Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army											Date: February 2020	
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 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	39.261	37.108	9.589	-	9.589	9.226	9.088	2.398	1.919	0.000	108.589
016: *Close Combat Capabilities ENG DEV*	-	7.454	19.198	7.591	-	7.591	3.231	2.094	2.398	1.919	0.000	43.885
415: *Mine Neutral/Detection*	-	31.807	17.910	1.998	-	1.998	5.995	6.994	0.000	0.000	0.000	64.704

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, Explosive Ordnance Disposal (EOD) render safe, 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: Funding in this program supports the Army's Cross Functional Teams (CFT) initiatives. Project 016, Close Combat Capabilities, covers two programs: Next Generation Advanced Bomb Suit (NGABS) and Explosive Ordnance Disposal Render Safe (EOD RS). It provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications. NGABS directly contributes to Soldier lethality and ground force commander freedom of maneuver by providing next generation sensor and optics in the cutting-edge Heads-Up-Display (HUD) while integrating the Government's latest investments in protective material for the modular, scalable NGABS bomb suit fabrication. EOD RS equips EOD teams with low light visual augmentation system, electronic countermeasures, buried IED detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to improve commonality.

NGABS will increase the Warfighter lethality and mobility by optimizing Soldier protection for EOD personnel, while effectively managing all life cycle aspects of Personal Protective Equipment (PPE). Warfighter lethality is increased through bomb suit weight reduction utilizing extensive investments in protective material research and development. The result is material solutions that are lighter and are pieced together in a manner which increases Soldier mobility and longevity. EOD Soldier situational awareness and exposure to ballistic threats is enhanced through the NGABS HUD which allows the Soldier increased visibility under various obscurants and low/no-light situations.

Project 415: 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army	Date: February 2020
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604808A *I Landmine Warfare/Barrier - Eng Dev*

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 September 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) at the end of FY20. 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) Type I consists of a semi-autonomous vehicle 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. 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. An OCU will be integrated into a Buffalo MPCV for Type I. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons which includes Tele-operation, RADAR-based Follow-Me, LIDAR obstacle detection, onscreen predictive turning map, and customizable camera views in order to achieve the RCIS mission.

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. This capability allows a soldier to remain in a protective posture while detecting and neutralizing a wide variety of hybrid and conventional explosive threats. SREHD conducted a successful Milestone (MS) C in April 2018 and initiated Low Rate Initial Production (LRIP) in June 2018. Due to the realignment of funds FY 2020-2024 to higher Army priorities, the proponent withdrew support to the Standoff Robotic Explosive Hazard Detection System (SREHD) after Low Rate Initial Production (LRIP) award. Research, Development, Test and Evaluation (RDTE) tasks will conclude in FY 2019 under FY 2018 PE 0654808A, Project 415, Landmine Warfare/Barrier - Eng Dev, once corrective action plans and trainer re-development are completed. The program will conclude in June 2020 under FY 2018 OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) and PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335 for system qualification and production and receipt of LRIP quantities for an orderly program closeout.

Robotic Explosive Hazard Detection System (REHDS) provides the warfighter with a robotic mounted capability to detect and mark buried landmines and IEDs from a safe standoff distance. REHDS is an enabler for Soldier Lethality as it enables soldier maneuverability by enhancing the probability and speed of detection of buried landmines and IEDs allowing for increased speed of dismounted operations making the unit more efficient and lethal. REHDS is a new start in FY 2021 and begins in the Engineering and Manufacturing Development (EMD) phase. REHDS will leverage developed SREHD capability and incorporate increased Rate of Advanced Downtrack (RoAD) and Integration to the Man Transportable Robotic System (MTRS) II platform. FY 2021 Total Base funding in the amount of $1.998 million supports EMD activities with REHDS.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army					Date: February 2020
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604808A *I Landmine Warfare/Barrier - Eng Dev*		
B. Program Change Summary ($ in Millions)	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**
Previous President's Budget	43.064	39.208	166.902	-	166.902
Current President's Budget	39.261	37.108	9.589	-	9.589
Total Adjustments	-3.803	-2.100	-157.313	-	-157.313
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.100			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.803	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-157.313	-	-157.313

Change Summary Explanation

FY 2021 funding decrease in the amount of $157.313 million due to a change in acquisition strategy for the Close Terrain Shaping Obstacle development effort. Funding has been realigned as appropriate to Program Element 0603619A, Project EK7, Area Denial Capability Development and Budget Line Item 0612E76740, Standard Stock Number (SSN) F78310 - Close Terrain Shaping Obstacles.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
016: *Close Combat Capabilities ENG DEV*	-	7.454	19.198	7.591	-	7.591	3.231	2.094	2.398	1.919	0.000	43.885
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 016: Funding in this program supports the Army's Cross Functional Teams (CFT) initiatives. Project 016, Close Combat Capabilities, covers two programs: Next Generation Advanced Bomb Suit (NGABS) and Explosive Ordnance Disposal Render Safe (EOD RS). It provides for the Engineering and Manufacturing Development (EMD) and demonstration of capabilities needed for Explosive Ordnance Disposal (EOD) teams to Render Safe (RS) US and foreign ordnance and improvised explosive devices, enabling ground force commanders to retain freedom of maneuver and secure lines of communications. NGABS directly contributes to Soldier lethality and ground force commander freedom of maneuver by providing next generation sensor and optics in the cutting-edge Heads-Up-Display (HUD) while integrating the Government's latest investments in protective material for the modular, scalable NGABS bomb suit development. EOD RS equips EOD teams with low light visual augmentation system, electronic countermeasures, buried IED detection, dismounted X-ray imager, X-ray generator, trace explosive, Chemical, Biological, Radiological, and Nuclear (CBRN), and drug detection, unmanned aerial system, power management, gamma and neutron search and detection, and render safe initiation. This project will continue to support cross-service initiatives to increase commonality.

NGABS will increase the Warfighter survivability and mobility by optimizing Soldier protection for EOD personnel, while effectively managing all life cycle aspects of Personal Protective Equipment (PPE). Warfighter lethality is increased through bomb suit weight reduction utilizing extensive investments in protective material research and development. The result is material solutions that are lighter and are pieced together in a manner which increases Soldier mobility and longevity. EOD Soldier situational awareness and exposure to ballistic threats is enhanced through the NGABS HUD which allows the Soldier increased visibility under various obscurants and low/no-light situations.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Next Generation Advanced Bomb Suit (NGABS)	7.454	11.230	6.592	-	6.592
Description: The objective of this effort is to increase the Warfighter lethality, modularity, and mobility, by optimizing Soldier protection and situational awareness for EOD personnel. 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 that are non-existent in legacy designs. This new, tailorable, full body protective system will provide a significantly increased capability at a reduced weight.					
FY 2020 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
In FY 2020, the NGABS team will continue to evaluate and develop system and subsystem technologies for the NGABS system to assist in the protection from emerging ballistic/blast threats, and sensor technologies. ***FY 2021 Base Plans:*** NGABS FY 2021 plans center around finalizing the production design for the bomb suit, executing ballistic and blast test plans with subsequent fixes applied to the suit design. FY 2021 also leads NGABS into the complex phases of component integration; sensor suite, Heads Up Display (HUD), power, cooling, helmet, and suit with Soldier Protection System components. All of these components combined are the NGABS system. FY 2021 includes the planning and scheduling for system level tests (ballistic, blast, environmental, Human Factor Evaluation (HFE), etc.). ***FY 2020 to FY 2021 Increase/Decrease Statement:*** NGABS funding decrease from FY 2020 to FY 2021 is due to the initial prototyping of sensor and optics subsystems which primarily occur in FY 2020, resulting in a decrease for FY 2021.					
Title: Explosive Ordnance Disposal (EOD) Render Safe (RS) ***Description:*** Render Safe (RS) procedures require technicians to employ a wide variety of capabilities and explosives. ***FY 2020 Plans:*** Conduct evaluation, integration, and logistics demonstration of the following capabilities: low light visual augmentation, localized incident site protection, dismounted X-Ray processor/imager, trace explosive, CBRN and drug detection, unmanned aerial system, electric tools, gamma and neutron search and detection, final disposition, and render safe initiation. ***FY 2021 Base Plans:*** Review 1/3 of the Render Safe (RS) capabilities in anticipation of technical obsolescence, the changing threat, or an increase in capability that is demeaned worthy of the additional investment. Render Safe capabilities to be reviewed in 2021 are Gamma/Neutron radiation detection, dismounted buried IED detection, X-Ray generator, dismounted X-Ray processor/imager. Activities include the conduct of a market survey, testing of equipment against objective requirements, reporting of findings and recommendations. Electronic countermeasures will continue to be tested and evaluated against emerging threats and loadset verification, validation, and release will continue. ***FY 2020 to FY 2021 Increase/Decrease Statement:***	-	7.096	0.999	-	0.999

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Funding decrease from FY 2020 to FY 2021 is due to the high initial cost of the full suite of capabilities in the kit which primarily occurs in FY 2020 resulting in a decrease for FY 2021.					
Title: FY 2020 SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2020 Plans:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2020 to FY 2021 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC ?638	-	0.872	-	-	-
Accomplishments/Planned Programs Subtotals	7.454	19.198	7.591	-	7.591

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• R63610: *Render Safe Sets kits Outfits*	-	102.684	64.583	84.000	148.583	-	-	-	4.994	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Next Generation Advanced Bomb Suit (NGABS) Program utilizes a competitive, developmental, innovative and efficient Other Transaction Authority (OTA) in EMD through the Fort Belvoir Sensor Communication and Electronic Consortium (SCEC) which will result in a production ready prototype leading to a competitive Production and Deployment (PD) phase for full capability while ensuring best value to the Army. Milestone (MS) B / Material Development Decision (MDD) occurred in FY 2018 and MS C is scheduled for FY 2022.

The Explosive Ordnance Disposal (EOD) Render Safe (RS) program utilizes existing government contract vehicles to acquire prototype systems for testing and evaluation of the systems for down selection and inclusion in the capabilities package during Engineering and Manufacturing Development. The program will continue to use the existing government contract vehicles for the production and deployment phase as well as to continue the development of capabilities during the 5 phase technical refresh.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army			Date: February 2020
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGABS	Allot	PM SPE : Fort Belvoir	0.901	0.900		0.703		1.000		-		1.000	0.000	3.504	Continuing
Explosive Ordnance Disposal (EOD) Render Safe (RS)	Allot	PM CCS : Picatinny Arsenal, NJ	-	-		0.403	Jan 2020	-		-		-	0.000	0.403	Continuing
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.872		-		-		-	0.000	0.872	-
		Subtotal	0.901	0.900		1.978		1.000		-		1.000	0.000	4.779	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGABS - Production Prototype Development	C/FFP	TBD : Manufacturing Techniques Inc. (MTEQ), Lorton, VA	5.675	6.116		2.153		2.980		-		2.980	0.000	16.924	Continuing
EOD RS	MIPR	Various : Various	-	-		3.603	Jan 2020	-		-		-	0.000	3.603	Continuing
FY 2019 FFRDC / SBIR / STTR	TBD	TBD : TBD	-	0.438		-		-		-		-	0.000	0.438	-
		Subtotal	5.675	6.554		5.756		2.980		-		2.980	0.000	20.965	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGABS Support Costs	MIPR	TBD : Various	1.711	-		0.703		2.146		-		2.146	0.000	4.560	Continuing
EOD RS	MIPR	CCDC Armaments Center : Picatinny Arsenal, NJ	-	-		0.825	Jan 2020	0.500	Oct 2019	-		0.500	0.000	1.325	Continuing
EOD RS	MIPR	CCDC S5ISR : Aberdeen Proving Ground (APG), MD	-	-		0.503	Jan 2020	0.499	Oct 2019	-		0.499	0.000	1.002	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army		Date: February 2020
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	1.711	-		2.031		3.145		-		3.145	0.000	6.887	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGABS Test & Evaluation	MIPR	TBD : Various	-	-		7.730		0.466		-		0.466	0.000	8.196	Continuing
EOD RS	MIPR	Various : Various	-	-		1.703	Jun 2020	-		-		-	0.000	1.703	Continuing
		Subtotal	-	-		9.433		0.466		-		0.466	0.000	9.899	N/A

	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.287	7.454		19.198		7.591		-		7.591	0.000	42.530	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
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*

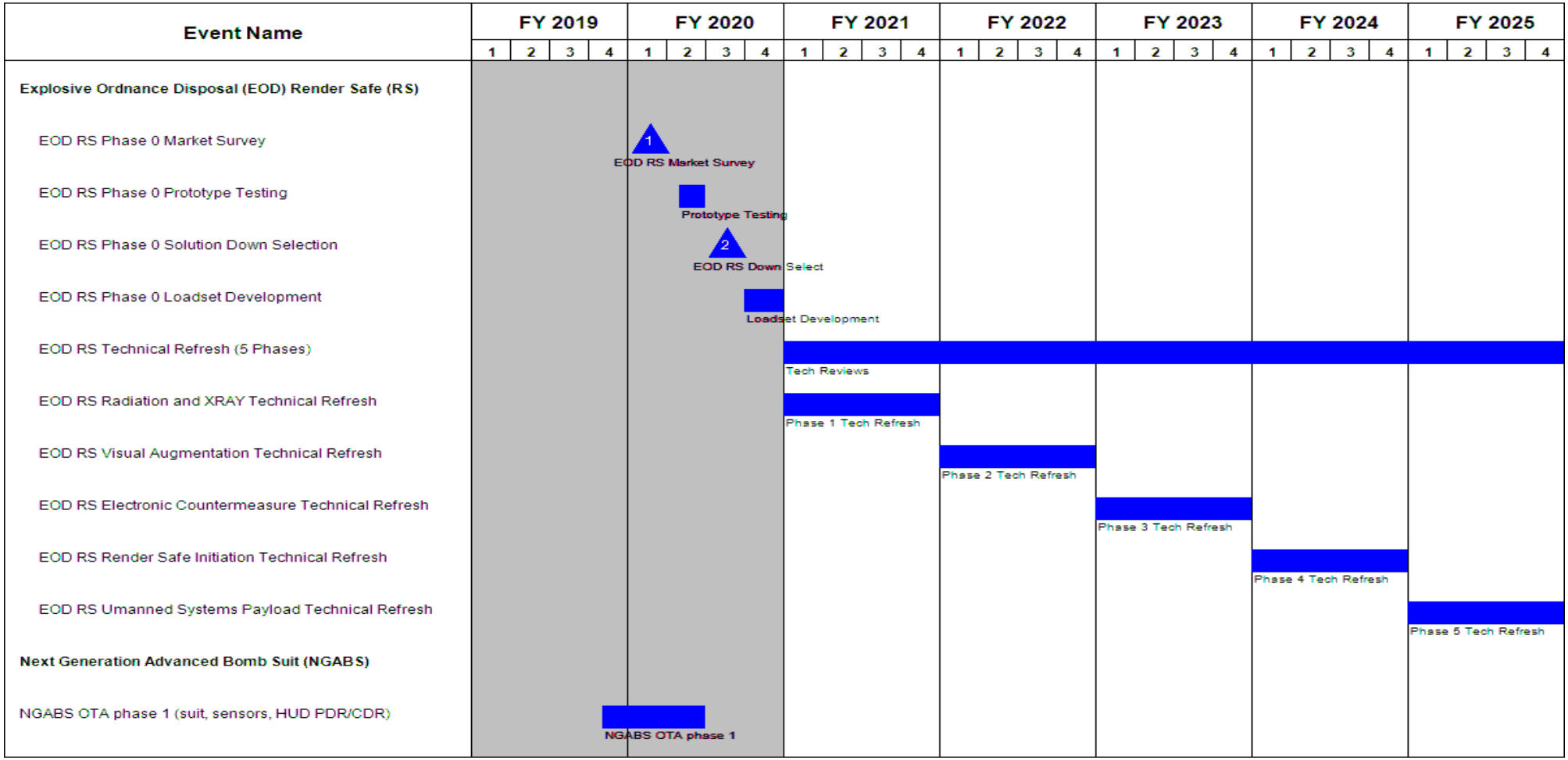

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604808A / *Landmine Warfare/Barrier - Eng Dev*	**Project (Number/Name)** 016 / *Close Combat Capabilities ENG DEV*

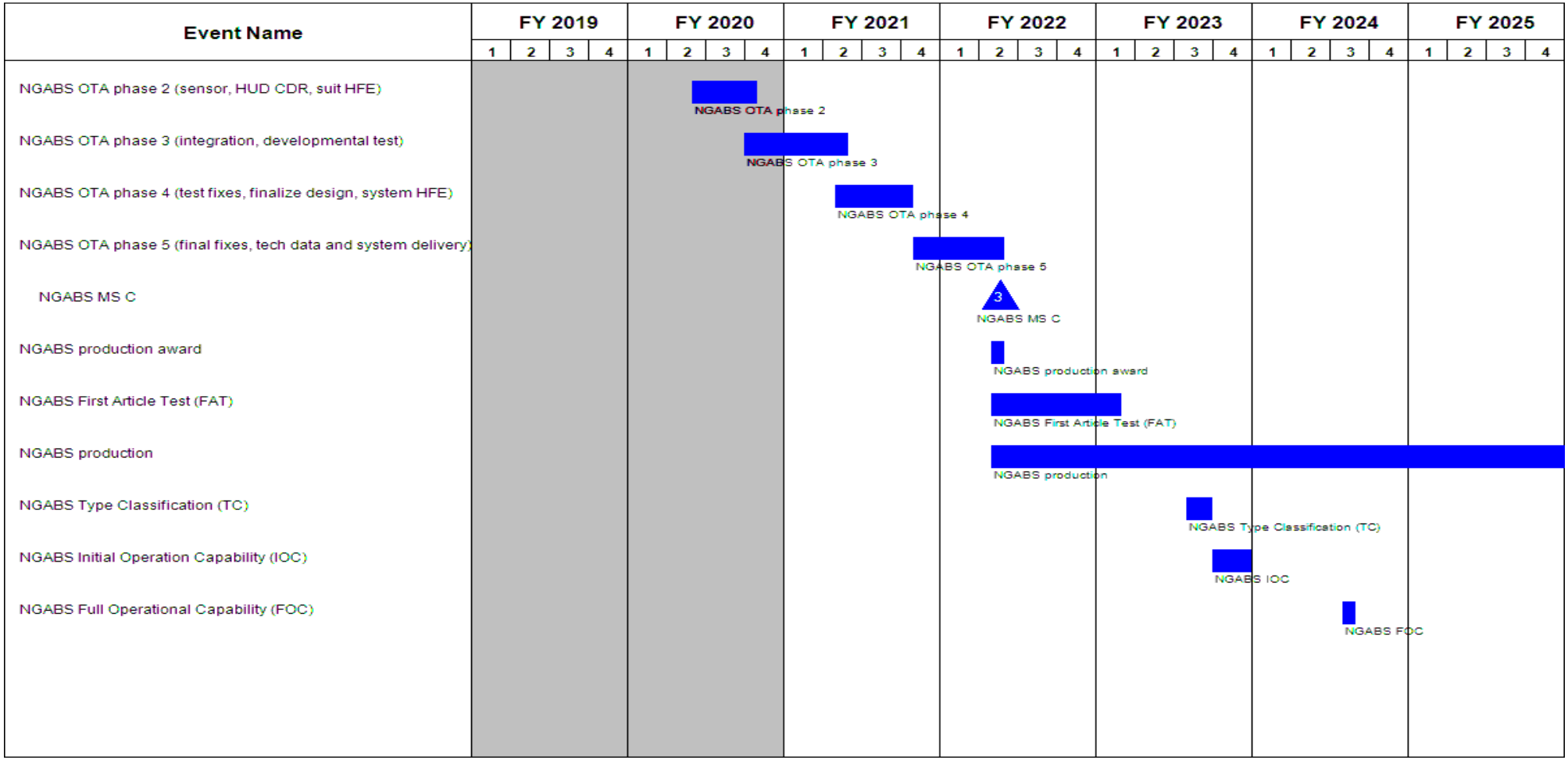

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604808A / *Landmine Warfare/Barrier - Eng Dev*	**Project (Number/Name)** 016 / *Close Combat Capabilities ENG DEV*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Explosive Ordnance Disposal (EOD) Render Safe (RS)	1	2021	4	2025
EOD RS Phase 0 Market Survey	1	2020	1	2020
EOD RS Phase 0 Prototype Testing	2	2020	2	2020
EOD RS Phase 0 Solution Down Selection	3	2020	3	2020
EOD RS Phase 0 Loadset Development	4	2020	4	2020
EOD RS Technical Refresh (5 Phases)	1	2021	4	2025
EOD RS Radiation and XRAY Technical Refresh	1	2021	4	2021
EOD RS Visual Augmentation Technical Refresh	1	2022	4	2022
EOD RS Electronic Countermeasure Technical Refresh	1	2023	4	2023
EOD RS Render Safe Initiation Technical Refresh	1	2024	4	2024
EOD RS Umanned Systems Payload Technical Refresh	1	2025	4	2025
Next Generation Advanced Bomb Suit (NGABS)	1	2017	4	2024
NGABS Materiel Development Decision (MDD)	2	2018	2	2018
NGABS Milestone (MS) B	3	2018	3	2018
NGABS OTA phase 1 (suit, sensors, HUD PDR/CDR)	4	2019	2	2020
NGABS OTA phase 2 (sensor, HUD CDR, suit HFE)	2	2020	4	2020
NGABS OTA phase 3 (integration, developmental test)	4	2020	2	2021
NGABS OTA phase 4 (test fixes, finalize design, system HFE)	2	2021	4	2021
NGABS OTA phase 5 (final fixes, tech data and system delivery)	4	2021	2	2022
NGABS MS C	2	2022	2	2022
NGABS production award	2	2022	2	2022
NGABS First Article Test (FAT)	2	2022	1	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
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*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NGABS production	2	2022	4	2026
NGABS Type Classification (TC)	3	2023	3	2023
NGABS Initial Operation Capability (IOC)	4	2023	4	2023
NGABS Full Operational Capability (FOC)	3	2024	3	2024

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army			Date: February 2020
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 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
415: *Mine Neutral/Detection*	-	31.807	17.910	1.998	-	1.998	5.995	6.994	0.000	0.000	0.000	64.704
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 415: 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 September 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) at the end of FY20. 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) Type I consists of a semi-autonomous vehicle 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. 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. An OCU will be integrated into a Buffalo MPCV for Type I. RCIS capabilities will be fielded to Route Clearance Squads and Engineer Platoons which includes Tele-operation, RADAR-based Follow-Me, LIDAR obstacle detection, onscreen predictive turning map, and customizable camera views in order to achieve the RCIS mission.

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. This capability allows a soldier to remain in a protective posture while detecting and neutralizing a wide variety of hybrid and conventional explosive threats. SREHD conducted a successful Milestone (MS) C in April 2018 and initiated Low Rate Initial Production (LRIP) in June 2018. Due to the realignment of funds from FY 2020 through FY 2024 to higher Army priorities, the proponent withdrew support to the Standoff Robotic Explosive Hazard Detection System (SREHD) after Low Rate Initial Production (LRIP) award. Research, Development, Test and Evaluation (RDTE) tasks will conclude in FY 2019 under FY 2018 PE 0654808A, Project 415, Landmine Warfare/Barrier - Eng Dev, once corrective action plans and trainer re-development are completed. The program will

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
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conclude in June 2020 under FY 2018 OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) and PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335 for system qualification and production and receipt of LRIP quantities for an orderly program closeout.

Robotic Explosive Hazard Detection System (REHDS) provides the warfighter with a robotic mounted capability to detect and mark buried landmines and IEDs from a safe standoff distance. REHDS is an enabler for Soldier Lethality as it guarantees soldier maneuverability by enhancing the probability and speed of detection of buried landmines and IEDs allowing for increased speed of dismounted operations making the unit more efficient and lethal. REHDS is a new start in FY 2021 and begins in the Engineering and Manufacturing Development (EMD) phase. REHDS will leverage developed SREHD capability and incorporate increased Rate of Advanced Downtrack (RoAD) and Integration to the Man Transportable Robotic System (MTRS) II platform. FY 2021 Total Base funding in the amount of $1.998 million supports EMD activities for REHDS.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: HMDS Program Management Support ***Description:*** Husky Mounted Detection System (HMDS) Program Management Support ***FY 2020 Plans:*** Continue execution and management of Engineering Change Proposal (ECP) for Wire Detection, Infrared Illumination and Information Assurance compliance in preparation for Modification Work Order (MWO) ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds requested for this project.	1.840	1.131	-	-	-
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 2020 Plans:*** Will complete ongoing ECP efforts for Wire Detection, Infrared Illumination and Information Assurance compliance. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds for this project.	15.223	1.773	-	-	-
Title: HMDS Testing and Test Support activities ***Description:*** HMDS Testing and Test Support activities	4.609	2.388	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
FY 2020 Plans: Will complete Risk Reduction and ECP testing ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds for this project.					
Title: HMDS A1 Auto-Height Improvements ***Description:*** Auto-Height Control ***FY 2020 Plans:*** Complete auto-height development and produce prototypes to support testing ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds requested for this project.	-	2.586	-	-	-
Title: HMDS Systems Training Product Development ***Description:*** Training product development to support Developmental test and limited user testing ***FY 2020 Plans:*** Complete development activities to support Modification Work Order (MWO) ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds for this project.	0.892	0.648	-	-	-
Title: HMDS Program and Logistics Support ***Description:*** Program and Logistics support ***FY 2020 Plans:*** Development of final logistics products to support logistics demo and Modification Work Order (MWO) ***FY 2020 to FY 2021 Increase/Decrease Statement:*** There are no FY 2021 Base Research, Development, Test & Evaluation (RDT&E) funds requested for this project.	-	1.678	-	-	-
Title: RCIS Type I	7.507	6.893	-	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Description: Route Clearance & Interrogation System (RCIS) Type I provides standoff capability to detect and neutralize the full spectrum of explosive hazards. ***FY 2020 Plans:*** RCIS Type I: Continue the EMD phase - perform government safety testing with full up system level RCIS prototypes; perform cyber scans and analysis; continue logistics analysis; prep for MS C in FY21. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** RDTE funding for RCIS ends in FY 2020.					
Title: Multifunction Video Display (MVD) ***Description:*** Multifunction Video Display (MVD). Digital display used to control and view RCV enablers	0.500	-	-	-	-
Title: RCV & Enabler Improvements ***Description:*** Develop the hardware used to improve POR RCVs.	0.425	-	-	-	-
Title: Standoff Robotic Explosive Hazard Detection (SREHD) (Formerly AMDS) ***Description:*** Standoff Robotic Explosive Hazard Detection (SREHD) (AMDS)	0.811	-	-	-	-
Title: Robotic Explosive Hazard Detection System (REHDS) ***Description:*** Robotic Explosive Hazard Detection System (REHDS) ***FY 2021 Base Plans:*** Develop REHDS contract and conduct Materiel Development Decision. ***FY 2020 to FY 2021 Increase/Decrease Statement:*** New Start in FY 2021.	-	-	1.998	-	1.998
Title: FY 2020 SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2020 Plans:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2020 to FY 2021 Increase/Decrease Statement:***	-	0.813	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Funding transferred in accordance with Title 15 USC ?638					
Accomplishments/Planned Programs Subtotals	31.807	17.910	1.998	-	1.998

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• R64001: *HUSKY MOUNTED DETECTION SYSTEM (HMDS)*	35.834	75.586	109.069	-	109.069	76.800	-	-	-	0.000	297.289
• R68102: *GRND STANDOFF MINE DETECTN SYSM (GSTAMIDS)BLK 1*	42.001	40.680	2.497	-	2.497	-	-	-	-	0.000	85.178
• DA0924: *Modification Of In Svc Equip*	256.642	83.627	114.977	-	114.977	29.661	0.456	-	-	0.000	485.363
• R68260: *AREA MINE DETECTION SYSTEM (AMDS)*	5.797	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• 606: *Cntrmn/Barrier Adv Dev*	2.869	-	0.000	-	0.000	-	4.947	4.578	9.935	0.000	22.329
• M80400: *Robotic Combat Support System (RCSS)*	8.879	5.300	0.000	-	0.000	-	-	-	-	0.000	14.179
• E50510: *DEMO KIT, BLASTING: Munition Array Charge, XM335*	-	-	-	-	-	-	-	-	-		
• R64003: *HMDS - DEEP BURIED DETECTION*	-	29.382	84.216	-	84.216	64.191	-	-	-	0.000	177.789

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) and Operation Inherent Resolve (OIR). In FY 2020, the program will complete execution of an Engineering Change Proposals (ECP) to add a wire detection capability to address evolving threat, and Infrared illumination to enable nighttime operation, improve operational availability of the HMDS during inclement weather and address obsolescence and Cyber Security deficiencies.

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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 in 4th quarter of FY 2018 to one EMD contractor for the Semi-Autonomous Control (SAC) Kit . The SAC Kit was awarded 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 enable the Government to execute a full Pre-Production Qualification Test (PPQT) and to evaluate 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 four 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.

The Standoff Robotic Explosive Hazard Detection System (SREHD) (formerly known as AMDS) is currently in the Low Rate Initial Production (LRIP) phase 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.). Transition to Low Rate Initial Production (LRIP) occurred 30 April 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. Due to the realignment of funds beginning FY 2020 through FY 2024 to higher Army priorities, the proponent withdrew support to the Standoff Robotic Explosive Hazard Detection System (SREHD) after Low Rate Initial Production (LRIP) award. Subsequently, the Milestone Decision Authority (MDA) directed that FY 2019 funding will not be executed for this program. Due to timing, funding is still reflected in FY 2019. Research, Development, Test and Evaluation (RDTE) tasks will conclude in FY 2019 under FY 2018 PE 0654808A, Project 415, Landmine Warfare/Barrier - Eng Dev, once corrective action plans and trainer re-development are completed. The program will conclude in June 2020 under FY 2018 OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) and PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335 for system qualification and production and receipt of LRIP quantities for an orderly program closeout.

Robotic Explosive Hazard Detection System (REHDS) is a new start in FY 2021 and begins in the Engineering Manufacturing Development (EMD) phase. REHDS will develop the capability to detect and mark explosive hazards from a robotic platform to deliver standoff capability to the warfighter. REHDS will leverage developed SREHDS capability and incorporate the following two changes: Increased Rate of Advanced Downtrack (RoAD) and Integration to Man Transportable Robotic System (MTRS) II platform. REHDS has planned efforts in FY 2022 and FY 2023; dollar amounts are $6.000 million and $7.000 million respectively. Plan to execute a sole source strategy utilizing the SREHD contractor as they have the ability to develop similar systems.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army		Date: February 2020
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS System Engineering & Program Management	MIPR	PM Terrestrial Sensors : Fort Belvoir. VA	1.750	1.840	Jan 2019	1.179	Mar 2020	-		-		-	0.000	4.769	-
Program Management - RCIS Type I	MIPR	PM FP : Warren, MI	4.213	0.769	Oct 2018	0.582	Oct 2019	-		-		-	Continuing	Continuing	-
SREHD (Formerly AMDS) Program Management	Allot	JPEO A&A, PM CCS : Picatinny Arsenal, NJ	3.868	-		-		-		-		-	0.000	3.868	-
SREHD (Formerly AMDS) Program Closeout	Allot	JPEO A&A, PM CCS : Picatinny Arsenal, NJ	-	0.811	Dec 2018	-		-		-		-	0.000	0.811	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.813		-		-		-	0.000	0.813	-
		Subtotal	9.831	3.420		2.574		-		-		-	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS A1 Dev of Engineering Change Proposal w/ Wire Detect and InfraRed	SS/FFP	Chemring Sensors & Electronic Systems (CSES) : Dulles, VA	8.437	15.223	Jan 2019	1.821	Nov 2019	-		-		-	0.000	25.481	-
HMDS Auto-height improvements	C/CPFF	TBD : TBD	-	-		2.634	Nov 2019	-		-		-	0.000	2.634	-
HMDS Systtems Training Product Development	MIPR	CECOM : Various	-	0.892	Nov 2018	0.696	Nov 2019	-		-		-	0.000	1.588	-
RCIS Type I	SS/FFP	J C Bamford : Pooler, GA	9.233	1.810	Nov 2018	1.542	Oct 2019	-		-		-	0.000	12.585	Continuing
RCIS Type I test assets	MIPR	Letterkenny Army Depot : Letterkenny, PA	2.252	-		-		-		-		-	0.000	2.252	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army		Date: February 2020
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RCIS Type I SAC	C/CPIF	QinetiQ : Waltham, MA	-	3.700	Nov 2018	3.383	Oct 2019	-		-		-	Continuing	Continuing	-
Multi-Function Video Display	MIPR	NVESD : Fort Belvoir, VA	3.972	0.500	Oct 2018	-		-		-		-	3.047	7.519	3.047
Buffalo MPCV Interrogation Arm Improvements	C/CPFF	KRC : Houghton, MI	-	0.425	Nov 2018	-		-		-		-	0.000	0.425	-
SREHD (Formerly AMDS) EMD and Trainer Re-development	C/CPIF	Carnegie Robotics LLC : Pittsburgh, PA	30.889	-		-		-		-		-	0.000	30.889	-
SREHD (Formerly AMDS) RAMS Type B Integration with Trainer	MIPR	ARL : Adelphi, MD	0.300	-		-		-		-		-	0.000	0.300	-
		Subtotal	55.083	22.550		10.076		-		-		-	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS - Program and Logistics Support	MIPR	Various : Various	-	-		1.727	Nov 2019	-		-		-	0.000	1.727	-
RCIS Type I	MIPR	TARDEC, TACOM : Warren, MI	7.588	0.768	Oct 2018	0.332	Oct 2019	-		-		-	Continuing	Continuing	-
SREHD (Formerly AMDS)	MIPR	Various : Various	13.676	-		-		-		-		-	0.000	13.676	-
Robotic Explosive Hazard Detection System	MIPR	CCDC - Picatinny : Picatinny Arsenal, NJ	-	-		-		1.998	Mar 2021	-		1.998	0.000	1.998	-
		Subtotal	21.264	0.768		2.059		1.998		-		1.998	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army		Date: February 2020
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
HMDS ATEC Testing	MIPR	ATEC : Alexandria, VA	5.045	3.717	Mar 2019	1.936	Nov 2019	-		-		-	0.000	10.698	-
HMDS Test Support	MIPR	CECOM : Various	-	0.892	Nov 2018	0.433	Nov 2019	-		-		-	0.000	1.325	-
RCIS Type I	MIPR	ATEC : Aberdeen, MD	1.772	0.460	Nov 2018	0.832	Oct 2019	-		-		-	0.000	3.064	-
SREHD (Formerly AMDS)	MIPR	OTC : Ft. Hood, TX	4.341	-		-		-		-		-	0.000	4.341	-
SREHD (Formerly AMDS)	MIPR	ARL : Adelphi, MD	0.100	-		-		-		-		-	0.000	0.100	-
		Subtotal	11.258	5.069		3.201		-		-		-	0.000	19.528	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	97.436	31.807		17.910		1.998		-		1.998	Continuing	Continuing	N/A

Remarks

Due to the realignment of funds FY 2020-2024 to higher Army priorities, the proponent withdrew support to the Standoff Robotic Explosive Hazard Detection System (SREHD) after Low Rate Initial Production (LRIP) award. Subsequently, the Milestone Decision Authority (MDA) directed that FY 2019 funding will not be executed for this program. Due to timing, funding is still reflected in FY 2019. Research, Development, Test and Evaluation (RDTE) tasks will conclude in FY 2019 under FY 2018 PE 0654808A, Project 415, Landmine Warfare/Barrier - Eng Dev, once corrective action plans and trainer re-development are completed. The program will conclude in June 2020 under FY 2018 OPA R68260 / AREA MINE DETECTION SYSTEM (AMDS) and PAA E50510 / DEMO KIT, BLASTING: Munition Array Charge, XM335 for system qualification and production and receipt of LRIP quantities for an orderly program closeout.

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
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*

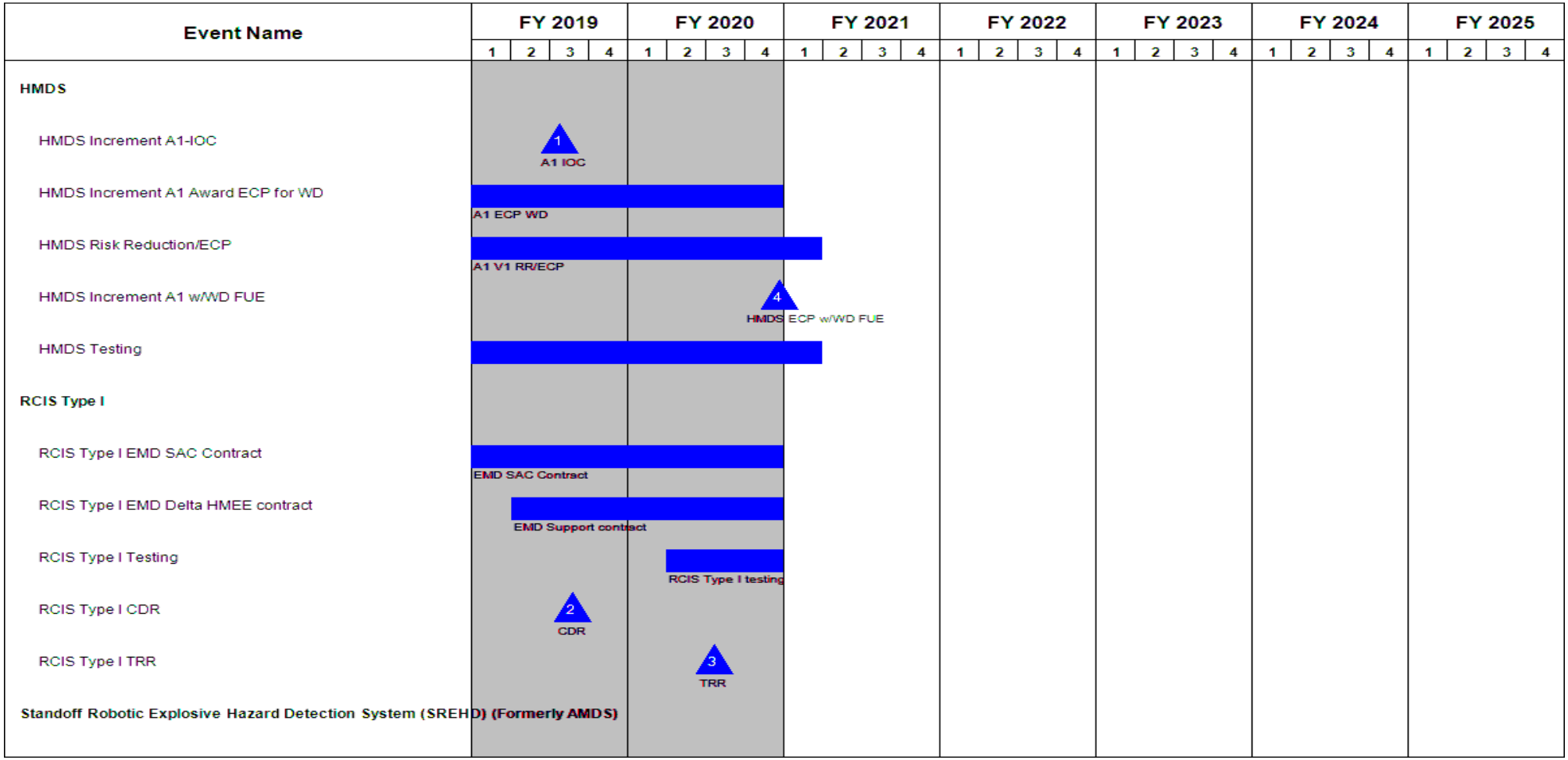

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
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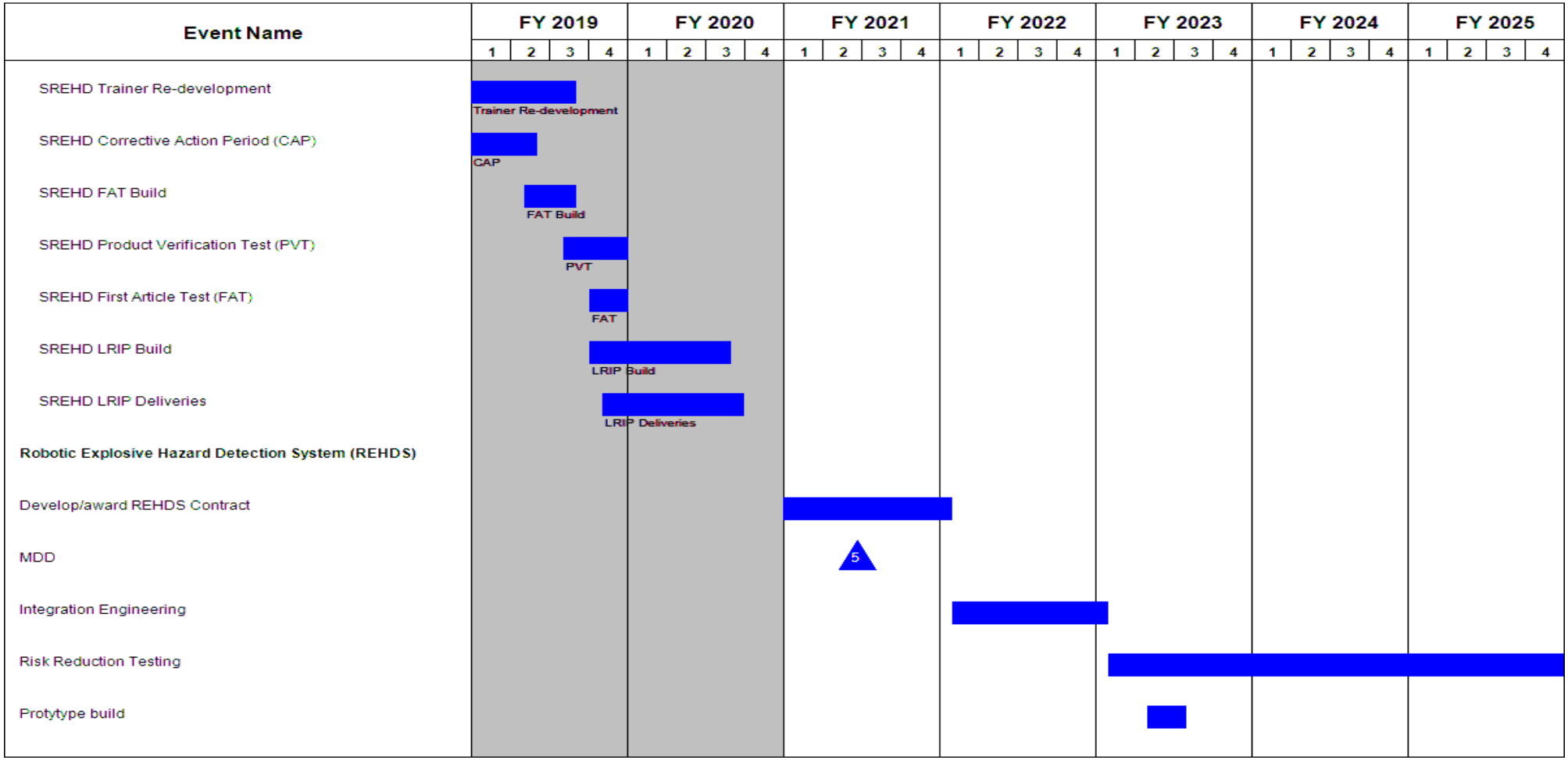

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
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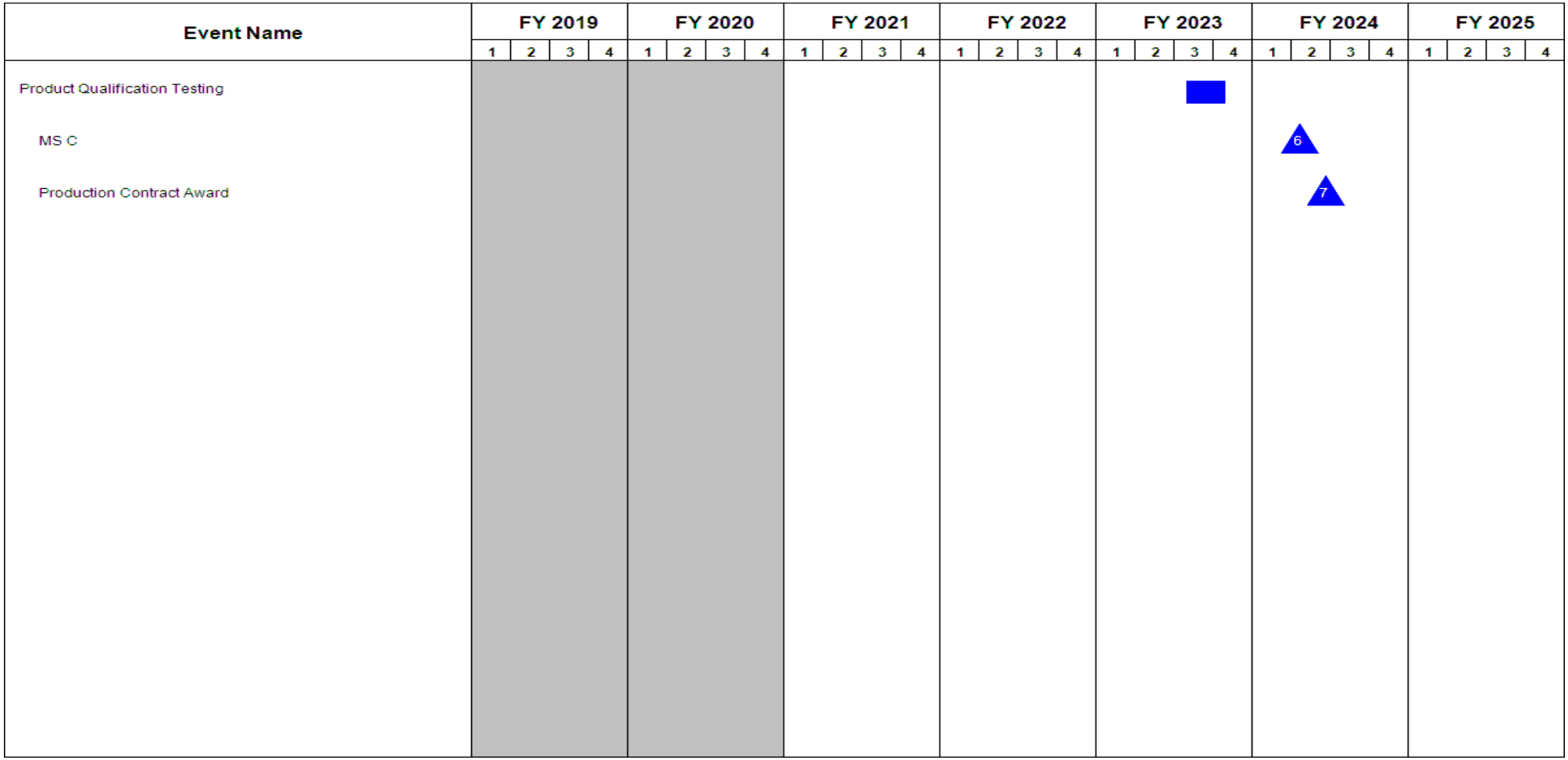

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604808A / *Landmine Warfare/Barrier - Eng Dev*	**Project (Number/Name)** 415 / *Mine Neutral/Detection*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
HMDS	1	2016	1	2023
HMDS Increment A1 - MS C Review	4	2017	4	2017
HMDS Increment A1-TC/MR	3	2018	3	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	2021
HMDS Increment A1 w/WD FUE	4	2020	4	2020
HMDS Testing	2	2018	1	2021
RCIS Type I	1	2015	4	2022
RCIS Type I MS B	4	2018	4	2018
RCIS Type I EMD SAC Contract	4	2018	4	2020
RCIS Type I EMD Delta HMEE contract	2	2019	4	2020
RCIS Type I Testing	2	2020	4	2020
RCIS Type I CDR	3	2019	3	2019
RCIS Type I TRR	3	2020	3	2020
Standoff Robotic Explosive Hazard Detection System (SREHD) (Formerly AMDS)	1	2018	4	2022
SREHD Regression Testing	1	2018	2	2018
SREHD Milestone C	3	2018	3	2018
SREHD Trainer Re-development Contract Modification	3	2018	3	2018
SREHD Low Rate Initial Production (LRIP) Award	3	2018	3	2018
SREHD Trainer Re-development	3	2018	3	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SREHD Corrective Action Period (CAP)	4	2018	2	2019
SREHD FAT Build	2	2019	3	2019
SREHD Product Verification Test (PVT)	3	2019	4	2019
SREHD First Article Test (FAT)	4	2019	4	2019
SREHD LRIP Build	4	2019	3	2020
SREHD LRIP Deliveries	4	2019	3	2020
Robotic Explosive Hazard Detection System (REHDS)	1	2021	4	2025
Develop/award REHDS Contract	1	2021	1	2022
MDD	2	2021	2	2021
Integration Engineering	1	2022	1	2023
Risk Reduction Testing	1	2023	4	2025
Protytype build	2	2023	3	2023
Product Qualification Testing	3	2023	4	2023
MS C	2	2024	2	2024
Production Contract Award	2	2024	2	2024