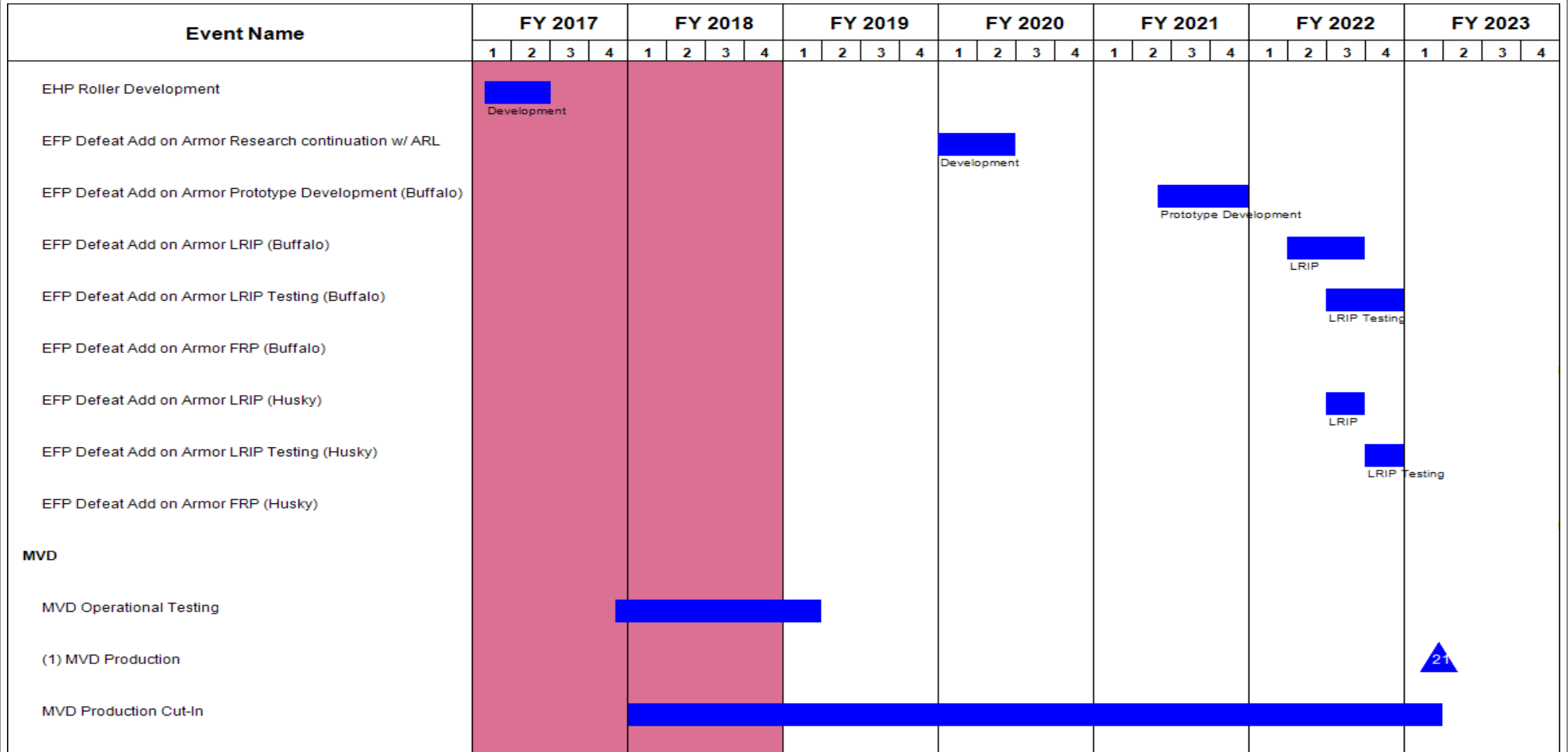
Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>
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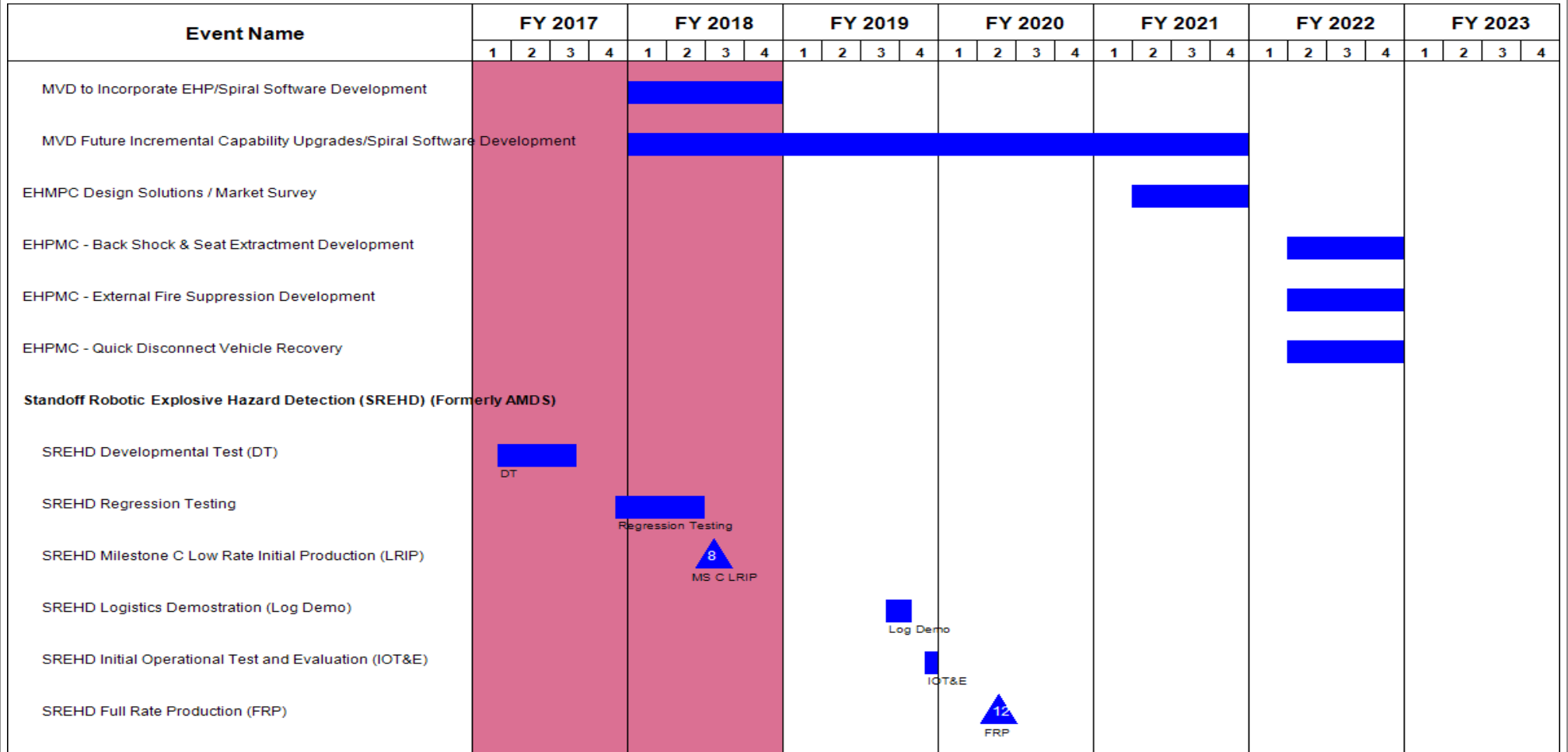
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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>	



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>	



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army																Date: February 2018																					
Appropriation/Budget Activity 2040 / 5										R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev										Project (Number/Name) 415 / Mine Neutral/Detection																	
Event Name										FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SREHD Initial Operational Capability (IOC)																										15 IOC								20 FOC			
SREHD Full Operational Capability (FOC)																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
HMDS	1	2016	1	2023
HMDS Increment A1 - MS C Review	4	2017	4	2017
HMDS Increment A1-TC/MR	1	2018	1	2018
HMDS Increment A1-FUE	3	2018	3	2018
HMDS Increment A1-IOC	3	2019	3	2019
HMDS Increment A1 Award ECP for WD	3	2018	4	2020
HMDS Risk Reduction/ECP	2	2017	1	2023
HMDS Increment A1 w/WD FUE	4	2020	4	2020
HMDS Testing	2	2018	1	2023
RCIS Type I and Type II	1	2015	4	2022
RCIS Type I MS B	3	2018	3	2018
RCIS Type I EMD SAC Contract	3	2018	1	2021
RCIS Type I EMD support contract Digitized HMEE	3	2018	3	2021
RCIS Type I Testing	4	2019	4	2020
RCIS Type I MS C	1	2021	1	2021
RCIS Type I Low Rate Initial Production (LRIP)	1	2021	1	2023
RCIS Type I Full Rate Production (FRP)	1	2023	2	2027
RCIS Type I Fielding	2	2023	3	2027
RCIS Type II MDD	1	2020	1	2020
RCIS Type II MS B Documentation Development	1	2020	3	2021
RCIS Type II MS B	3	2021	3	2021
RCIS Type II EMD contract	3	2021	1	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army				Date: February 2018	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 415 / <i>Mine Neutral/Detection</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
MTRS	1	2016	3	2017	
MTRS PDR	1	2018	1	2018	
MTRS Inc II MS B/C	3	2017	3	2017	
MTRS Inc II Contract Award	3	2017	3	2017	
VOSS	1	2016	1	2020	
Geo-location Integration	1	2016	4	2016	
Geo-location Qualification	1	2017	4	2017	
Geo-location Operation Test	4	2017	4	2017	
Infrared Camera Integration	1	2017	4	2017	
Infrared Camera Qualification	1	2018	4	2018	
RCV & Enablers	1	2016	4	2022	
Buffalo IA Upgrade	1	2019	3	2019	
EHP Equipment Upgrades	2	2020	4	2020	
RCV Acceleration Study	2	2020	4	2020	
Buffalo RPG Kit reverse engineer	2	2021	4	2021	
RPG Defeat Add on Armor Husky	4	2022	4	2022	
RPG Defeat Add on Armor Husky LRIP Testing	3	2022	3	2022	
RPG Defeat Add on Armor Husky FRP	4	2022	4	2022	
EHP Roller Development	1	2016	2	2017	
EFP Defeat Add on Armor Research continuation w/ ARL	1	2020	2	2020	
EFP Defeat Add on Armor Prototype Development (Buffalo)	2	2021	4	2021	
EFP Defeat Add on Armor LRIP (Buffalo)	2	2022	3	2022	
EFP Defeat Add on Armor LRIP Testing (Buffalo)	3	2022	4	2022	
EFP Defeat Add on Armor LRIP (Husky)	3	2022	3	2022	
EFP Defeat Add on Armor LRIP Testing (Husky)	4	2022	4	2022	

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018	
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev		Project (Number/Name) 415 / Mine Neutral/Detection
		Start		End
Events	Quarter	Year	Quarter	Year
MVD	1	2018	1	2024
MVD Operational Testing	4	2017	1	2019
(1) MVD Production	1	2023	1	2023
MVD Production Cut-In	1	2018	1	2023
MVD to Incorporate EHP/Spiral Software Development	1	2018	4	2018
MVD Future Incremental Capability Upgrades/Spiral Software Development	1	2018	4	2021
EHMPC Design Solutions / Market Survey	2	2021	4	2021
EHPMC - Back Shock & Seat Extractment Development	2	2022	4	2022
EHPMC - External Fire Suppression Development	2	2022	4	2022
EHPMC - Quick Disconnect Vehicle Recovery	2	2022	4	2022
Standoff Robotic Explosive Hazard Detection (SREHD) (Formerly AMDS)	1	2017	4	2022
SREHD Developmental Test (DT)	1	2017	3	2017
SREHD Regression Testing	4	2017	2	2018
SREHD Milestone C Low Rate Initial Production (LRIP)	3	2018	3	2018
SREHD Logistics Demonstration (Log Demo)	3	2019	4	2019
SREHD Initial Operational Test and Evaluation (IOT&E)	4	2019	4	2019
SREHD Full Rate Production (FRP)	2	2020	2	2020
SREHD Initial Operational Capability (IOC)	2	2021	2	2021
SREHD Full Operational Capability (FOC)	1	2023	1	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
434: Anti-Personnel Landmine Alternatives (NSD)	-	0.000	4.100	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.100
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Spider Increment 1A will build upon the existing M7 Spider system. The M7 Spider system is a hand-emplaced, remotely controlled (Man-In-The-Loop) system that provides highly responsive terrain-shaping and protection capabilities. M7 Spider replaces persistent anti-personnel landmines, is compliant with US National Landmine policy, and has been fielded to US forces in support of Operation Enduring Freedom and currently being fielded to Engineers within Brigade Combat Teams in the Active and Army National Guard components. Additional capabilities will be developed to enhance the Spider Remote Control Station and demonstrate the ability to employ legacy Government-Off-The-Shelf (GOTS) lethal and non-lethal anti-personnel (AP) munitions and counter mobility obstacles. Spider Increment 1A will utilize an open system architecture to facilitate future munition integration.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Engineering Support								-	0.713	-	-	-
Description: Perform engineering support.												
FY 2018 Plans:												
Continue to support development of Spider Increment 1A system. Monitor Initial Operation Test (IOT).												
FY 2018 to FY 2019 Increase/Decrease Statement:												
There is no FY19 RDTE budget to compare against the FY18 RDTE budget.												
Title: Test and Evaluation								-	2.898	-	-	-
Description: Provide support to Contractor/Government test activities.												
FY 2018 Plans:												
Execute Initial Operational Test (IOT).												
FY 2018 to FY 2019 Increase/Decrease Statement:												
There is no FY19 RDTE budget to compare against the FY18 RDTE budget.												
Title: Program Management and Oversight								-	0.328	-	-	-
Description: Program Management and support of Spider Increment 1A.												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 434 / <i>Anti-Personnel Landmine Alternatives (NSD)</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<i>FY 2018 Plans:</i> Perform overall program management support for the execution of the Spider Inc 1A development effort and oversee Government Qualification Testing. Manage the Initial Operational Test (IOT). <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> There is no FY19 RDTE budget to compare against the FY18 RDTE budget.					
<i>Title:</i> FY 2014-2016 Reductions <i>Description:</i> Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) and Federally Funded Research & Development Centers (FFRDC) Reductions. <i>FY 2018 Plans:</i> Estimated Small Business Innovative Research (SBIR) costs are \$140,000. Estimated Small Business Technology Transfer Program (STTR) costs are \$21,000. <i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> There is no FY19 RDTE budget to compare against the FY18 RDTE budget.	-	0.161	-	-	-
Accomplishments/Planned Programs Subtotals	-	4.100	-	-	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• B55501: <i>SPIDER APLA Remote Control Unit</i>	1.428	0.996	0.000	-	0.000	-	-	-	-	0.000	2.424
• B54020: <i>Spider Family of Networked Munitions Incr</i>	8.796	4.500	17.515	-	17.515	18.510	18.215	8.022	-	0.000	75.558

Remarks

D. Acquisition Strategy

The Engineering Manufacturing Development (EMD) contract was a competitively awarded Cost Plus Incentive Fee EMD contract with a one year Firm-Fixed Price (FFP) Low Rate Initial Production (LRIP) option. A Government Level 3 Technical Data Package (TDP) will be delivered as part of the EMD contract. The modified TDP at the end of LRIP will be the basis of a Full Rate Production (FFP) contract.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev	Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)					
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spider - Program Mgmt	Various	PM-CCS, : Picatinny Arsenal, NJ	4.029	-		0.328		-		-		-	Continuing	Continuing	-
SBIR/STTR, FFRDC and Section 3001/3004 ATB Adjustments	Various	PM CCS, : Picatinny Arsenal, NJ	3.686	-		0.161		-		-		-	0.000	3.847	-
Subtotal			7.715	-		0.489		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spider Non-Lethal Launcher (FY12)	SS/CPIF	Alliant Techsystems Operations, LLC : Plymouth, MN	0.667	-		-		-		-		-	0.000	0.667	-
Spider Inc 1A (FY13-16)	C/CPIF	Northrop Grumman Systems Corporation : Carson, CA	29.819	-		-		-		-		-	Continuing	Continuing	-
Rifleman Radio Systems	Reqn	General Dynamics, C4 Systems : Scottsdale, AZ	0.057	-		-		-		-		-	0.000	0.057	-
Subtotal			30.543	-		-		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spider - ARDEC Eng support	MIPR	ARDEC, : Picatinny Arsenal, NJ	15.101	-		0.683		-		-		-	Continuing	Continuing	-
Spider - ARDEC Non-Lethal Launcher Eng Spt	MIPR	ARDEC, : Picatinny Arsenal, NJ	1.561	-		-		-		-		-	0.000	1.561	-
Mitre provide C4 Support	FFRDC	Mitre, : McLean, VA	3.272	-		-		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Spider - Millennium Engineering Support	C/FFP	Millennium : Arlington, VA	2.782	-		-		-		-		-	Continuing	Continuing	-
Contractor Engineering Support	C/FFP	TBD : TBD	-	-		0.030		-		-		-	0.000	0.030	-
Spider - CECOM Engineering Support MOD	C/CPFF	URS Federal Support Service : Lakehurst, NJ	0.390	-		-		-		-		-	0.000	0.390	-
Spider - CERDEC Engineering Support	C/CPFF	AASKI Technologies, INC : Chantilly, VA	0.281	-		-		-		-		-	0.000	0.281	-
Spider - CERDEC Eng support	MIPR	CERDEC - SPACE AND TERRESTRIAL COMMS DIR : APG, MD	0.330	-		-		-		-		-	Continuing	Continuing	-
Spider Increment 1A PEO STRI Training Support	MIPR	PEO STRI : Orlando, FL	0.150	-		-		-		-		-	0.000	0.150	-
ARL HRED MANPRINT/ HFE Support	MIPR	ARL HRED : Adelphi, MD	0.468	-		-		-		-		-	0.000	0.468	-
Night Vision Electronic Sensors Directorate	C/CPFF	Fibertek : Herndon, VA	0.163	-		-		-		-		-	0.000	0.163	-
Spider 1A Maint & Engr SPT DOTC Contract	C/CPFF	Advanced Technology International (ATI) : North Charleston, SC	0.194	-		-		-		-		-	0.000	0.194	-
Spider 1A Maint & Engr SPT IDIQ Contract	C/IDIQ	Advanced Technology International (ATI) : North Charleston, SC	0.168	-		-		-		-		-	0.000	0.168	-
Natick	MIPR	Natick Soldier RDEC : Natick, MA	0.029	-		-		-		-		-	0.000	0.029	-
Subtotal			24.889	-		0.713		-		-		-	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev					Project (Number/Name) 434 / Anti-Personnel Landmine Alternatives (NSD)					
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contractor/ Government Test Activities	MIPR	OTC, AMSAA, AEC, ATEC, NIE, TSMO, ARDEC : Various	3.502	-		2.898		-		-		-	Continuing	Continuing	-
Subtotal			3.502	-		2.898		-		-		-	Continuing	Continuing	N/A
Remarks Not Applicable															
			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			66.649	-		4.100		-		-		-	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army			Date: February 2018		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>		Project (Number/Name) 434 / <i>Anti-Personnel Landmine Alternatives (NSD)</i>	

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Spider Increment 1A Development																												
Government DT																												
MS C Documentation																												
MS C																												
Interactive Electronic Training Manual (IETM) Validation (2)																												
Force Development Test (FDT)																												
Initial Operational Test (IOT)																												
Full Rate Production (FRP) Decision																												
Initial Operational Capability (IOC)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604808A / <i>Landmine Warfare/Barrier - Eng Dev</i>	Project (Number/Name) 434 / <i>Anti-Personnel Landmine Alternatives (NSD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SPIDER Networked Munitions Increment 1A	1	2004	1	2005
Request For Proposal (RFP)	1	2013	1	2013
Source Selection	2	2013	4	2013
Spider Increment 1A Development	4	2013	4	2017
Contractor DT	3	2014	4	2015
Government DT	3	2015	3	2017
Limited User Test (LUT)	2	2016	3	2016
MS C Documentation	2	2016	3	2017
MS C	3	2017	3	2017
Interactive Electronic Training Manual (IETM) Validation (2)	3	2018	3	2018
Force Development Test (FDT)	3	2018	3	2018
Initial Operational Test (IOT)	4	2018	1	2019
Full Rate Production (FRP) Decision	2	2019	2	2019
Initial Operational Capability (IOC)	3	2019	3	2019