Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	13.326	13.379	-	13.379	-	-	-	-	-	-
CD4: *Counter Improvised-Threat Demonstration*	-	-	13.326	13.379	-	13.379	-	-	-	-	-	-

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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	13.831	14.650	-	14.650
Current President's Budget	0.000	13.326	13.379	-	13.379
Total Adjustments	0.000	-0.505	-1.271	-	-1.271
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-0.505			
• Adjustments to Budget Years	-	-	-1.271	-	-1.271

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CD4: *Counter Improvised-Threat Demonstration*	-	-	13.326	13.379	-	13.379	-	-	-	-	-	-
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 2020	FY 2021	FY 2022
Title: Vehicle Borne IED Detection Technology Demonstration	-	1.903	-
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. ***FY 2021 Plans:*** Will integrate nuclear quadropole resonance detection sensor into a vehicle check point. Will demonstrate the ability of the sensor to detect IEDs concealed in a vehicle. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** This demonstration completes in FY 2021.			
Title: Vehicle Borne IED Warnings and Indicators Technology Demonstration	-	1.292	-
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. ***FY 2021 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Will conduct a demonstration of detection techniques applied to data collected by local sensor systems to identify indicators of Vehicle Borne IEDs. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** This demonstration completes in FY 2021.			
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 2021 Plans:*** Will apply advanced network techniques to identify Radio Controlled IEDs at standoff distances. Will perform test and evaluation of the detection techniques and document for urgent materiel release purposes. ***FY 2022 Plans:*** Will continue evaluation of advanced network techniques to identify Radio Controlled IEDs at standoff distances. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decrease represents the planned progression of this effort that has been decided to continue into FY 2022.	-	2.500	1.954
Title: Anti-Armor IED Detection Technology Demonstration ***Description:*** This effort demonstrates anti-armor IED detection using technologies to include high resolution electro-optical / infrared sensors to detect component characteristics to identify the location of IEDs prior to detonation. ***FY 2021 Plans:*** Will conduct a demonstration of the use of advanced electro-optical / infrared sensor processing techniques to detect component characteristics to identify the location potential IEDs. Will demonstrate the ability of these sensors to detect anti-armor IEDs at a standoff distance and quantify false alarm rates using a cluttered demonstration area. Will perform test and evaluation of the sensor technology and document for urgent material release purposes. ***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 2021 to FY 2022 Increase/Decrease Statement:***	-	2.489	1.805

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Funding decrease is based on a decision to continue this promising technology to another phase of integrated demonstration.			
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. ***FY 2021 Plans:*** Demonstrate the Anti-Armor IED mitigation technology using surrogate threat IEDs to evaluate the residual effects of the IED on a surrogate armor plate. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** This demonstration completes in FY 2021.	-	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 2021 Plans:*** Will continue development of compact LIDAR sensor technologies for use on small platforms. Will demonstrate the ability of to detect concealed IEDs in an multi-level urban structure using a micro UAS. ***FY 2022 Plans:*** Will continue development of compact sensor technologies for use on individual Soldiers to detect concealed IED components in urban environments. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding decrease is based on a decision to continue this promising technology to develop and test a prototype system.	-	2.444	1.256
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	-	2.168	2.741

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
PBIEDs attached to personnel through thin walls. This effort demonstrates the ability to aggregate sensor data to identify PBIEDs with minimal false alarms. ***FY 2021 Plans:*** Will mature sensor fusion technologies to identify concealed PBIEDs in various environments. Will perform test and evaluation of the sensor technology and document for urgent material release purposes. ***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 2021 to FY 2022 Increase/Decrease Statement:*** Funding decrease is based on a decision to continue this promising technology to develop and test a prototype system.			
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 2021 to FY 2022 Increase/Decrease Statement:*** This is a new effort in FY 2022.	-	-	3.293
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:***	-	-	2.330

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
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 2021 to FY 2022 Increase/Decrease Statement:*** This is a new effort in FY 2022.			
Accomplishments/Planned Programs Subtotals	-	13.326	13.379

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 2022 Army			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 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	TBD : TBD	-	-		2.500	Dec 2020	1.954	Dec 2021	-		1.954	0.000	4.454	-
Anti-Armor IED Detection Technology Demonstration	C/TBD	TBD : TBD	-	-		2.489	Dec 2020	1.805	Dec 2021	-		1.805	0.000	4.294	-
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		1.256	Dec 2021	-		1.256	0.000	3.700	-
Personnel Borne IED Detection Technology Demonstration	C/TBD	TBD : TBD	-	-		2.168		2.741	Dec 2021	-		2.741	0.000	4.909	-
Off-Route IED Detection Technology Demonstrator	TBD	TBD : TBD	-	-		-		3.293	Feb 2022	-		3.293	0.000	3.293	-
Water-Borne IED Detection Technology Demonstration	TBD	TBD : TBD	-	-		-		2.330	Feb 2022	-		2.330	0.000	2.330	-
		Subtotal	-	-		13.326		13.379		-		13.379	0.000	26.705	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		13.326		13.379		-		13.379	0.000	26.705	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
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*

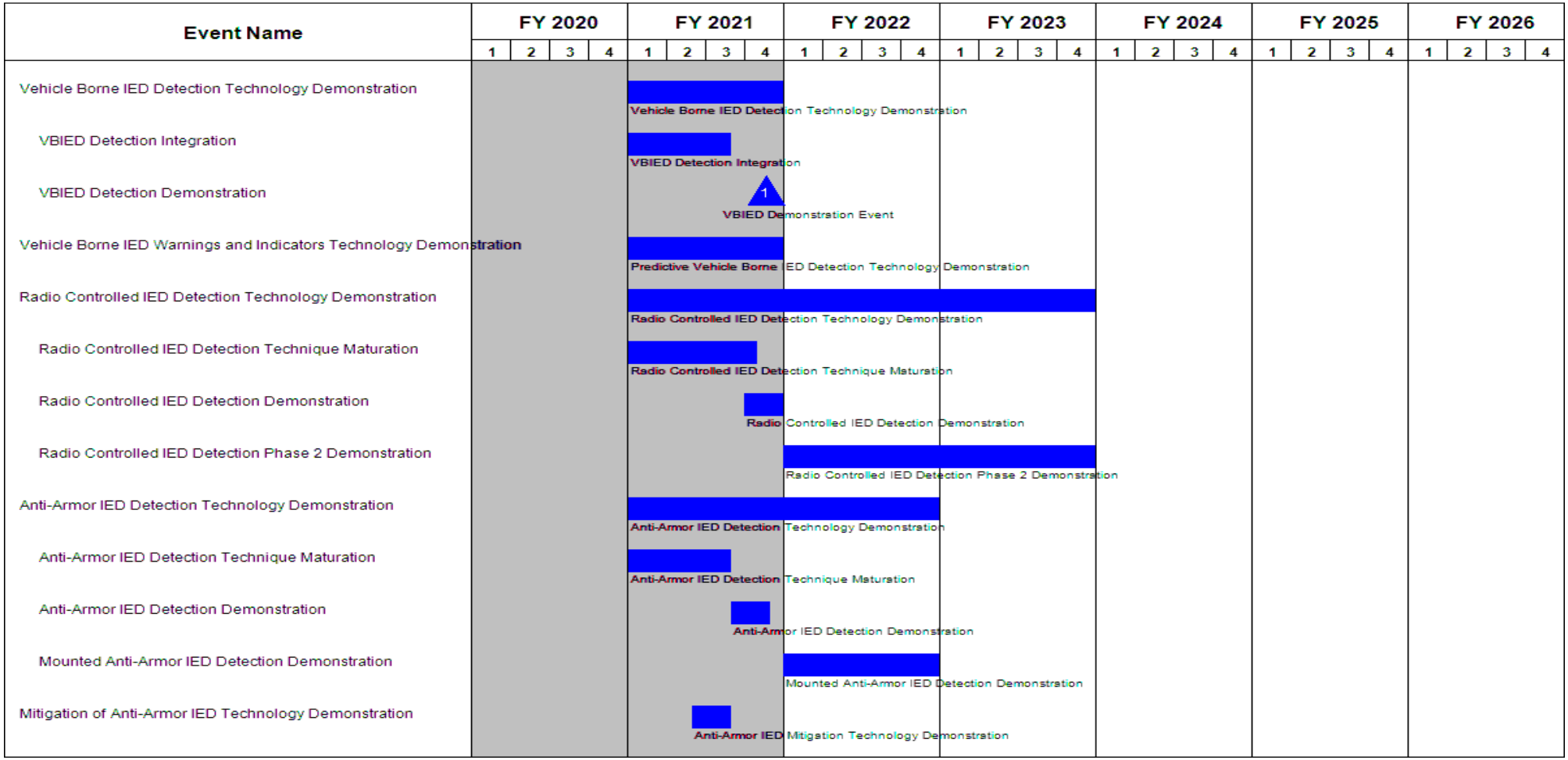

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

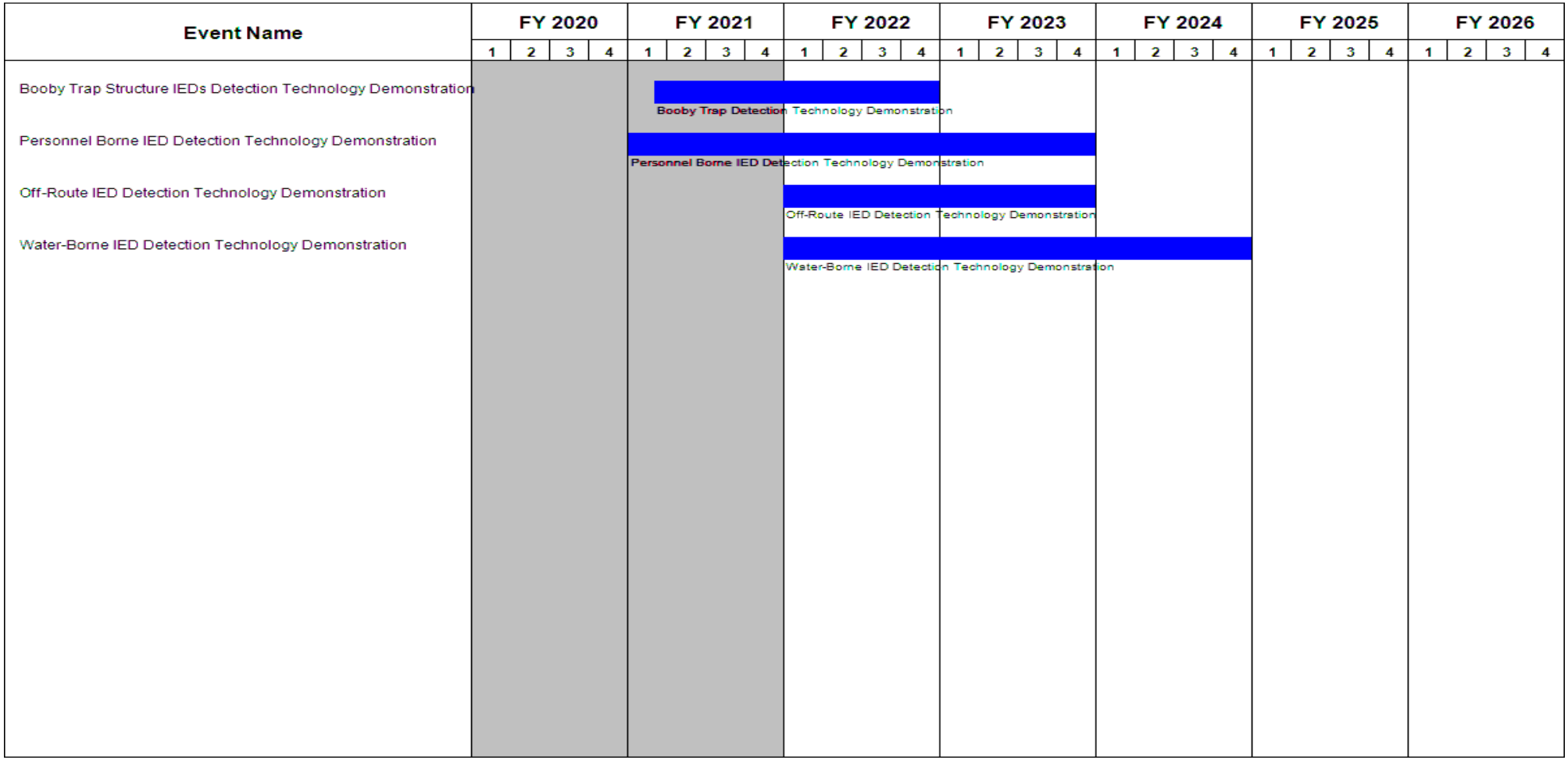

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604134A / *Counter Improvised-Threat Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** CD4 / *Counter Improvised-Threat Demonstration*

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
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
Off-Route IED Detection Technology Demonstration	1	2022	4	2023
Water-Borne IED Detection Technology Demonstration	1	2022	4	2024