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**Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Army** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 3: Advanced Technology Development (ATD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603134A / <i>Counter Improvised-Threat Simulation</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	20.782	21.672	21.398	-	21.398	21.680	21.695	21.933	22.151	0.000	151.311
CD3: <i>Counter Improvised-Threat Simulation</i>	-	20.782	21.672	21.398	-	21.398	21.680	21.695	21.933	22.151	0.000	151.311

**A. Mission Description and Budget Item Justification**

This Program Element (PE) develops technology for detecting and defeating Improvised Explosive Devices (IEDs). The goal of this research is to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and positively neutralize or mitigate the effects of IEDs with minimal collateral damage.

This PE is executed by the Army Futures Command (AFC) in coordination with the Under Secretary of Defense for Research and Engineering (USD/R&E) and the Defense Threat Reduction Agency (DTRA).

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025 Base</u>	<u>FY 2025 OCO</u>	<u>FY 2025 Total</u>
Previous President's Budget	21.486	21.672	21.680	-	21.680
Current President's Budget	20.782	21.672	21.398	-	21.398
Total Adjustments	-0.704	0.000	-0.282	-	-0.282
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.704	-			
• Adjustments to Budget Years	-	-	-0.282	-	-0.282

**Change Summary Explanation**

The FY25 funding change from the previous PB to the current PB reflects an Army approved minor reduction.

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<b>Appropriation/Budget Activity</b> 2040 / 3					<b>R-1 Program Element (Number/Name)</b> PE 0603134A / <i>Counter Improvised-Threat Simulation</i>				<b>Project (Number/Name)</b> CD3 / <i>Counter Improvised-Threat Simulation</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
CD3: <i>Counter Improvised-Threat Simulation</i>	-	20.782	21.672	21.398	-	21.398	21.680	21.695	21.933	22.151	0.000	151.311
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This Project develops, matures, and demonstrates technology for detecting and defeating improvised explosive devices (IEDs). The goal of this research is to increase the ability of deployed forces to positively identify IEDs with minimal false alarms and increase the rate of advance of deployed forces, as well as to identify vehicle and personnel borne IEDs at fixed sites. Additionally, the objective is to positively neutralize or mitigate the effects of IEDs with minimal collateral damage.

This Project is executed by the Army Futures Command (AFC) in coordination with the Under Secretary of Defense for Research and Engineering (USD/R&E) and the Defense Threat Reduction Agency (DTRA).

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

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> Standoff Detection of IED Threats in All Environments	9.791	10.221	-
<b>Description:</b> This effort develops technology to detect IED threats at standoff distances. Technologies include electro-optical, radar, light detection and ranging (LIDAR), atomic magnetometer and other technologies applicable to detecting IEDs and their components that can be integrated on dismounted Soldiers, ground, water-based and aerial systems or at fixed sites. This effort also develops technologies and network techniques to detect the electronic signature of radio-controlled IEDs. Technologies will be validated on their ability to detect IEDs and their components within infrastructure, on or under ground and water, and attached to vehicles or personnel. The goal for these technologies is to achieve high probabilities of detection while minimizing false alarms from naturally occurring and man-made entities.			
<b>FY 2024 Plans:</b> Will mature EO/IR, EM, neutron-gamma, and RF sensor technologies to improve detection performance of highly obscured IEDs in a broad range of emplacement scenarios and environments; integrate sensor technologies on Soldier-borne, ground, and aerial platforms or at fixed sites; demonstrate and assess detection of IEDs configured as vehicle borne IEDs and personnel borne IEDs in various operational conditions while improving form factor and cost considerations.			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding decrease reflects administrative restructure to task Counter Improvised Threat Advanced Technologies within this Project.			
<b>Title:</b> IED Neutralization, Prevention and Mitigation	2.948	3.138	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p><b>Description:</b> This effort develops technology critical to neutralizing and mitigating the effects of IEDs at standoff distances. Technologies include directed energy sources, energetic or kinetic effectors, encasement of the threat and Soldier, platform and base protection technologies. These technologies will be demonstrated to neutralize IEDs in place and protect soldiers and equipment from the effects of IEDs. This effort also explores advanced techniques to robotically manipulate IEDs. The goal for these technologies is to achieve high probabilities of avoiding the IED's effects by friendly forces.</p> <p><b>FY 2024 Plans:</b> Will mature and validate kinetic, jamming, and directed energy neutralization technologies to increase neutralization and mitigation performance to reduce impacts to maneuver speeds; demonstrate novel C-IED mitigation capabilities in militarily relevant scenarios in additional environments.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding decrease reflects administrative restructure to task Counter Improvised Threat Advanced Technologies within this Project.</p>			
<p><b>Title:</b> Enabling C-IED Technologies</p> <p><b>Description:</b> This effort develops technologies that support the detection, prevention, neutralization and mitigation of IED threats. Technologies exploit data sciences including sensor processing algorithms, integration of sensor data, data processing and analytics, threat forecasting, and autonomous maneuver. Techniques will be demonstrated that determine detection of IED threats and identify trends to forecast probabilities of encountering or attributing IEDs based on operational data and machine learning techniques. The goals for these technologies are to achieve high probabilities of detecting, predicting and attributing IEDs threats.</p> <p><b>FY 2024 Plans:</b> Will demonstrate lower size, weight, and power sensor components and improved processing techniques to detect IED threats with reduced false alarms; leverage threat data from foreign partners and use existing U.S. threat data repositories to optimize, develop, and mature new IED signature attributes in varying environments for multiple sensor modalities; demonstrate artificial intelligence and machine learning techniques to increase autonomous detection capability and reduce operator burden.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding decrease reflects administrative restructure to task Counter Improvised Threat Advanced Technologies within this Project.</p>	8.043	8.313	-
<p><b>Title:</b> Counter Improvised Threat Advanced Technologies</p>	-	-	21.398

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p><b>Description:</b> This effort matures and demonstrates technology to detect IED threats at standoff distances. Technologies include electro-optical, radar, light detection and ranging (LIDAR), atomic magnetometer and other technologies applicable to detecting IEDs and their components that can be integrated on dismounted Soldiers, ground, water-based and aerial systems or at fixed sites. This effort also matures and demonstrates technologies and network techniques to detect the electronic signature of radio-controlled IEDs, as well as technology critical to neutralizing and mitigating the effects of IEDs at standoff distances. Technologies include directed energy sources, energetic or kinetic effectors, encasement of the threat and Soldier, platform and base protection technologies. Will demonstrate these technologies to neutralize IEDs in-place and protect soldiers and equipment from the effects of IEDs. This effort also matures technologies that exploit data sciences including sensor processing algorithms, integration of sensor data, data processing and analytics, threat forecasting, and autonomous maneuver. Will demonstrate techniques that detect IED threats and identify trends to forecast probabilities of encountering or attributing IEDs based on operational data and machine learning techniques.</p> <p><b>FY 2025 Plans:</b> Will demonstrate electro-optical/infrared (EO/IR), electromagnetic (EM), and radio frequency (RF) sensor technologies coupled with automated detection algorithms for the standoff detection of IEDs across a broad range of emplacement scenarios and environments. Will continue to optimize existing and new sensor technologies on ground platforms, aerial platforms, and at fixed sites. Will validate the use of multiple sensor modalities with data processing techniques to improve detection of vehicle borne IEDs and personnel borne IEDs in various operational conditions. Will demonstrate kinetic, jamming, spoofing, and directed energy neutralization technologies to disrupt the functioning of IEDs in both stationary applications and on the move scenarios in militarily relevant scenarios. Will exploit and optimize sensor components and processing techniques to lower SWaP. Will validate artificial intelligence and machine learning techniques for autonomous detection of threats. Will demonstrate the use of "teamed" unmanned aerial vehicle and unmanned ground sensor to provide data to facilitate multiple look angles and characterize potential threats.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding increase reflects administrative restructure from tasks Standoff Detection of IED Threats in All Environments, IED Neutralization, Prevention and Mitigation, and Enabling C-IED Technologies within this Project.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	20.782	21.672	21.398

<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A
<b>Remarks</b>

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**D. Acquisition Strategy**  
N/A