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

Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 3: Advanced Technology Development (ATD)	R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology
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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	-	108.758	21.015	28.333	-	28.333	38.190	39.513	41.404	39.821	0.000	317.034
AE3: <i>Unconventional Countermeasures-Survivability ATech</i>	-	0.512	11.208	11.863	-	11.863	11.928	0.788	1.246	1.585	0.000	39.130
BN7: <i>Weapons Components Adv Technology (CA)</i>	-	98.000	-	-	-	-	-	-	-	-	0.000	98.000
CV6: <i>Optimized High Energy Laser Source Adv Tech</i>	-	6.852	6.743	4.188	-	4.188	5.547	5.653	5.051	3.499	0.000	37.533
DB3: <i>Radar Survivability through Dis Sensing Adv Tech</i>	-	3.394	3.064	6.724	-	6.724	8.054	4.239	4.344	-	0.000	29.819
IB1: <i>Integrated Beam Control Systems Demo for C-CM</i>	-	-	-	5.558	-	5.558	4.522	3.028	2.021	3.644	0.000	18.773
SU2: <i>Counter Small Unmanned Aircraft Sys (C-sUAS) Adv*</i>	-	-	-	-	-	-	8.139	25.805	28.742	31.093	0.000	93.779

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2025

Note

In Fiscal Year (FY) 2025, project IB1 / Integrated Beam Control Systems Demonstration for Counter-Cruise Missiles is a new start within PE 0603466A / Air and Missile Defense Advanced Technology.

A. Mission Description and Budget Item Justification

This Program Element (PE) matures demonstrates technology in support of Army Modernization Priority Air and Missile Defense by maturing, demonstrating and conducting system level experimentation for the development of advanced air defense technologies that reduce the cost curve of missile defense, restore overmatch, survive volley-fire attacks, and operate within sophisticated Anti-Access/Area Denial (A2/AD) and contested domains.

Research in this PE complements PE 0602150A (Air and Missile Defense Technology).

This PE is directly aligned to the Air & Missile Defense (AMD) Army Modernization Priority.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>
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Research is performed by the United States (U.S.) Army Futures Command (AFC), the United States Army Space and Missile Defense Command/Army Forces Strategic Command (SMDC/ARSTRAT), and the Engineer Research and Development Center (ERDC), and the United States Army Rapid Capabilities and Critical Technologies Office (RCCTO).

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	99.147	21.015	28.277	-	28.277
Current President's Budget	108.758	21.015	28.333	-	28.333
Total Adjustments	9.611	0.000	0.056	-	0.056
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	10.000	-			
• SBIR/STTR Transfer	-0.389	-			
• Adjustments to Budget Years	-	-	0.056	-	0.056

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: BN7: *Weapons Components Adv Technology (CA)*

Congressional Add: *Program Increase - HEL for All-Terrain Vehicles*

Congressional Add: *Program Increase - Silicon Carbide Electronics*

Congressional Add: *Program Increase: Palletized Counter sUAS HEL Weapon System*

Congressional Add: *Program Increase: Weapons Components Advance Technology*

Congressional Add: *Program Increase - MISSILE AI FORCE APPLICATION SYNCHRONIZATION TESTBED*

Congressional Add: *Program Increase - MOBILE FORCE PROTECTION*

Congressional Add: *HEL Power and Thermal Subsystem*

Congressional Add Subtotals for Project: BN7

Congressional Add Totals for all Projects

	FY 2023	FY 2024
	12.000	-
	8.000	-
	20.000	-
	20.000	-
	8.000	-
	20.000	-
	10.000	-
Congressional Add Subtotals for Project: BN7	98.000	-
Congressional Add Totals for all Projects	98.000	-

Change Summary Explanation

Increased funding due to revised economic assumptions.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology				Project (Number/Name) AE3 / Unconventional Countermeasures-Survivability ATech			
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
AE3: <i>Unconventional Countermeasures-Survivability ATech</i>	-	0.512	11.208	11.863	-	11.863	11.928	0.788	1.246	1.585	0.000	39.130
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates technologies to increase survivability of personnel and critical assets using integrated unconventional countermeasures. These countermeasures include tone down concepts for signature management using novel materials, rapidly deployable, low-cost, multispectral survivability enhancement technologies as well as intuitive decision support technologies to select and assess non-kinetic protective measures.

Work in this Project complements Program Element (PE) 0602150A (Air and Missile Defense Technology) / Project AE2 (Unconventional Countermeasures-Survivability Tech).

The work cited is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is conducted by the United States Army Engineer Research and Development Center Geotechnical and Structures Laboratory.

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

	FY 2023	FY 2024	FY 2025
Title: Advanced Integrated Unconventional Countermeasures Applications Demonstrations	0.512	1.164	1.839
Description: This effort demonstrates methods and materials to defeat peer advanced reconnaissance, surveillance, targeting methods through advancements in material science and computational prototyping to reduce targetable signatures and confuse targeting systems.			
FY 2024 Plans: Will demonstrate a prototype system and corresponding auxiliary countermeasures with design influences produced by computational tools developed for signature management applications.			
FY 2025 Plans: Will mature and demonstrate physical prototype survivability enhancement kits for fire assets.			
FY 2024 to FY 2025 Increase/Decrease Statement: Funding increase reflects planned additional workflows as technologies are transitioned for maturation and demonstration.			
Title: Assured Protection of Layered Logistics Operations (APoLLO)	-	10.044	10.024

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>	Project (Number/Name) AE3 / <i>Unconventional Countermeasures-Survivability ATech</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p>Description: This effort matures and demonstrates unconventional countermeasures to protect joint logistical assets against emerging and dynamic threats to include expansion of core capabilities to other families of critical assets.</p> <p>FY 2024 Plans: Will mature and demonstrate passive unconventional countermeasures systems tailored for fixed logistics assets. Will mature active countermeasures with specific focus on low-cost logistics protection of hard-to-move unique system and subsystems.</p> <p>FY 2025 Plans: Will refine and demonstrate passive unconventional countermeasures systems tailored for additional fixed logistics assets. Will optimize active countermeasures with specific focus on low-cost logistics protection of hard-to-move unique system and subsystems.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Decrease funding reflect planned lifecycle for this effort.</p>			
Accomplishments/Planned Programs Subtotals	0.512	11.208	11.863

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology				Project (Number/Name) BN7 / Weapons Components Advanced Technology (CA)			
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
BN7: Weapons Components Advanced Technology (CA)	-	98.000	-	-	-	-	-	-	-	-	0.000	98.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
Congressional Interest Item funding provided for Weapons Components Advanced Technology.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Weapons Components Advanced Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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

	FY 2023	FY 2024
Congressional Add: Program Increase - HEL for All-Terrain Vehicles	12.000	-
FY 2023 Accomplishments: Program increase supporting advanced technology development of high energy lasers for all-terrain vehicles. Furthers efforts executed under FY 2022 congressional add Program Increase. This effort provided research and development on advanced weapons technology leading to a high energy laser system for vehicles that support Army Brigade and below operations. It further enabled soldiers to have a Counter- small Unmanned Air System (C-UAS) weapon system at the small unit level and requirements put forth by the Joint Counter-UAS Office. The effort built upon the advanced laser technologies being developed for counter rockets, artillery, and mortars (C-RAM) and to be integrated on larger vehicles (10-ton FMTV). These integrated systems find their best use in all theaters for C-UAS defense applications, a critical deficiency. Work performed by the Rapid Capabilities and Critical Technologies Office (RCCTO), in Huntsville, Alabama.		
Congressional Add: Program Increase - Silicon Carbide Electronics	8.000	-
FY 2023 Accomplishments: Congressional Interest Item funding provided for Silicon Carbide Electronics		
Congressional Add: Program Increase: Palletized Counter sUAS HEL Weapon System	20.000	-

UNCLASSIFIED

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Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology	Project (Number/Name) BN7 / Weapons Components Advanced Technology (CA)
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024
<p>FY 2023 Accomplishments: This effort integrated Palletized High Energy Laser (P-HEL) in a tactically relevant, rugged, transportable and fieldable fixed and semi-fixed command and control configuration. This integrated P-HEL provided the DoD with mature production prototype 20-kilowatt (kW) Counter- small Unmanned Air Systems (C-sUAS) to provide a solution for the detection, identification, management and mitigation of sUAS threats. This transition positions Army Rapid Capabilities and Critical Technologies Office (RCCTO) to deliver the P-HEL system with residual combat capabilities in support of Joint Warfighting and Interagency Organizations in collaboration with the Joint Counter sUAS Organization (JCO).</p> <p>Work performed by the Rapid Capabilities and Critical Technologies Office (RCCTO), in Huntsville, Alabama.</p>		
<p>Congressional Add: Program Increase: Weapons Components Advance Technology</p> <p>FY 2023 Accomplishments: This effort provided for the integration of a 300- kW class High Energy Laser Weapon System and all subsystems to be transported and prepped for system level testing at White Sands Missile Range (WSMR) in support of Army Integrated Air and Missile Defense. This effort will conclude with the integration of the laser and all subsystems into a container on an Army tactical truck complete with beam director assembly and battery packs - critical for WSMR testing.</p> <p>Work performed by the Rapid Capabilities and Critical Technologies Office (RCCTO), in Huntsville, Alabama.</p>	20.000	-
<p>Congressional Add: Program Increase - MISSILE AI FORCE APPLICATION SYNCHRONIZATION TESTBED</p> <p>FY 2023 Accomplishments: Congressional Interest Item funding provided for MISSILE AI FORCE APPLICATION SYNCHRONIZATION TESTBED</p>	8.000	-
<p>Congressional Add: Program Increase - MOBILE FORCE PROTECTION</p> <p>FY 2023 Accomplishments: Congressional Interest Item funding provided for MOBILE FORCE PROTECTION</p>	20.000	-
<p>Congressional Add: HEL Power and Thermal Subsystem</p> <p>FY 2023 Accomplishments: This funding furthered research and develop in Power and Thermal Subsystem for High Energy Laser (HEL) systems in the area of direct current power generation modules, stackable power modules, optimization of heat exchanger materials and working fluids; "mixed material brazing" heat exchangers to increase overall efficiency and reduce costs and improvements to vapor compression systems. Additionally, this funding allowed for investigation of regeneration of excessive heat generated back into energy to augment the HEL power supply.</p>	10.000	-
Congressional Adds Subtotals	98.000	-

UNCLASSIFIED

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Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>	Project (Number/Name) BN7 / <i>Weapons Components Advanced Technology (CA)</i>

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology				Project (Number/Name) CV6 / Optimized High Energy Laser Source Adv Tech			
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
CV6: Optimized High Energy Laser Source Adv Tech	-	6.852	6.743	4.188	-	4.188	5.547	5.653	5.051	3.499	0.000	37.533
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates Optimized High Energy Laser Source advanced technology establishing a more affordable laser source for application in High Energy Laser weapon systems. This Project will deliver a lower cost laser weapon source to next generation HEL systems.

Research in this Project complements other Army Directed Energy efforts conducted under (PE) 0602150A (Air and Missile Defense Technology)/Projects DC1 (Next Generation Directed Energy Concept Development and Analysis) and CV7 (High Energy Laser Direct Diode Applied Technology).

The cited research is consistent with the Army's modernization programs, the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the Army's future capability opportunities for leap-ahead technology for Directed Energy.

Research is performed by the United States Army Space and Missile Defense Command - Technical Center (USASMDC-TC) in coordination with RCCTO and PEO Missiles and Space/PM Shield.

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

	FY 2023	FY 2024	FY 2025
Title: Optimized High Energy Laser Source Advanced Technology	6.852	6.743	4.188
Description: This effort matures and demonstrates Optimized High Energy Laser Source Advanced Technology to demonstrate a more affordable laser source for application in High Energy Laser weapon systems. This effort will provide a low-cost, rugged and compact laser source. Delivering an affordable 50 kW-class laser subsystem with 50% efficiency and 80% fractional Power in the Bucket enabling improvements in efficiency and Size, Weight, and Power laser source resulting in a smaller footprint while reducing logistics requirements.			
FY 2024 Plans: This effort will continue improvement and complete the integration of the 50 kW-class semiconductor high energy laser subsystem module with a focus on validating performance of components and subsystems as they are integrated. Initiate plans to integrate the 50 kW-class laser module into a testbed for field demonstration the following year.			
FY 2025 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>	Project (Number/Name) CV6 / <i>Optimized High Energy Laser Source Adv Tech</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
This effort will continue improvement and integration of the 50 kW-class semiconductor high energy laser subsystem module with a focus on validating performance of components and subsystems as they are integrated. As a risk reduction this effort will integrate a 30 kW-class ruggedized laser module into a prototype High Energy Laser System for testing and experimentation. <i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> Funding decrease reflects a planned shift in the focus of work to integration and field demonstration.			
Accomplishments/Planned Programs Subtotals	6.852	6.743	4.188

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology				Project (Number/Name) DB3 / Radar Survivability through Dis Sensing Adv Tech			
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
DB3: Radar Survivability through Dis Sensing Adv Tech	-	3.394	3.064	6.724	-	6.724	8.054	4.239	4.344	-	0.000	29.819
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates critical radar capability enhancements to defeat advanced Air and Missile threats and protect Army maneuver forces and critical assets. Radar enhancements are required for advanced Electronic Protection (EP) techniques against advanced jammers, electronic Combat Identification (CID), and resource optimization across the threat spectrum while retaining 360-degree coverage capability. Technology maturation in the project includes providing capabilities for: dispersed multi-static operation, classifying/tracking emerging threats and high-volume threats; adaptive digital beam forming to enable resource efficiency, performance in a dynamic clutter environment and enhanced survivability in a contested battlespace; and multi-modal tracking and additional discrimination models to support diverse and emerging threats, such as swarms and guided munitions. Multiple soldier touchpoints and demonstrations of developed technology to autonomously synchronize multiple radars across a distributed battlefield in the presence of countermeasures and the denial of Global Positioning System (GPS) will be performed in lab and field environments. Legacy concepts for centralized deployment planning and battle management overly constrain distributed Integrated Air and Missile Defense (IAMD) mission effectiveness. Multi-Domain Operations (MDO) requires distributed and collaborative engagement decision making. The Augmented Intelligence for Mission Planning and Control effort will develop and mature Artificial Intelligence (AI) Decision Aids enabling operators to continuously manage IAMD component deployments and to select best engagement options in support of Multi-Domain Operations (MDO).

This work is coordinated with Army Program Element (PE) 0602141A (Lethality Technology) / Project CG4 (Advanced Radar Concepts and Technologies); PE 0602148A (Future Vertical Lift Technology) / Project CC3 (FVL Radar Technologies); and PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics).

Work in this Project complements Program Element (PE) 0602141A (Lethality Technology) / Project CJ7 (Future Air Defense Missile Enabling Tech) and PE 0602150A (Air and Missile Defense Technology) / Project DA9 (Radar Survivability through Dis Sensing Tech).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Aviation & Missile Center (AvMC).

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

	FY 2023	FY 2024	FY 2025
Title: Radar Survivability through Dis Sensing (RSDS) Adv Tech	3.394	3.064	3.701
Description: Matures, and demonstrates critical radar capability enhancements to defeat advanced Air and Missile threats and protect Army maneuver forces and critical assets.			

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Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>	Project (Number/Name) DB3 / <i>Radar Survivability through Distributed Sensing Advanced Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
<p>FY 2024 Plans: Will select and execute RSDS technology demonstrations of critical capabilities to generate performance metrics. Initial tactical M&S and live demonstrations in the field will incorporate soldier touch points to compare multi and mono-static operations. User feedback early in the technology development process will ensure developed technology is interoperable with Air Defense radars through software built to avoid costly hardware modifications. Utilize the low-cost distributed sensing multi-static Radar testbed S&T development to assess performance and inform future requirements.</p> <p>FY 2025 Plans: Will conduct an initial modeling and simulation demonstration that will assess technologies developed under the communication among sensors (CAS) task to pass detection information between sensors; mature software technology for future multi-static demonstrations. Incorporate user feedback to ensure developed technology is interoperable with Air Defense radars through software built to avoid costly hardware modifications.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Funding increase is an economic adjustment.</p>				
<p>Title: Augmented Intelligence for Mission Planning and Control</p> <p>Description: Provides mission effectiveness capabilities for MDO distributed & collaborative engagement decision making through maturation of Artificial Intelligence (AI) decision aids that enable operators to continuously manage IAMD component deployments and select best engagement options and pairings. Performs test bed demonstrations of collaborative AI processes enabling a mix of fixed and mobile AMD weapons to defeat full MDO threat spectrum.</p> <p>FY 2025 Plans: Will develop and evaluate various decision aids for introduction into future Air Defense Command and Control (C2) systems to reduce cognitive overload; decision aids will be evaluated in a virtual battlespace to determine their viability for the users; refine decision aids and create a process that can be incorporated into future Air Defense C2 Systems, thus building a foundation for how the Army implements Artificial Intelligence/Machine Learning (AI/ML) for AMD mission planning and optimization of weapon system pairing.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Funding increase reflects planned initiation of this effort to develop and mature Artificial Intelligence (AI) Decision Aids enabling operators to continuously manage IAMD component deployments and to select best engagement options in support of Multi-Domain Operations (MDO).</p>		-	-	3.023
Accomplishments/Planned Programs Subtotals		3.394	3.064	6.724

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Ad vanced Technology</i>	Project (Number/Name) DB3 / <i>Radar Survivability through Dis Sensing Adv Tech</i>

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603466A / Air and Missile Defense Advanced Technology				Project (Number/Name) IB1 / Integrated Beam Control Systems Demo for C-CM			
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
IB1: Integrated Beam Control Systems Demo for C-CM	-	-	-	5.558	-	5.558	4.522	3.028	2.021	3.644	0.000	18.773
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Integrated Beam Control Systems Demo for C-CM is a new start within the Air and Missile Defense Advanced Technology program in FY 2025.

A. Mission Description and Budget Item Justification

This program element will mature and demonstrate advanced beam control technology to extend the effective range of a High Energy Laser weapon system. Integrate a 50-cm class off-axis telescope into a government Testbed with advanced adaptive optics and tracking. Validate and optimize advanced adaptive optics and laser quality tracking algorithms in order to demonstrate capabilities that will increase effective range of the Indirect Fire Protection Capability High Energy Laser weapon system.

Research in this Project complements other Army Directed Energy efforts conducted under (PE) 0602150A (Air and Missile Defense Technology)/Projects DC1 (Next Generation Directed Energy Concept Development and Analysis) and DE3 (Advanced Beam Control Component Development for Counter-Cruise Missile).

The cited research is consistent with the Army's modernization programs, the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the Army's future capability opportunities for leap-ahead technology for Directed Energy.

Research is performed by the United States Army Space and Missile Defense Command - Technical Center (USASMDC-TC) in coordination with RCCTO.

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

	FY 2023	FY 2024	FY 2025
Title: Integrated Beam Control Systems Demo for C-CM	-	-	5.558
Description: Supports Advanced Beam Control Phase I (extend effective range of the Indirect Fire Protection Capability High Energy Laser weapon system).			
Supports Advanced Beam Control Phase II (extend effective range of the Indirect Fire Protection Capability High Energy Laser weapon system).			
Demonstrates New Technologies for Beam Director Assemblies.			
Support the Space and Missile Defense Commands efforts in developing Counter Cruise Missile Components/Subsystems.			
FY 2025 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024		
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603466A / <i>Air and Missile Defense Advanced Technology</i>	Project (Number/Name) IB1 / <i>Integrated Beam Control Systems Demo for C-CM</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
Initiate integration of a 50 cm-class beam expander, advanced adaptive optics, and advanced laser quality track subsystems with a high energy laser testbed. Initiate field validation strategy to iteratively optimize advanced algorithms. Begin progress towards demonstrating extended effective range of a high energy laser weapon system and transitioning Technology Readiness Level (TRL) 6 technologies to a program of record for a block upgrade to current system architectures.				
FY 2024 to FY 2025 Increase/Decrease Statement: Funding increase reflects a planned New Start required to demonstrate advanced beam control capabilities to a Technical Readiness Level 6 and support transition to a program of record as a block upgrade.				
Accomplishments/Planned Programs Subtotals		-	-	5.558
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				