Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army											Date: April 2022	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604134A *I Counter Improvised-Threat Demonstration, Prototype Development, and Testing*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	-	13.326	13.379	15.840	-	15.840	16.773	17.650	17.655	17.827	0.000	112.450
CD4: *Counter Improvised-Threat Demonstration*	-	13.326	13.379	15.840	-	15.840	16.773	17.650	17.655	17.827	0.000	112.450

A. Mission Description and Budget Item Justification

This Program Element (PE) develops prototypes and demonstrates technology for detecting and defeating Improvised Explosive Devices (IED). The goal of this Project is to mature technology to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and increase the rate of advance of route clearance missions. Additionally the objective is to positively neutralize or mitigate the effects of IEDs with minimal collateral damage. Driven by the current threat facing deployed U.S. forces, this PE enables rapid development and delivery of capabilities that enable the detection, neutralization, and risk mitigation of IEDs and their effects. These technologies are intended to be matured and demonstrated for integration onto existing Department of Defense weapon systems.

This PE is coordinated with the Under Secretary of Defense for Research and Engineering (USD/R&E) including the Defense Threat Reduction Agency (DTRA).

Work in this PE was previously conducted under PE 0604134BR, Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	13.326	13.379	0.000	-	0.000
Current President's Budget	13.326	13.379	15.840	-	15.840
Total Adjustments	0.000	0.000	15.840	-	15.840
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	15.840	-	15.840

Change Summary Explanation

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

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	Project (Number/Name) CD4 / *Counter Improvised-Threat Demonstration*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CD4: *Counter Improvised-Threat Demonstration*	-	13.326	13.379	15.840	-	15.840	16.773	17.650	17.655	17.827	0.000	112.450
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project develops prototypes and demonstrates technology for detecting and defeating Improvised Explosive Devices (IED). The goal of this Project is to mature technology to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and increase the rate of advance of maneuver forces. Additionally the objective is to positively neutralize IEDs with minimal collateral damage. Driven by the current threat facing deployed U.S. forces, this Project enables rapid development and delivery of capabilities that enable the detection, neutralization, and mitigation of IEDs and their effects.

This Project is coordinated with the Under Secretary of Defense for Research and Engineering (USD/R&E) including the Defense Threat Reduction Agency (DTRA).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Vehicle Borne IED Detection Technology Demonstration ***Description:*** This effort conducts technology demonstration of sensing technologies to detect IEDs at entry control points for fixed bases. This effort uses nuclear quadropole resonance detection sensors matured in FY 2020 by the Defense Threat Reduction Agency to detect Vehicle Borne IEDs at vehicle check point with minimal false alarms.	1.903	-	-
Title: Vehicle Borne IED Warnings and Indicators Technology Demonstration ***Description:*** This effort demonstrates fusion of existing sensing technologies to provide warnings and indicators for the presence of Vehicle Borne IEDs in areas surrounding fixed sites. This effort uses detection techniques matured in FY 2020 by the Defense Threat Reduction Agency to predict the presence of Vehicle Borne IEDs using information collected by sensor systems located in the vicinity of fixed sites.	1.292	-	-
Title: Radio Controlled IED Detection Technology Demonstration ***Description:*** This effort demonstrates Radio Controlled IED detection exploiting advanced network techniques. This effort demonstrates the ability to detect Radio Controlled IEDs with minimal false alarms. ***FY 2022 Plans:*** Will continue evaluation of advanced network techniques to identify Radio Controlled IEDs at standoff distances. ***FY 2023 Plans:***	2.500	1.883	1.892

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Will demonstrate advanced network techniques to identify Radio Controlled IEDs at standoff distances. Will demonstrate flexible modular open systems to mitigate IED's without impacting other electro-magnetic systems on the platform. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Minor increase due to economic assumptions			
Title: Anti-Armor IED Detection Technology Demonstration ***Description:*** This effort demonstrates anti-armor IED detection using technologies to include high resolution electro-optical / infrared and other sensors to detect component characteristics to identify the location of IEDs prior to detonation. ***FY 2022 Plans:*** Will conduct an integrated vehicle demonstration of the use of advanced electro-optical / infrared sensor processing techniques to detect component characteristics to identify the location potential anti-armor IEDs at a standoff distance while moving. Will perform test and evaluation of the integrated vehicle system. ***FY 2023 Plans:*** Will conduct an integrated demonstration of a multi-sensor system including advanced electro-optical, infrared, lidar, and radio-frequency sensor processing techniques to detect and geo-locate anti-armor IEDs at a standoff distance. Will perform test and evaluation of the integrated multi-sensor system. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decreased funding as a result of the effort will be completed in FY 2023.	2.489	1.739	1.597
Title: Mitigation of Anti-Armor IED Technology Demonstration ***Description:*** This effort demonstrates mitigation of Anti-Armor IED effects using technologies developed by the Defense Threat Reduction Agency in FY 2020. This effort will demonstrate the use of physical countermeasure technology to mitigate the effects of explosively formed penetrators and other explosively driven IED threats.	0.530	-	-
Title: Booby Trap Structure IEDs Detection Technology Demonstration ***Description:*** This effort demonstrates detection techniques developed by DTRA in FY 2020 using small unmanned aerial systems (UAS) with compact sensor technologies including light detection and ranging (LIDAR) to develop high resolution imagery of structures with the ability to inspect multi-level structures for the presence of IEDs. This effort demonstrates the ability to develop high fidelity mapping of multi-level structures to identify potential locations of IEDs. ***FY 2022 Plans:***	2.444	1.210	-

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Will continue development of compact sensor technologies for use on individual Soldiers to detect concealed IED components in urban environments. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** This effort will be completed in FY 2022.			
Title: Personnel Borne IED Detection Technology Demonstration ***Description:*** This effort demonstrates Personnel Borne IED (PBIED) detection aggregating information from a network of small, inexpensive sensor technologies including electro-optical and millimeter wave radar subgarment imagers to sense the presence of PBIEDs attached to personnel through thin walls. This effort demonstrates the ability to aggregate sensor data to identify PBIEDs with minimal false alarms. ***FY 2022 Plans:*** Will continue to mature integrated (fused) multi-mode sensor technologies to identify concealed Personnel Borne IEDs in various environments. Will continue to perform test and evaluation of the prototype sensor technology and document for urgent material release purposes. ***FY 2023 Plans:*** Will demonstrate multi-mode sensor technologies integrated to increase the probability of detecting concealed Personnel Borne IEDs in various environments. Will perform test and evaluation of the prototype sensor technologies and document for urgent material release purposes. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase in FY 2023 to complete testing of integrator sensor system in a relevant environment.	2.168	2.641	4.457
Title: Off-Route IED Detection Technology Demonstration ***Description:*** This effort will demonstrate a proof of concept IED detection system using miniaturized sensors developed in the Counter-Improvised Threat Simulation Program Element 0603134A integrated with unmanned aerial systems to detect off-route IEDs to support combat maneuver forces. ***FY 2022 Plans:*** Will integrate miniature detection sensors such as hyper-spectral imaging and ground penetrating radar with unmanned aerial systems. Will develop plans for aerial route detection proof of concept experimentation to be conducted in FY 2023. ***FY 2023 Plans:***	-	3.173	2.891

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Will conduct multi-mode sensor unmanned air and ground systems off-route detection proof of concept demonstration. Will optimize sensor technologies to increase rate of advance and standoff detection range. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding decrease reflects decreased planned progression of effort to conduct proof of concept demonstration.			
Title: Water-Borne IED Detection Technology Demonstration ***Description:*** This effort conducts a technology demonstration to evaluate the performance of IED detection technologies in coastal water and water gap crossings. The focus is on detecting devices in water using detection mechanisms at standoff distances to protect troop landings and water gap crossings for the military. ***FY 2022 Plans:*** Will integrate mature sensor technologies on a platform capable of operating ahead of formations in both troop landings and water gap crossings. Will plan a demonstration for FY 2024 using the demonstration platform to detect IED threats in both a coastal and water crossing scenario. ***FY 2023 Plans:*** Will continue to mature sensor technologies and autonomous behaviors for a platform capable of operating ahead of formations in both troop landings and water gap crossings. Will continue to develop plans for an FY 2024 demonstration to detect IED threats in both a coastal and water crossing scenario. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increase represents higher planned lifecycle of this effort.	-	2.245	3.409
Title: Teamed IED Detection Technology Demonstration ***Description:*** This effort demonstrates the teaming of small unmanned aerial and ground systems to cooperatively detect IED emplacements and indicators of IED emplacements. This effort optimizes unmanned system teaming to increase the confidence in IED detection using multiple platforms with multiple sensor modes, and integrating their information. This effort will conduct a demonstration in FY 2025 using multiple heterogenous platforms to reduce false alarms for IED detection. ***FY 2023 Plans:*** Will mature unmanned system behaviors to optimize IED detection using multiple systems for detection, including including orthogonal detections for confirmation. Will mature sensor processing techniques to integrate information from multiple sensor	-	-	1.594

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
systems to reduce the likelihood of false alarms. Will develop scenario plans to demonstrate value of multi-sensor detection schemes to be conduced in FY 2025. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increased funding for this effort represents a progression of and expands the capability of the unmanned aerial systems and sensor technologies developed in the "Off-Route IED Detection Technology Demonstration" effort in this Project.			
Title: SBIR/STTR Transfer ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC ?638	-	0.488	-
Accomplishments/Planned Programs Subtotals	13.326	13.379	15.840

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Army will coordinate plans with USD (R&E), DTRA, and other Services to prototype and demonstrate CIED technologies, with Army and Service Laboratories and/or industry performing the demonstration activities. The Army will use existing and new contracts to perform these efforts with selected industry partners based on solicitations issued. The Army will continue promising technology demonstrations started in FY20 by DTRA based on review with DTRA, USD (R&E) and other Services.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR Transfer	C/TBD	TBD : TBD	-	-		0.488		-		-		-	0.000	0.488	-
		Subtotal	-	-		0.488		-		-		-	0.000	0.488	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Vehicle Borne IED Detection Technology Demonstration	C/TBD	To Be Determined : To Be Determined	-	1.903	Dec 2020	-		-		-		-	0.000	1.903	-
Vehicle Borne IED Warnings and Indicators Technology Demonstration	C/TBD	TBD : TBD	-	1.292		-		-		-		-	0.000	1.292	-
Remote Controlled IED Detection Technology Demonstration	C/TBD	C/TBD; PEO IEW&S : Aberdeen, MD	-	2.500	Dec 2020	1.883	Dec 2021	1.892	Jan 2023	-		1.892	0.000	6.275	-
Anti-Armor IED Detection Technology Demonstration	C/TBD	TBD : TBD	-	2.489	Dec 2020	1.739	Dec 2021	1.597	Feb 2023	-		1.597	0.000	5.825	-
Mitigation of Anti-Armor IED Technology Demonstration	C/TBD	TBD : TBD	-	0.530		-		-		-		-	0.000	0.530	-
Booby Trap Structure IEDs Detection Technology Demonstration	Various	TBD : TBD	-	2.444		1.210	Dec 2021	-		-		-	0.000	3.654	-
Personnel Borne IED Detection Technology Demonstration	C/TBD	DEVCOM CBC : Aberdeen, MD	-	2.168		2.641	Dec 2021	4.457	Dec 2022	-		4.457	0.000	9.266	-
Off-Route IED Detection Technology Demonstrator	TBD	TBD : TBD	-	-		3.173	Feb 2022	2.891	Dec 2022	-		2.891	0.000	6.064	-
Water-Borne IED Detection Technology Demonstration	TBD	Office of Naval Research (ONR) : Arlington, VA	-	-		2.245	Feb 2022	3.409	Jan 2023	-		3.409	0.000	5.654	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	Project (Number/Name) CD4 / *Counter Improvised-Threat Demonstration*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Teamed IED Detection Technology Demonstration	TBD	DEVCOM GVSC : Warren, MI	-	-		-		1.594	Feb 2023	-		1.594	0.000	1.594	-
		Subtotal	-	13.326		12.891		15.840		-		15.840	0.000	42.057	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	13.326		13.379		15.840		-		15.840	0.000	42.545	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

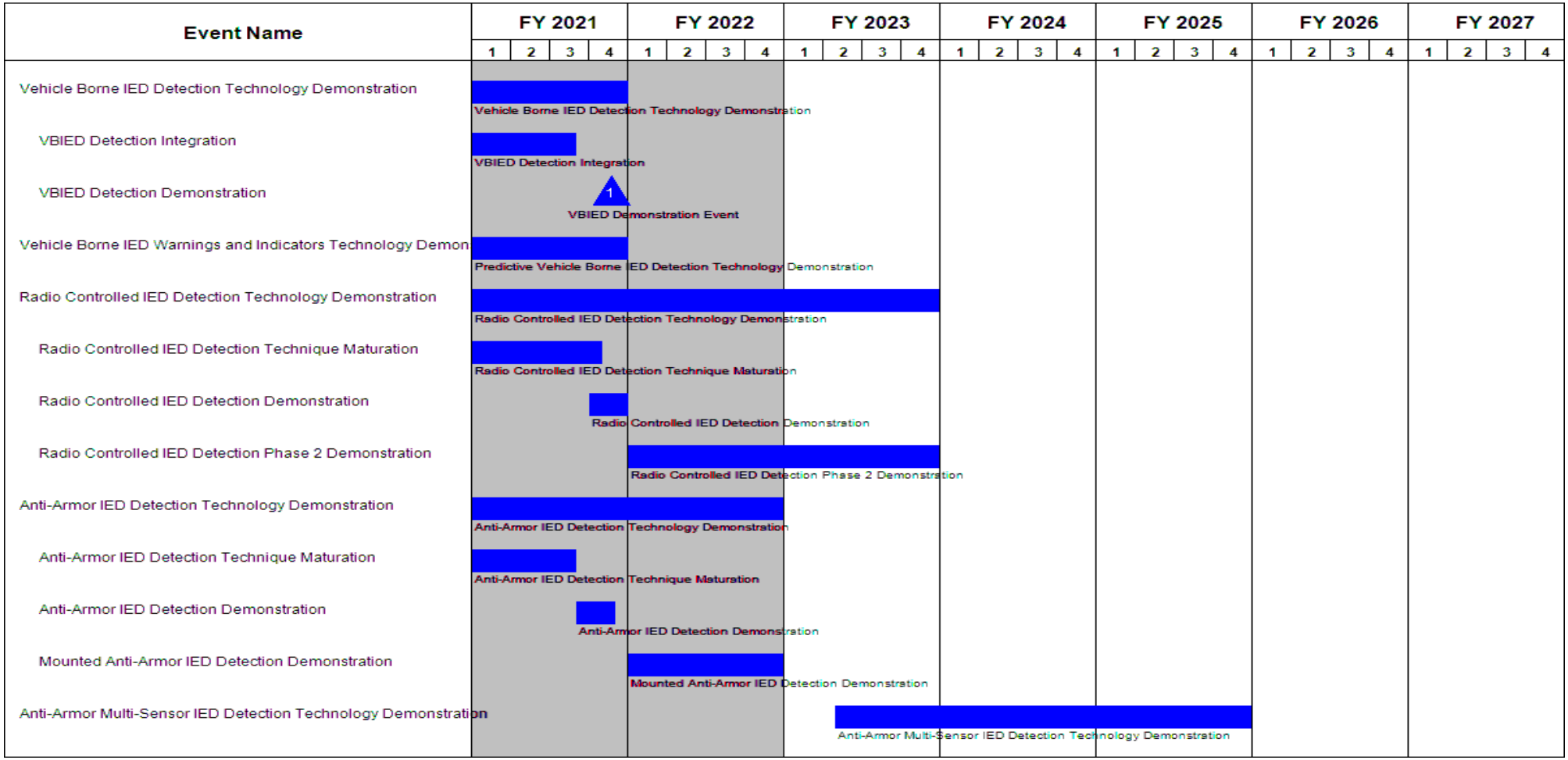

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

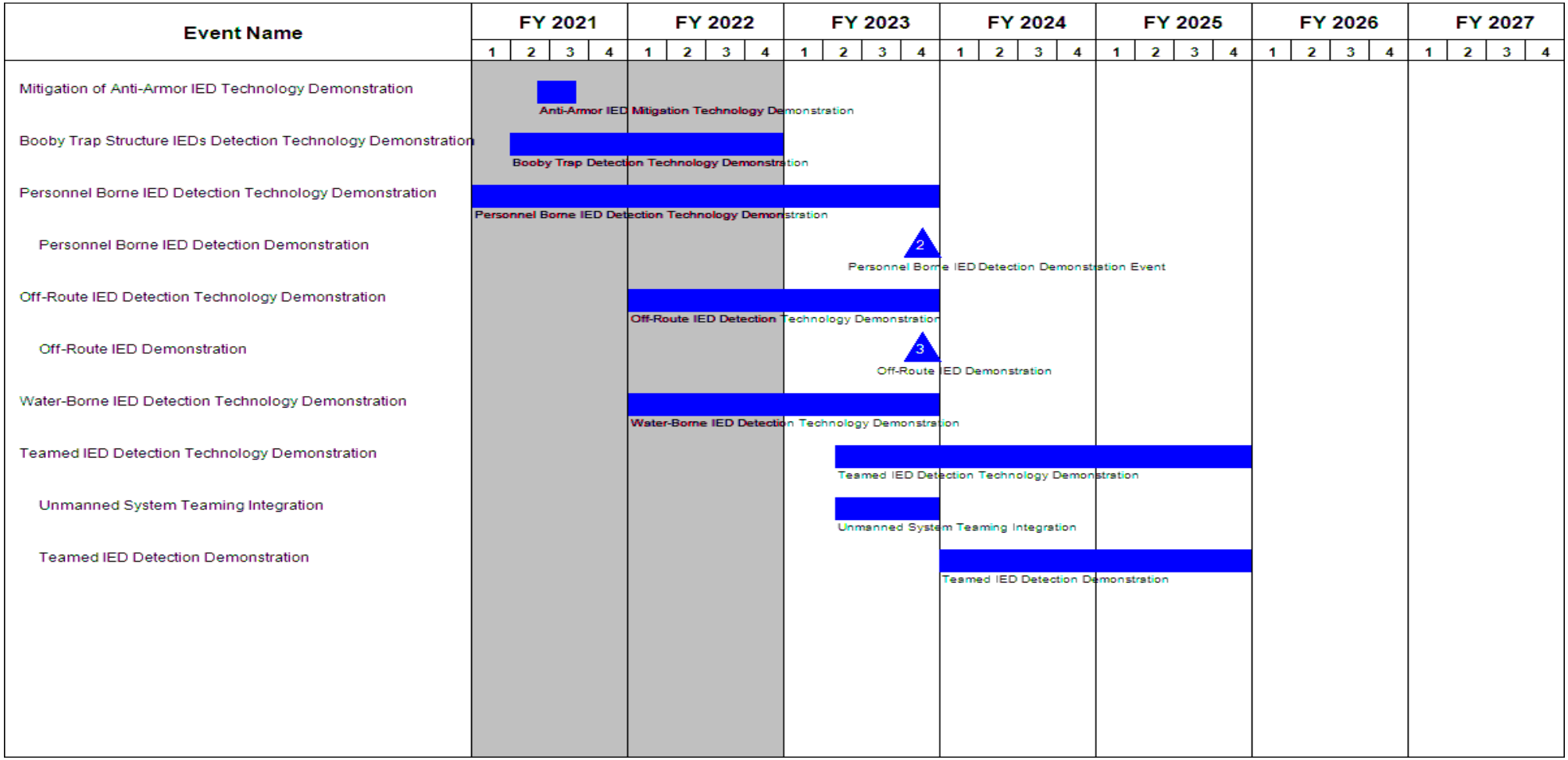

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Vehicle Borne IED Detection Technology Demonstration	1	2021	4	2021
VBIED Detection Integration	1	2021	3	2021
VBIED Detection Demonstration	4	2021	4	2021
Vehicle Borne IED Warnings and Indicators Technology Demonstration	1	2021	4	2021
Radio Controlled IED Detection Technology Demonstration	1	2021	4	2023
Radio Controlled IED Detection Technique Maturation	1	2021	4	2021
Radio Controlled IED Detection Demonstration	4	2021	4	2021
Radio Controlled IED Detection Phase 2 Demonstration	1	2022	4	2023
Anti-Armor IED Detection Technology Demonstration	1	2021	4	2022
Anti-Armor IED Detection Technique Maturation	1	2021	3	2021
Anti-Armor IED Detection Demonstration	3	2021	4	2021
Mounted Anti-Armor IED Detection Demonstration	1	2022	4	2022
Anti-Armor Multi-Sensor IED Detection Technology Demonstration	2	2023	4	2025
Mitigation of Anti-Armor IED Technology Demonstration	2	2021	3	2021
Booby Trap Structure IEDs Detection Technology Demonstration	1	2021	4	2022
Personnel Borne IED Detection Technology Demonstration	1	2021	4	2023
Personnel Borne IED Detection Demonstration	4	2023	4	2023
Off-Route IED Detection Technology Demonstration	1	2022	4	2023
Off-Route IED Demonstration	4	2023	4	2023
Water-Borne IED Detection Technology Demonstration	1	2022	4	2023
Teamed IED Detection Technology Demonstration	2	2023	4	2025

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Unmanned System Teaming Integration	2	2023	4	2023
Teamed IED Detection Demonstration	1	2024	4	2025