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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	87.895	57.674	55.215	-	55.215	45.750	16.214	3.958	4.991	Continuing	Continuing
016: Close Combat Capabilities ENG DEV	-	-	-	1.629	-	1.629	3.500	-	-	-	-	5.129
415: Mine Neutral/Detection	-	65.647	47.003	49.296	-	49.296	42.250	16.214	3.958	4.991	Continuing	Continuing
434: Anti-Personnel Landmine Alternatives (NSD)	-	22.248	10.671	4.290	-	4.290	-	-	-	-	-	37.209
Note												
FY 2014: Budget supports Project 415, Mine Neutral/Detection and Project 434, Anti-Personnel Landmine Alternatives (NSD). Budget reprogramming of \$1.800 million and \$X.XXX million for SBIR/STTR reductions.												
FY 2015: Budget supports Project 415, Mine Neutral/Detection and Project 434, Anti-Personnel Landmine Alternatives (NSD).												
FY 2016: Budget supports Project 016 Close Combat Capabilities, Project 415, Mine Neutral/Detection and Project 434, Anti-Personnel Landmine Alternatives (NSD).												
The FY 2016 funding request was reduced for \$13.782 million to account for the availability of prior year execution balances.												
A. Mission Description and Budget Item Justification												
This program element (PE) provides for the engineering and manufacturing development (EMD) and demonstation 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.												
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), Autonomous Mine Detection System												

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(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.						
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. Further, Spider Increment 1A will complete the development of the Non-Lethal Launcher (NLL) XM809 and XM810.						
B. Program Change Summary (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget		92.236	57.705	52.477	-	52.477
Current President's Budget		87.895	57.674	55.215	-	55.215
Total Adjustments		-4.341	-0.031	2.738	-	2.738
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-1.800	-			
• SBIR/STTR Transfer		-1.962	-0.031			
• Adjustments to Budget Years		-	-	2.738	-	2.738
• Other Adjustments 1		-0.579	-	-	-	-

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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			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
016: Close Combat Capabilities ENG DEV	-	-	-	1.629	-	1.629	3.500	-	-	-	-	5.129
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification The Close Combat Capabilities Engineering Development project develops 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). These 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.												
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	
Title: Dismounted Lane Breaching System 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 2016 Base Plans: Perform trade studies/cost-benefit analyses to prioritize user identified capability gaps and the material solutions that address them; Prepare Preliminary Design; Prepare contract Statement of Work (SOW); Draft Test Plans.							-	-	1.629	-	1.629	
Accomplishments/Planned Programs Subtotals							-	-	1.629	-	1.629	
C. Other Program Funding Summary (\$ in Millions) N/A Remarks D. Acquisition Strategy N/A E. Performance Metrics N/A												

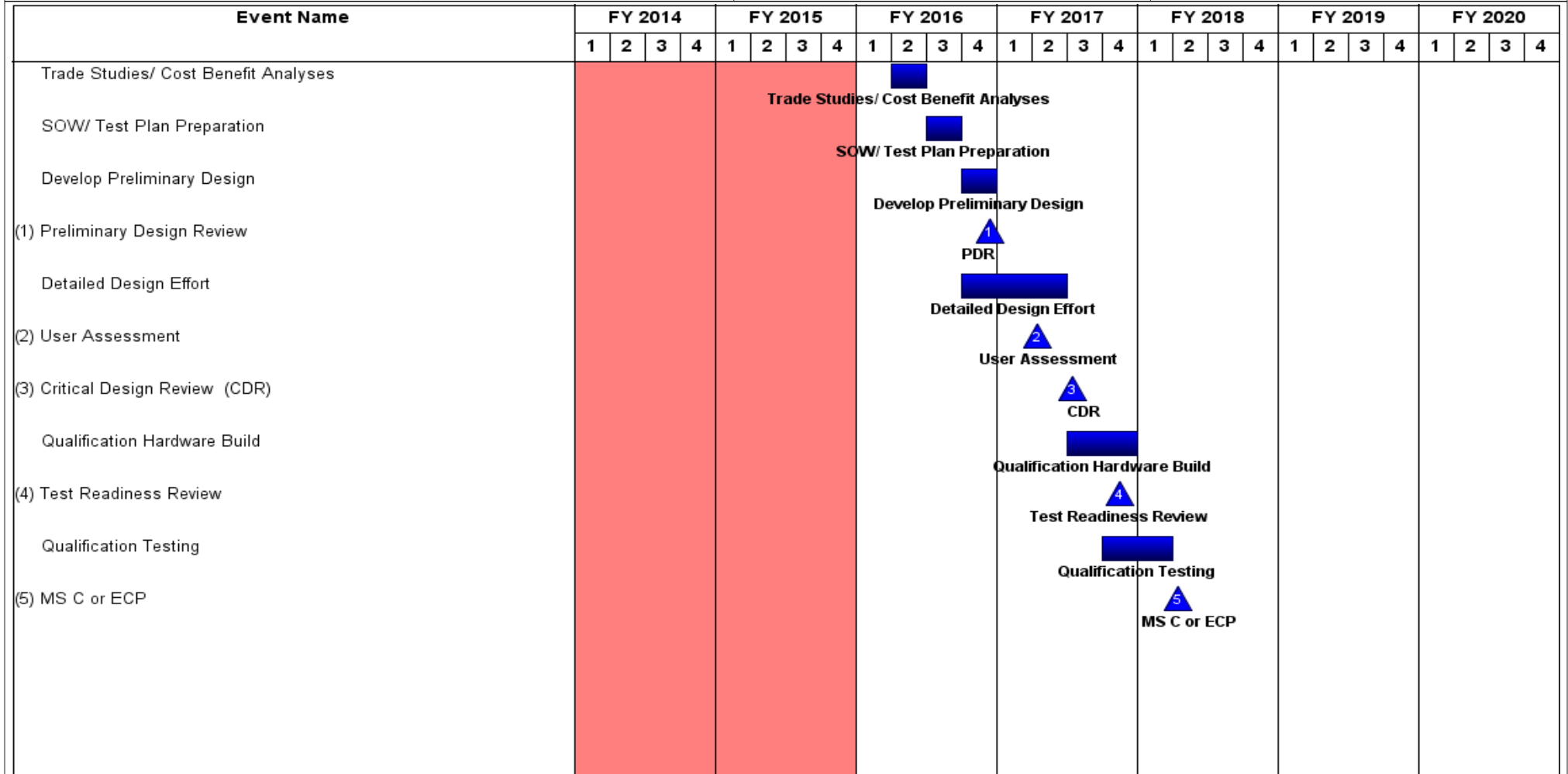
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604808A / Landmine Warfare/Barrier - Eng Dev				Project (Number/Name) 016 / Close Combat Capabilities ENG DEV							
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	0.000	-		-		0.100		-		0.100	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.100		-		0.100	-	-	-
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	0.000	-		-		1.100		-		1.100	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.100		-		1.100	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	0.000	-		-		0.429		-		0.429	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		0.429		-		0.429	-	-	-
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		1.629		-		1.629	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army **Date:** February 2015

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-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
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>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Trade Studies/ Cost Benefit Analyses	2	2016	2	2016
SOW/ Test Plan Preparation	3	2016	3	2016
Develop Preliminary Design	4	2016	4	2016
Preliminary Design Review	4	2016	4	2016
Detailed Design Effort	4	2016	2	2017
User Assessment	2	2017	2	2017
Critical Design Review (CDR)	3	2017	3	2017
Qualification Hardware Build	3	2017	4	2017
Test Readiness Review	4	2017	4	2017
Qualification Testing	4	2017	1	2018
MS C or ECP	2	2018	2	2018

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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			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
415: Mine Neutral/Detection	-	65.647	47.003	49.296	-	49.296	42.250	16.214	3.958	4.991	Continuing	Continuing
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 and low-metallic surface-laid and shallow-buried antitank landmines, unexploded ordnance, trigger mechanisms, and deep buried metallic Improvised Explosive Devices (IEDs) and metallic encased caches in support of route and area-clearance operations. It provides area access and freedom of movement for the Commander. HMDS is a mission equipment package, mounted on the Husky route clearance vehicle, which consists of a Ground Penetrating Radar (GPR), Deep Buried Detection (DBD) capability, and Semi-Autonomous Control capability (SAC). Program is broken out into three increments. The GPR (Increment A1) will detect and accurately mark a broad spectrum of suspected explosive hazards and trigger mechanisms in a wider range of road surfaces and varying soil conditions. The DBD capability (Increment A2) will detect and accurately mark suspected deep buried metallic Improvised Explosive Devices (IEDs) and metallic encased caches. The SAC capability (Increment B) will enable an operator to remotely and semi-autonomously control all functions of the Husky and HMDS from inside the Mine Protected Clearance Vehicle, improving survivability of the operator during the detection mission. The HMDS Common Operating Group (COG) is comprised of the Common Installation Kits, DBD Trainer and GPR Trainer.

The Route Clearance & Interrogation System (RCIS) consists of two semi-autonomous vehicles and designated control vehicles which provide a standoff capability to detect and neutralize the full spectrum of explosive hazards by integrating a semi-autonomous kit onto a High Mobility Engineering Excavator (HMEE) and the RG-31 and an Operator Control Unit (OCU) onto a designated RG-31 or Buffalo. RCIS Type 1 semi-autonomous kit will be integrated onto the HMEE and be capable of interrogating and classifying explosive hazards. RCIS Type 2 semi-autonomous kit will be integrated onto an RG-31/Medium Mine Protected Vehicle (MMPV) Type II vehicle and be able to detect, neutralize and proof explosive hazards. The OCU will be integrated into both a RG-31 MMPV and Buffalo. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons. RCIS Type 1 and Type 2 are being procured as separate increments.

MTRS Inc II will provide a single medium sized robot configuration common across all users. The program would create one common material solution by using the reset on hand unmanned ground vehicle (UGV) chassis as the base platform with a modular design to allow different payloads for each end user. Based on the cost savings, schedule improvement, and the need to expeditiously field the capability to the war fighter this approach was chosen; in addition to the commonality of systems across the Army. A bridging strategy led by the Robot Logistics Support Center (RLSC) will support any emerging urgent requirements until the MTRS Inc II is fielded. The upgraded UGV will be the materiel solution for MTRS Inc II.

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The Interoperability effort includes development of RCIS Type 1 and RCIS Type 2 interface requirements in UGV Interoperability Profile (IOP) Version 2, development of RCIS Type 1 and 2 IOP Instantiation Document, and government lab interoperability risk reduction for RCIS Type 1 and 2 in support of Milestone B and EMD phase.							
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. FY 2016 Base Funding in the amount of \$2.100 million supports VOSS Geo-location capability specification development, Interface Control Document (ICD), integration and prototypes.							
The Multifunction Video Display (MVD) provides view/control capability of the enablers (Interrogation Arms, VOSS, Man Transportable Robotic System, 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) 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.							
Route Clearance Vehicle (RCV) & Enabler Improvements: Develop the hardware used to improve POR RCVs and Enablers							
- Develop product upgrades to MMPV Type II Interrogation Arm - Next Generation HMDS A2 to include Deep Buried Detection the Husky on the Husky and semi-autonomous control capability on the Husky and Buffalo - Explosive Hazard Pre-Detonation (EHP) Equipment upgrades - RCV weight reduction							
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. 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.							
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. AMDS 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. AMDS 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.							
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: AMDS			17.828	7.549	7.135	-	7.135
Description: AMDS							

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
FY 2014 Accomplishments: Engineering Manufacturing Development (EMD) Contract awarded and Milestone (MS) B achieved						
FY 2015 Plans: Engineering Manufacturing Development (EMD), Preliminary Design Review (PDR), and Risk Reduction Testing (RRT)						
FY 2016 Base Plans: Engineering Manufacturing Development (EMD), Critical Design Review (CDR), ad Development Testing (DT)						
Title: HMDS Engineering Support Description: HMDS Engineering Support		13.008	10.077	11.543	-	11.543
FY 2014 Accomplishments: Engineering Manufacturing Development (EMD) Contract Award, Preliminary Design Review (PDR), Inc. B pre-award activities						
FY 2015 Plans: Engineering Manufacturing Development (EMD); Risk Reduction Testing						
FY 2016 Base Plans: Engineering Manufacturing Development (EMD);Critical Design Review						
Title: HMDS Increment A, Configuration 1, Ground Penetrating Radar (GPR) Description: HMDS Increment A, Configuration 1, Ground Penetrating Radar (GPR)		2.085	0.500	-	-	-
FY 2014 Accomplishments: HMDS Increment A1 baseline testing						
FY 2015 Plans: GPR (upgrade) trainer testing						
Title: HMDS Increment A, Configuration 2 Description: HMDS Increment A, Configuration 2		19.995	17.665	7.784	-	7.784
FY 2014 Accomplishments:						

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Increment A2 Engineering Manufacturing Development (EMD) In-Process Review (IPR) and contract award						
FY 2015 Plans: Increment A2 Risk ReductionTesting						
FY 2016 Base Plans: Critical Design Review (CDR) and Developmental Testing (DT)						
Title: HMDS Training Aids, Devices, Simulators and Simulations (TADSS)		1.886	-	4.776	-	4.776
Description: PEO STRI to develop trainer.						
FY 2014 Accomplishments: HMDS Increment A, Configuration 1 - Trainer						
FY 2016 Base Plans: Virtual Clearance Training Suite (VCTS), Explosive Hazard Replicated Target Set (EHRTS), Interactive Multimedia Instruction (IMI)						
Title: RCIS		7.098	9.246	13.691	-	13.691
Description: RCIS						
FY 2014 Accomplishments: RCIS MS B Preparation, RFP, Material Development Decision (MDD) preparation, Interoperability, and HMEE platform upgrades. MTRS Inc II MDD, Acquisition Concept brief, testing and MTRS Inc II program documentation preparation and MTRS II RFP preparation.						
FY 2015 Plans: RCIS PM support, MS B preparation, Engineering and Manufacturing Dev. contract preparation, RFP release, HMEE platform upgrades, risk reduction testing, source selection, System Integration Laboratory (SIL) design/build, and Interoperability. MTRS Inc II PM support, Request For Proposal (RFP) development, scope of work development and Milestone C documentation preparation.						
FY 2016 Base Plans: RCIS Engineering and Manufacturing Development (EMD) contract award, PM support, Source Selection Evaluation Board (SSEB), upgrade of HMEE platform for EMS, RCIS Preliminary Design Review (PDR), and						

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Interoperability. MTRS Inc II development, Source Selection Evaluation Board, IOP instantiation and design reviews .						
Title: Multifunction Video Display (MVD). Description: Multifunction Video Display (MVD). Digital display used to control and view RCV enablers FY 2014 Accomplishments: Development of MVD, procurement of Product Verification Test (PVT) assets and Test. Begin development of MVD System Integration Laboratory (SIL) at Night Vision & Electronic Sensor Directorate (NVESD) FY 2015 Plans: Continued MVD Prototype Development and follow-on Test. Continuing support for MVD SIL at NVESD. FY 2016 Base Plans: Continuing support for MVD SIL at NVESD for development of additional enablers (EHP) onto MVD.		3.297	1.100	0.750	-	0.750
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 2015 Plans: Investigate lighter weight EFP AoA recipes for RCVs with Army Research Lab. Develop and test Husky Chevron RPG Kit. FY 2016 Base Plans: Continue development of lighter weight EFP AoA recipes with Army Research Lab. Develop and test Buffalo EFP AoA Kit.		-	0.483	0.750	-	0.750
Title: RCV & Enabler Improvements Description: Develop the hardware used to improve POR RCVs. FY 2014 Accomplishments: Protoype Development. FY 2015 Plans:		0.450	0.383	0.767	-	0.767

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B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Prototype Development of MMPV Type II Interrogation Arm systems improvements.													
FY 2016 Base Plans: Develop system demonstrator of MMPV Type II Interrogation Arm System Improvements and test.													
Title: VOSS Geo-Location Capability									-	-	2.100	-	2.100
Description: VOSS Capability to determine location of explosive hazards.													
FY 2016 Base Plans: Spec Development, Interface Control Document (ICD), integration and prototypes for Geo-location capability.													
Accomplishments/Planned Programs Subtotals									65.647	47.003	49.296	-	49.296
C. Other Program Funding Summary (\$ in Millions)													
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost		
• 606: Countermine/Barrier Advanced Dev 606	-	-	-	-	-	-	-	3.000	14.285	-	17.285		
• R64001: Husky Mounted Detection System (HMDS) R64001	-	18.545	13.565	-	13.565	14.446	54.828	91.117	97.123	Continuing	Continuing		
• R68102: GSTAMIDS R68102	-	37.649	58.682	-	58.682	17.634	29.670	30.038	19.531	Continuing	Continuing		
• R68260: AMDS R68260	-	-	-	-	-	8.838	15.551	25.305	29.736	Continuing	Continuing		
• DA0924: OPA1 Mods in Services DA0924	35.304	83.173	130.993	130.000	260.993	87.855	95.877	117.361	95.110	Continuing	Continuing		
Remarks													
D. Acquisition Strategy													
EHP Debris Blower will be procured as a COTS item from a commercial vendor in FY16. EHP Roller will be procured through Depot System starting in FY16. MVD will be procured through an existing government contract with PdM Common Hardware Systems in FY16. Spiral development of software upgrades to MVD will be procured in FY17. MMPV Type II Interrogation Arm ECPs/upgrades would be procured through a commercial vendor in FY17.													
AMDS transitioned to Engineering Manufacturing Development (EMD) in FY 2014.													

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
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>
The HMDS acquisition strategy is evolutionary with three capability increments – Increment A, Configuration1 (A1), Increment A, Configuration 2 (A2), and Increment B. Increment A provides detection and marking of antitank landmines, unexploded ordnance, trigger mechanisms, and deep buried metallic Improvised Explosive Devices (IEDs) and metallic encased caches, while Increment B enables an operator to remotely and semi-autonomously control all functions of the Husky and HMDS from inside the Mine Protected Clearance Vehicle. In order to accelerate delivery of the Ground Penetrating Radar (GPR) capability and its corresponding full-scale training device, Increment A will be executed as two distinct capability increments. Increment A1 leverages the Quick Reaction Capability (QRC) GPR technology currently deployed in support of Operation Enduring Freedom (OEF), and the stand-alone full-scale GPR trainer currently used for pre-deployment home station training. Increment A2 integrates a Deep Buried Detection (DBD) capability and full-scale DBD training device with the GPR, utilizing a common installation kit. Increment B integrates a Semi-Autonomous Control (SAC) capability with the HMDS. The HMDS program entered EMD in 4th Quarter FY 2013 and awarded a contract for Configuration A1 in 4th Quarter FY 2013. An EMD contract for Configuration A2 was awarded in 3rd Quarter 2014. PM Ground Sensors is pursuing a acquisition approach for Vehicle Optics Sensor System (VOSS) which harvests Quick Reaction Capability (QRC) procured systems for refresh and insertion into the Program of Record (POR). In FY 2016 VOSS will conduct a capability improvement for the Geo-location requirement that will enable location determination of Explosive Hazards and suspected Improvised Explosive Devices (IEDs). The RCIS program will execute an EMD phase for Type 1 systems starting with contract award to one EMD contractor in 3rd Quarter FY16. This award will be based on a source selection from full and open competition. The EMD contract awardee will execute Preliminary Design Review (PDR), Critical Design Review (CDR), 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 to be evaluated with respect to CPD and performance specification requirements. MTRS Inc II will provide a single medium sized robot configuration common across all users. The program would create one common material solution by using the Reset, On-hand Talon UGV chassis as the base platform with a modular design to allow different payloads for each end user. Based on the cost savings, schedule improvement and the need to expeditiously field the capability to the warfighter, this approach was chosen. In addition to the commonality of systems across the Army, a bridging strategy led by the RLSC will support any emerging urgent requirements until the MTRS Inc II is fielded. The upgraded and Standardized Talon UGV will be the materiel solution for MTRS Inc II.		
<u>E. Performance Metrics</u> N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 - AMDS	Allot	PM-CCS : Picatinny Arsenal, NJ	1.541	0.630	Mar 2014	0.579	Jan 2015	1.233	Mar 2016	-		1.233	Continuing	Continuing	-
Program Management - HMDS	MIPR	PM CCS : Picatinny Arsenal, NJ	24.880	2.114	May 2015	2.826	Dec 2014	2.941	Mar 2016	-		2.941	Continuing	Continuing	-
Program Management - VOSS	MIPR	PM Ground Sensors : Ft. Belvoir, VA	0.200	-		-		0.161	Mar 2016	-		0.161	-	0.361	-
Program Management - MTRS Inc II	Allot	PM FP : Warren, MI	0.000	-		-		2.200	Mar 2016	-		2.200	Continuing	Continuing	-
Subtotal			26.621	2.744		3.405		6.535		-		6.535	-	-	-
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
AMDS Engineering and Manufacturing Development (EMD)	C/CPIF	Carnegie Robotics LLC : Pittsburgh, PA	5.533	16.072	Sep 2014	3.106	May 2015	-		-		-	-	24.711	-
AMDS Training Aids, Devices, Simulators and Simulations (TADSS)	C/FFP	TBD - executed thru PEO STRI : TBD	0.000	-		-		1.406	May 2016	-		1.406	Continuing	Continuing	Continuing
HMDS Inc A2 (LRIP) - Integration with DBD and Training Devices	SS/CPFF	NIITEK Dulles : VA	0.000	18.900	Jun 2014	13.528	Aug 2015	5.600	Jan 2016	-		5.600	-	38.028	-
HMDS - TADSS	C/FFP	TBD - executed through PEO STRI : TBD	0.000	-		-		4.661	Nov 2015	-		4.661	-	4.661	-
Multi-Function Video Display	C/CPFF	Night Vision Electronic Sensor Directorate : APG, MD	0.000	2.297		0.750		0.250		-		0.250	3.047	6.344	3.047

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
RCV & Enablers Improvements - MMPV Type II Interrogation Arm	C/CPFF	KRC : Houghton, MI	0.000	0.450		0.283		0.500	Oct 2015	-		0.500	-	1.233	-
RCIS	SS/FFP	PM FP, PdM ALUGS : Warren, MI	4.878	-		1.470	Jul 2015	3.944	May 2016	-		3.944	Continuing	Continuing	Continuing
VOSS	C/CPFF	Various : Ft. Belvoir, VA	1.393	-		-		0.827	Mar 2016	-		0.827	Continuing	Continuing	Continuing
Subtotal			11.804	37.719		19.137		17.188		-		17.188	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
AMDS	MIPR	Various : Various locations	1.990	0.876	Aug 2014	2.984	Jan 2015	1.611	Jan 2016	-		1.611	Continuing	Continuing	Continuing
HMDS - Test Support	C/FFP	USI : Newport News, VA	0.000	0.621	Jul 2014	-		0.601	Dec 2015	-		0.601	-	1.222	-
HMDS	MIPR	NVESD/CERDEC : Fort Belvoir, VA	5.452	2.659	Feb 2014	2.500	Dec 2014	2.220	Jan 2016	-		2.220	Continuing	Continuing	-
HMDS - Config A1	SS/CPFF	NIITEK : Dulles, VA	0.000	0.076	Jan 2015	-		-		-		-	-	0.076	-
HMDS - Tech Support	C/FFP	MANTECH : Fairfax, VA	0.000	0.739	Nov 2014	-		0.531	Nov 2015	-		0.531	-	1.270	-
HMDS - Power Steering Upgrade Kits	SS/FFP	Parker-Hannifan : Lakeville, MN	0.000	0.032	Feb 2014	-		-		-		-	-	0.032	-
HMDS - Information Assurance	SS/CR	MITRE : McLean, VA	0.000	0.276	Jan 2015	-		0.150	May 2016	-		0.150	-	0.426	-
HMDS	MIPR	PMFP, PdM ALUGS : Warren, MI	1.994	1.275	Mar 2014	0.960	Dec 2014	1.160	Jan 2016	-		1.160	-	5.389	-
HMDS - Test Data Plan Analysis	SS/CPFF	IDA : Alexandria, VA	0.000	0.560	Feb 2015	-		0.350	May 2016	-		0.350	-	0.910	-
HMDS	C/FFP	Pro Services : Trenton, NJ	0.000	0.070	Mar 2015	-		-		-		-	-	0.070	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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					
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 - Program Support	C/FFP	Millenium : East Hannover, NJ	0.000	0.972	Feb 2015	-		-		-		-	-	0.972	-
HMDS - VCTS	C/FFP	Akima Infrastructure : Hampton, VA	0.000	0.622	Mar 2015	-		-		-		-	-	0.622	-
HMDS - IMI	C/FFP	Akima Infrastructure : Hampton, VA	0.000	1.264	Mar 2015	-		-		-		-	-	1.264	-
HMDS	MIPR	PEO STRI : Orlando, FL	0.000	0.744	Mar 2014	0.597	Dec 2014	0.628	Jan 2016	-		0.628	-	1.969	-
HMDS	MIPR	CECOM : Aberdeen Proving Grounds, MD	0.000	1.256	Nov 2014	1.260	Dec 2014	1.515	Jan 2016	-		1.515	-	4.031	-
HMDS - Test Support	C/FFP	GSA : Washington DC	0.000	0.008	Oct 2014	-		-		-		-	-	0.008	-
HMDS	MIPR	Various : Various locations	2.290	0.318	Feb 2014	0.611	Dec 2014	-		-		-	-	3.219	-
HMDS	MIPR	Product Realization Directorate (PRD)/ CERDEC : APG, MD	0.000	0.462	Feb 2014	-		0.447	Jan 2016	-		0.447	-	0.909	-
HMDS	MIPR	AMRDEC : Redstone Arsenal, AL	0.000	0.297	Mar 2014	-		0.472	Jan 2016	-		0.472	-	0.769	-
HMDS	MIPR	ARDEC : Picatinny Arsenal, NJ	0.861	0.492	Mar 2014	0.780	Dec 2014	0.524	Jan 2016	-		0.524	-	2.657	-
HMDS	MIPR	MSCoE : Ft. Leonard Wood, MO	0.000	-		0.143	Dec 2014	0.119	Jan 2016	-		0.119	-	0.262	-
HMDS	MIPR	ECBC : Edgewood, MD	0.000	1.178	Jan 2015	-		-		-		-	-	1.178	-
HMDS	MIPR	Tobyhanna Army Depot : Tobyhanna, PA	0.000	0.185	Mar 2014	-		-		-		-	-	0.185	-
HMDS	MIPR	TARDEC : Warren, MI	0.545	-		0.400	Dec 2014	-		-		-	-	0.945	-
RCIS	MIPR	PM FP, PdM ALUGS : Warren, MI	1.830	1.300	Jan 2014	2.246	Mar 2015	2.146	Mar 2016	-		2.146	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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					
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
VOSS	MIPR	Various : Various	2.376	-		-		0.344	Apr 2016	-		0.344	Continuing	Continuing	Continuing
RCIS Interoperability	MIPR	PM FP, PdM ALUGS : Warren, MI	1.000	1.000	Feb 2014	1.000	Mar 2015	1.000	Mar 2016	-		1.000	-	4.000	-
MTRS Inc II	MIPR	PdM UGV : Warren, MI	0.000	3.600	Jun 2014	1.330	Mar 2015	3.865	Mar 2014	-		3.865	Continuing	Continuing	-
Add on Armor (AoA) Husky RPG Kit	MIPR	TARDEC, : Warren, MI	0.000	-		0.283		-		-		-	-	0.283	-
Add on Armor Buffalo EFP AOA	MIPR	TARDEC : Warren, MI	0.000	-		-		0.350	Mar 2016	-		0.350	-	0.350	-
Multi-function Video Display	C/CPFF	Night Vision Electronic Sensor Directorate : APG, MD	2.297	-		-		0.500	Oct 2015	-		0.500	-	2.797	-
Subtotal			20.635	20.882		15.094		18.533		-		18.533	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
AMDS	MIPR	ATEC : Aberdeen Proving Ground, MD	0.000	-		0.880	Jun 2015	2.885	Feb 2016	-		2.885	Continuing	Continuing	Continuing
AMDS	SS/CPFF	IDA : Alexandria, VA	0.000	0.250	Feb 2015	-		-		-		-	-	0.250	-
HMDS	MIPR	ATEC : Alexandria, VA	0.362	1.854	Oct 2014	4.890	Jan 2015	2.184	Jan 2016	-		2.184	Continuing	Continuing	Continuing
RCIS	MIPR	ATEC : Alexandria, VA	0.136	1.198	Jul 2014	2.197	May 2015	0.536	Feb 2016	-		0.536	-	4.067	-
MTRS Inc II	MIPR	SPAWAR PAC, Various : San Diego, CA	0.000	-		1.000		-		-		-	-	1.000	-
VOSS	MIPR	ATEC : Alexandria, VA	3.154	-		-		0.768	Jun 2016	-		0.768	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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					

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Multi-Function Video Display	WR	KRC : Houghton, MI	0.000	1.000		0.100	Mar 2015	-		-		-	-	1.100	-
RCV & Enabler Improvements –MMPV Type II Interrogation Arm.	MIPR	TARDEC : Warren, MI	0.000	-		0.100	Mar 2015	0.267	Mar 2015	-		0.267	-	0.367	-
Add on Armor (AoA) Husky RPG	MIPR	ATEC : Aberdeen, MD	0.000	-		0.100	Mar 2015	-		-		-	-	0.100	-
Add on Armor Buffalo EFP Kits	MIPR	ATEC Aberdeen, MD : MD	0.000	-		-		0.150	Jun 2016	-		0.150	-	0.150	-
Add-on Armor	MIPR	ARL : Adelphi, MD	0.000	-		0.100	Mar 2015	0.250	Oct 2015	-		0.250	-	0.350	-
Subtotal			3.652	4.302		9.367		7.040		-		7.040	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	62.712	65.647		47.003		49.296		-		49.296	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																				
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020											
	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								
(1) HMDS Increment A1 - MS C Review									1																											
(2) HMDS Increment A1 - IOC																																				
(3) HMDS Increment A2 - Critical Design Review (CDR)													3																							
(4) HMDS Increment A2 - LRIP Contract Option																																				
(5) HMDS Increment A2 - IOT&E																									5											
(6) HMDS Increment A2 - MS C Review																									6											
(7) HMDS Increment A2 - Full Rate Production (FRP) Decision																													7							
(8) HMDS Increment A2 - IOC																																				
(9) VOSS MS C																																				
Geo-location Development																																				
(10) RCIS Material Development Decision (MDD)																																				
(11) RCIS MS B																																				
(12) RCIS Type 1 Engin and Mftg. Devel.Contract Award																																				

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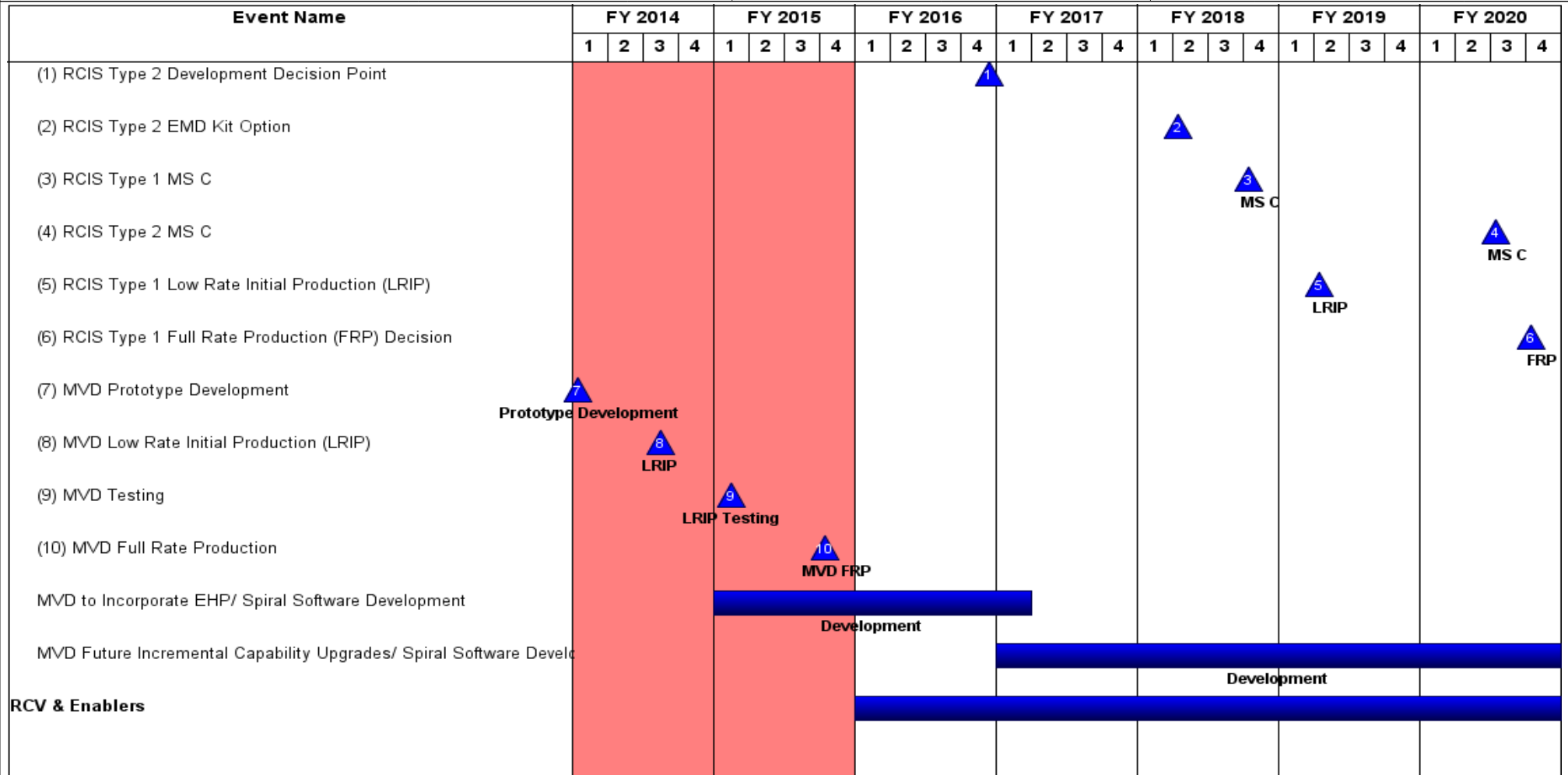
Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army

Date: February 2015

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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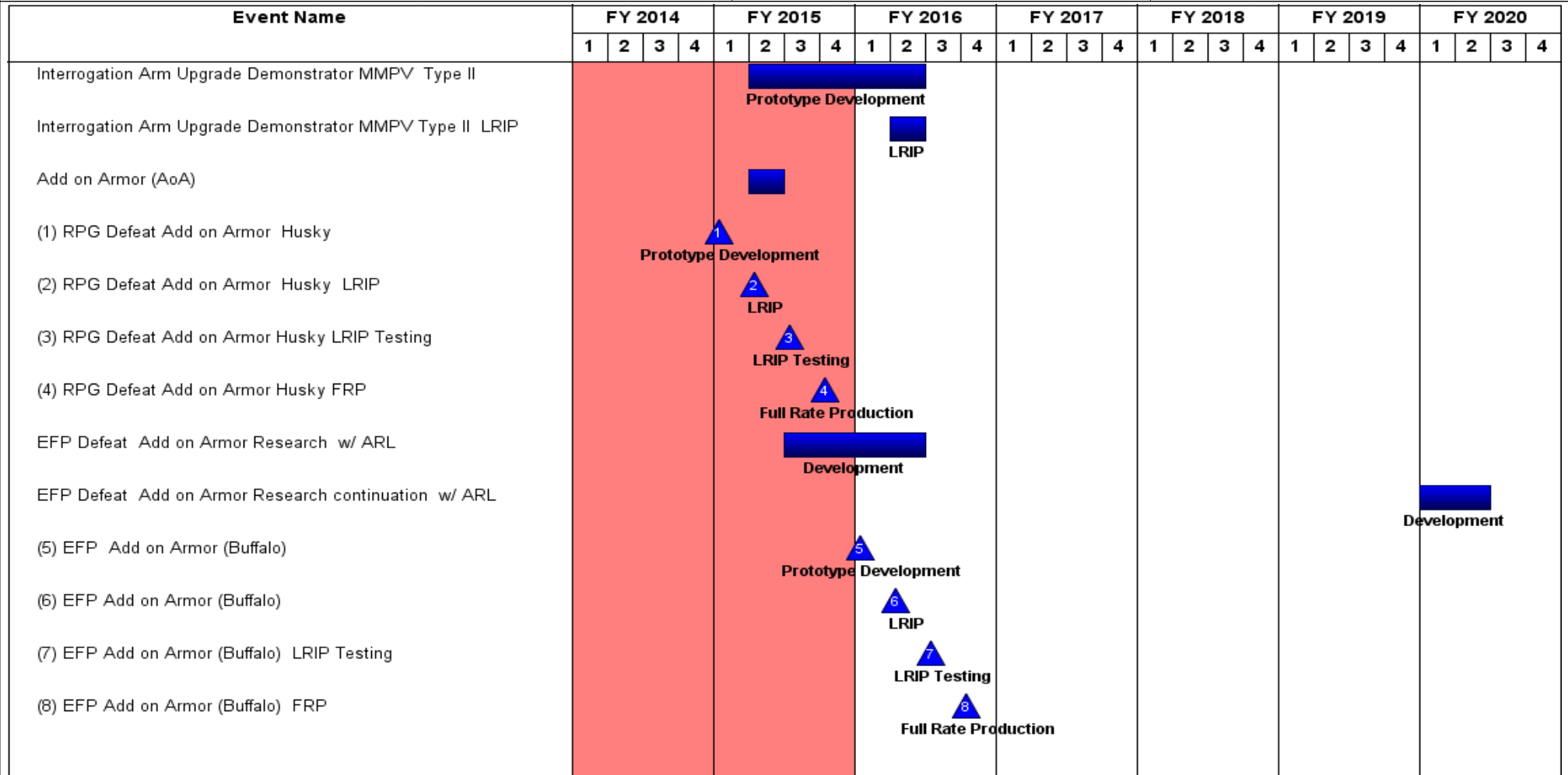
Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army

Date: February 2015

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 2016 Army

Date: February 2015

Appropriation/Budget Activity

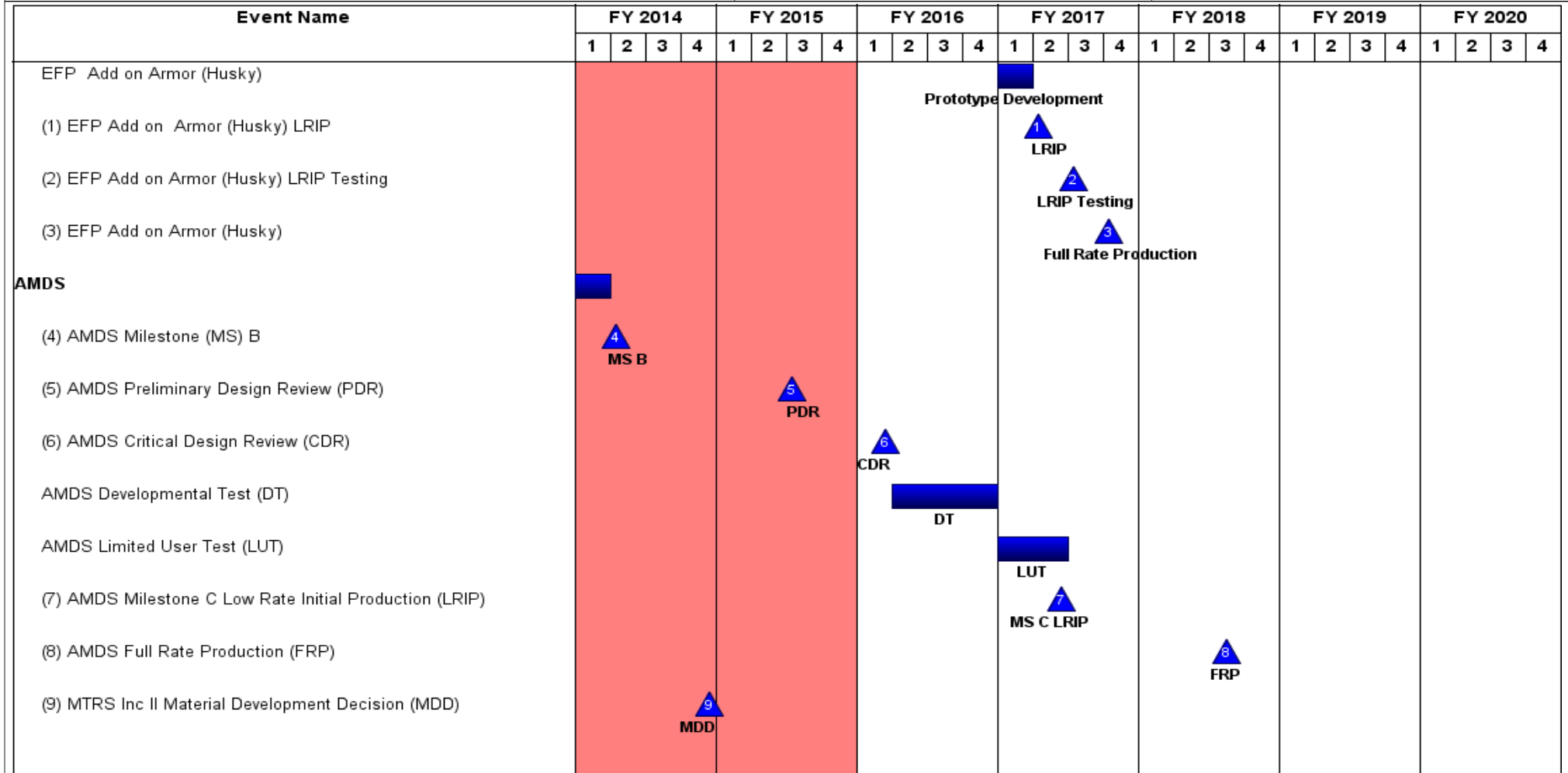
2040 / 5

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 2016 Army																Date: February 2015																					
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
										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
(1) MTRS Inc II Acq. Concept Brief										1 Concept Brief																											
(2) MTRS Inc II MS C										2 MS C																											
(3) MTRS Inc II RFP														3 RFP																							
(4) MTRS Inc II Contract Award																		4 Contract Award																			
MTRS Inc II IOT&E																										IOT&E											
(5) MTRS Inc II Full Rate Production (FRP) Decision																														5 FRP							
(6) MTRS Inc II First Unit Equipped (FUE)																														6 FUE							
(7) LRIP																						7 LRIP															
(8) Fielding																										8 Fielding											

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
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 Increment A1 - MS C Review	4	2015	4	2015
HMDS Increment A1 - IOC	2	2017	2	2017
HMDS Increment A2 - Critical Design Review (CDR)	2	2016	2	2016
HMDS Increment A2 - LRIP Contract Option	4	2017	4	2017
HMDS Increment A2 - IOT&E	2	2018	2	2018
HMDS Increment A2 - MS C Review	4	2017	4	2017
HMDS Increment A2 - Full Rate Production (FRP) Decision	1	2019	1	2019
HMDS Increment A2 - IOC	4	2020	4	2020
VOSS MS C	1	2015	1	2015
Geo-location Development	1	2016	4	2016
RCIS Material Development Decision (MDD)	3	2014	3	2014
RCIS MS B	2	2016	2	2016
RCIS Type 1 Engin and Mftg. Devel.Contract Award	3	2016	3	2016
RCIS Type 2 Development Decision Point	4	2016	1	2017
RCIS Type 2 EMD Kit Option	2	2018	2	2018
RCIS Type 1 MS C	4	2018	4	2018
RCIS Type 2 MS C	3	2020	3	2020
RCIS Type 1 Low Rate Initial Production (LRIP)	2	2019	2	2019
RCIS Type 1 Full Rate Production (FRP) Decision	4	2020	4	2020
MVD Prototype Development	1	2014	4	2014
MVD Low Rate Initial Production (LRIP)	3	2014	3	2014
MVD Testing	1	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015	
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 Full Rate Production	4	2015	4	2015
MVD to Incorporate EHP/ Spiral Software Development	1	2015	1	2017
MVD Future Incremental Capability Upgrades/ Spiral Software Development	1	2017	4	2020
RCV & Enablers	1	2016	4	2020
Interrogation Arm Upgrade Demonstrator MMPV Type II	2	2015	2	2016
Interrogation Arm Upgrade Demonstrator MMPV Type II LRIP	2	2016	2	2016
Add on Armor (AoA)	2	2015	2	2015
RPG Defeat Add on Armor Husky	1	2015	1	2015
RPG Defeat Add on Armor Husky LRIP	2	2015	2	2015
RPG Defeat Add on Armor Husky LRIP Testing	3	2015	3	2015
RPG Defeat Add on Armor Husky FRP	4	2015	4	2015
EFP Defeat Add on Armor Research w/ ARL	3	2015	2	2016
EFP Defeat Add on Armor Research continuation w/ ARL	1	2020	2	2020
EFP Add on Armor (Buffalo)	1	2016	1	2016
EFP Add on Armor (Buffalo)	2	2016	2	2016
EFP Add on Armor (Buffalo) LRIP Testing	3	2016	3	2016
EFP Add on Armor (Buffalo) FRP	4	2016	4	2016
EFP Add on Armor (Husky)	1	2017	1	2017
EFP Add on Armor (Husky) LRIP	2	2017	2	2017
EFP Add on Armor (Husky) LRIP Testing	3	2017	3	2017
EFP Add on Armor (Husky)	4	2017	4	2017
AMDS	4	2013	1	2014
AMDS Milestone (MS) B	2	2014	2	2014
AMDS Preliminary Design Review (PDR)	3	2015	3	2015
AMDS Critical Design Review (CDR)	1	2016	1	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015	
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
AMDS Developmental Test (DT)	2	2016	4	2016
AMDS Limited User Test (LUT)	1	2017	2	2017
AMDS Milestone C Low Rate Initial Production (LRIP)	2	2017	2	2017
AMDS Full Rate Production (FRP)	3	2018	3	2018
MTRS Inc II Material Development Decision (MDD)	4	2014	4	2014
MTRS Inc II Acq. Concept Brief	4	2014	4	2014
MTRS Inc II MS C	2	2015	2	2015
MTRS Inc II RFP	2	2016	2	2016
MTRS Inc II Contract Award	4	2016	4	2016
MTRS Inc II IOT&E	3	2018	3	2018
MTRS Inc II Full Rate Production (FRP) Decision	1	2019	1	2019
MTRS Inc II First Unit Equipped (FUE)	2	2019	2	2019
LRIP	2	2018	2	2018
Fielding	2	2019	2	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
434: Anti-Personnel Landmine Alternatives (NSD)	-	22.248	10.671	4.290	-	4.290	-	-	-	-	-	37.209
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. Further, Spider Increment 1A will complete the development of the Non-Lethal Launcher (NLL) XM809 and XM810.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Spider Increment 1A Contract Description: Develop Spider Increment 1A Controller with the ability to employ/control and initiate AP & counter mobility obstacle munitions. Continue with the development of the Spider NLL for use with the Spider Inc 1A system. FY 2014 Accomplishments: Continue with Spider Increment 1A EMD development efforts. FY 2015 Plans: Additional MODs to Spider Increment 1A EMD development efforts is Platform PC Trainer and Safety Banner.	7.827	0.967	-	-	-
Title: Engineering Support Description: Perform engineering support. FY 2014 Accomplishments: Continue EMD efforts of the Spider Inc 1A system. Provide engineering support, software development support, conduct Preliminary Design Review (PDR) and Post-PDR Assessment, provide MANPRINT and Human Factors	11.108	4.850	0.924	-	0.924

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army				Date: February 2015		
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)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Engineering (HFE) support to contractor Developmental Testing. Support the completion of the development effort for the NLL. FY 2015 Plans: Continue development of the Spider Inc 1A system. Provide engineering support, software development support, conduct Critical Design Review (CDR) and Post-CDR Assessment, provide MANPRINT and HFE support to contractor Developmental Testing, and initiate efforts to support Milestone C and government qualification testing. FY 2016 Base Plans: Continue Government Qualification Testing of the Spider Inc 1A system. Provide MANPRINT and Human Factors Engineering (HFE) support and complete efforts to support Milestone C.						
Title: Test and Evaluation Description: Provide support to Contractor/Government test activities. FY 2014 Accomplishments: Support contractor software testing to include system Lab Integration/parking lot testing, Hardware Environmental testing and Technical Interchange Meetings (TIMs). FY 2015 Plans: Provide support to Contractor/Government test activities. Contractor will conduct software testing to include system Lab Integration/parking lot testing, Fuctional Qualification Test (FQT), and System Verification Test (SVT). Government will conduct government testing; User Jury, Government System Verification Test (G-SVT) if necessary, DIACAP/Cooperative Vulnerability and Penetration Assessment (CVPA) Information Assurance (IA)/Cybersecurity, Electromagnetic Environmental Effects (E3), Environmental, Live Munition Firing Test (LMFT), Interactive Electronic Training Manual (IETM), Validation/Logistics Demo, Force Development Test (FDT), Initial Operational Test (IOT), and Army Interoperability Certification (AIC). FY 2016 Base Plans: Continue Government Qualification Testing; IETM Verification, Initial Operational Test (IOT).		0.178	2.811	2.400	-	2.400
Title: Program Management and Oversight Description: Program Management and support of Spider Increment 1A and completion of NLL development. FY 2014 Accomplishments:		2.383	1.500	0.740	-	0.740

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army							Date: February 2015				
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)					
B. Accomplishments/Planned Programs (\$ in Millions)						FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	
Perform overall program management support for the execution of the Spider Inc 1A development effort. Oversee all contractor activities. Conduct all major Program Reviews (System Requirements Review (SRR), System Functional Review (SFR), Preliminary Design Review (PDR) and Initial Baseline Review (IBR). Complete NLL development efforts. FY 2015 Plans: Perform overall program management support for the execution of the Spider Inc 1A development effort. Oversee all contractor activities. Conduct all major Program Reviews to include Critical Design Design Review (CDR), oversee Government Qualification Testing. FY 2016 Base Plans: Perform overall program management support for the execution of the Spider Inc 1A development effort and oversee Government Qualification Testing. Prepare the Milestone C package to include the Capability Production Document (CPD) and other Acquisition Documents.											
Title: FY 2014-2016 Reductions Description: Small Business Innovative Research/Small Business Technology Transfer Program (SBIR/STTR) and Federally Funded Research & Development Centers (FFRDC) Reductions. FY 2014 Accomplishments: FY 2014 reductions are \$752K in FFRDC, SBIR and STTR. FY 2015 Plans: Approximately \$543K projected adjustments in FY 2015. FY 2016 Base Plans: Approximately \$226K projected adjustments in FY 2016.						0.752	0.543	0.226	-	0.226	
Accomplishments/Planned Programs Subtotals						22.248	10.671	4.290	-	4.290	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete Total Cost	
• Spider - APLA Remote Control Unit: OPA2 Spider Increment 1 Program B55501	-	0.969	1.403	-	1.403	-	-	-	-	- 2.372	

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015	
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)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• Spider Family Of Networked Munition: OPA2 Spider Increment 1A Program B54020	-	-	9.199	-	9.199	10.236	10.297	9.098	8.425	-	47.255
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 facilitate full and open competition of a FFP Full Rate Production contract.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	0.769	2.383		1.500		0.740		-		0.740	Continuing	Continuing	-
SBIR/STTR, FFRDC and Section 3001/3004 ATB Adjustments	Various	PM CCS, : Picatinny Arsenal, NJ	2.352	0.752		0.543		0.226		-		0.226	-	3.873	-
Subtotal			3.121	3.135		2.043		0.966		-		0.966	-	-	-
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-		-		-		-		-	-	0.667	-
Spider Inc 1A (FY13-15)	C/CPIF	Northrop Grumman Systems Corporation : Carson, CA	12.002	7.827	Mar 2014	0.967	Feb 2015	-		-		-	Continuing	Continuing	-
Rifleman Radio Systems	Reqn	General Dynamics, C4 Systems : Scottsdale, AZ	0.057	-		-		-		-		-	-	0.057	-
Subtotal			12.726	7.827		0.967		-		-		-	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	3.563	6.840		3.626		0.704		-		0.704	Continuing	Continuing	-
Spider - ARDEC Non-Lethal Launcher Eng Spt	MIPR	ARDEC, : Picatinny Arsenal, NJ	0.650	0.911	Mar 2014	-		-		-		-	-	1.561	-
Mitre provide C4 Support	MIPR	Mitre, : McLean, VA	1.500	1.340		0.280		-		-		-	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	0.622	1.329	Feb 2014	-		-		-		-	Continuing	Continuing	-
Spider - CECOM Engineering Support MOD	C/CPFF	URS Federal Support Service : Lakehurst, NJ	0.000	0.390	Oct 2014	-		-		-		-	-	0.390	-
Spider - CERDEC Engineering Support	C/CPFF	CACI Technologies, INC : Chantilly, VA	0.000	0.100	Dec 2013	0.098	Jan 2015	0.120		-		0.120	-	0.318	-
Spider - CERDEC Eng support	MIPR	CERDEC - SPACE AND TERRESTRIAL COMMS DIR : APG, MD	0.000	0.098		0.110		-		-		-	Continuing	Continuing	-
Spider Increment 1A PEO STRI Training Support	MIPR	PEO STRI : Orlando, FL	0.050	-		0.100		0.100		-		0.100	-	0.250	-
ARL HRED MANPRINT/HFE Support	MIPR	ARL HRED : Adelphi, MD	0.109	0.100		0.175		-		-		-	-	0.384	-
Night Vision Electronic Sensors Directorate	C/CPFF	Fibertek : Herndon, VA	0.000	-		0.163	Jan 2015	-		-		-	-	0.163	-
Spider 1A Maint & Engr SPT DOTC Contract	C/CPFF	Advanced Technology International (ATI) : North Charleston, SC	0.000	-		0.130	Jan 2015	-		-		-	-	0.130	-
Spider 1A Maint & Engr SPT IDIQ Contract	C/IDIQ	Advanced Technology International (ATI) : North Charleston, SC	0.000	-		0.168	Aug 2015	-		-		-	-	0.168	-
Subtotal			6.494	11.108		4.850		0.924		-		0.924	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Contractor/ Government Test Activities	MIPR	OTC, AMSAA, AEC, ATEC, NIE, TSMO, ARDEC : Various	0.056	0.178		2.811		2.400		-		2.400		2.400	Continuing	Continuing	-
Subtotal			0.056	0.178		2.811		2.400		-		2.400		2.400	-	-	-

Remarks Not Applicable																
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	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.397	22.248		10.671		4.290		-		4.290	-	-	-

Remarks																
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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army																Date: February 2015																
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)														
Event Name	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020							
	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																																
Contractor DT																																
Government DT																																
Initial Operational Test (IOT)																																
MS C Documentation																																
(1) MS C																																
Interactive Electronic Training Manual (IETM) Verification																																
(2) Full Rate Production Decision																																
(3) Initial Operational Capability																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army			Date: February 2015
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 Increment 1A Development	4	2013	2	2016
Contractor DT	3	2014	3	2015
Government DT	3	2015	2	2016
Initial Operational Test (IOT)	4	2015	1	2016
MS C Documentation	1	2016	3	2016
MS C	3	2016	3	2016
Interactive Electronic Training Manual (IETM) Verification	2	2016	2	2016
Full Rate Production Decision	3	2017	3	2017
Initial Operational Capability	4	2017	4	2017