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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / Combat Vehicle Improvement Programs
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	272.438	194.229	146.635	-	146.635	97.719	97.799	98.842	99.944	Continuing	Continuing
280: RECOV VEH IMPROV PROG	-	104.977	66.435	13.197	-	13.197	-	-	-	-	Continuing	Continuing
330: Abrams Tank Improve Prog	-	118.471	61.205	96.240	-	96.240	83.621	83.688	84.581	85.524	Continuing	Continuing
371: Bradley Improve Prog	-	19.153	-	-	-	-	-	-	-	-	Continuing	Continuing
DD4: AMPV Improvement Program	-	-	-	12.354	-	12.354	-	-	-	-	Continuing	Continuing
EE2: Stryker Improvement	-	29.837	66.589	24.844	-	24.844	14.098	14.111	14.261	14.420	Continuing	Continuing

**Note**

DD4: AMPV Improvement Program is a new start in FY24

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

Program Element (PE) 0203735A Combat Vehicle Improvement Programs corrects vehicle deficiencies identified during Army operations; continues technical system upgrades to include the integration of applicable technologies on ground systems; addresses needed evolutionary enhancements to tracked combat vehicles; and develops technology improvements which have application to or insertion opportunities across multiple Ground Combat Systems vehicles. This PE provides combat effectiveness and Operating and Support (O&S) cost reduction enhancements for the Abrams tanks, Bradley Fighting Vehicles and Stryker Family of Vehicles (FOVs) through a series of product improvements.

The strategy for Abrams and Bradley will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future. This effort was approved by the Army Acquisition Executive in 3rd Quarter (QTR) Fiscal Year (FY) 2011.

The Abrams Main Battle Tank program has approved Engineering Change Proposals (ECPs) to restore lost capability, host inbound technologies, and to meet objective performance requirements called out in approved platform requirements documents. The strategy for Abrams will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future. This approach was approved by the Army Acquisition Executive in 3rd Quarter (Q) Fiscal Year (FY) 2011 and revalidated in an Army Requirements Oversight Council (AROC) decision in 2018. The Army will modernize the tank fleet through a series of deliberate, incremental Engineering Change Proposals (ECPs). The current M1A2 SEPv3 tank (Engineering Change Proposal (ECP) 1A - Power) is in production and is designed to mitigate Space, Weight, and Power (SWaP) limitations as well as create additional margin for integration of future technologies being developed by existing Programs of Record (POR). The M1A2 SEPv4 tank is a follow-on ECP (ECP 1B - Lethality) focused on lethality improvements to integrate higher functioning sensors, modules, and fire control. The Army anticipates achieving a two-variant (M1A2 SEPv3 and M1A2 SEPv4) fleet by 2038. In FY22, MBTS received a \$65M Congressional Add for efforts to mature technology for the next Abrams modernization program. The FY22 congressional add was received in 4th Quarter FY22 and will carry the effort through FY23. In FY24, a new cost element was added for Abrams Modernization. This work is a continuation

**UNCLASSIFIED**

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<p>of work from the FY22 Congressional Add. FY24 efforts continue to mature technologies to help Army Senior Leaders shape the next Abrams modernization program. Focus is on, but not limited to, weight reduction to reclaim operational mobility, improve Abrams lethality, and survivability beyond M1A2 SEPv4.</p> <p>The Recovery Vehicle Improvement program is an Engineering Change Proposal (ECP) that will allow the current recovery vehicle to regain Single Vehicle Recovery (SVR) for the heaviest tracked combat vehicle as defined in the Heavy Equipment Recovery Combat Utility Lift and Evacuation System (HERCULES) Enhanced M88A2E1 Capability Production Document Increment 2 dated 20 January 2017. The fielded M88A2 HERCULES lacks the necessary power, weight, and braking ability to safely support the recovery of the M1A2SEPv2 in all situations and with the next generation M1A2SEPv3 weight growth, the problem will get worse. The M88A3 vehicles will bring back the operational capability of the single vehicle recovery. The increased winching and lifting capability accommodates all 80 ton Abrams variants. Without this increased capability, units must use two M88A2 Medium Recovery Vehicles to perform the necessary spectrum of recovery operations.</p> <p>The Abrams M1A2 SEP V2 and M2/M3A3 Bradley Fighting Vehicles are at or exceed Space, Weight, and Power-Cooling (SWaP-C) limitations. In order to host and restore lost platform capability, the Abrams Tank and Bradley Fighting Vehicle programs will execute a series of ECPs to support the current embedded systems and to facilitate integration of technologies currently in development under other existing Programs of Record. The ECPs are not intended to exceed the operational capability outlined in current system requirements documents, but rather to ensure that the existing system performance is not further degraded and that Army mission equipment packages can be integrated on the Abrams and Bradley Platforms.</p> <p>The Armored Multi-Purpose Vehicle (AMPV) is the materiel solution for replacement of the Army's Armored Personnel Carrier (M113) Family of Vehicles (FoV) within the Armored Brigade Combat Team (ABCT). It will mitigate current and future capability gaps in force protection, survivability, mobility, reliability, and interoperability across the Spectrum of Conflict. AMPV Improvement will address the development of Survivability, Lethality, Mobility, Network Lethality, and Communication, Command and Control (C3) improvements within the AMPV Family of Vehicles (FOVs). The strategy for AMPV Combat Vehicle Improvement line will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future while transitioning material solutions for integration and implementation to the AMPV FOV fleet to increase combat capability. FY 2024 Base funding in the amount of \$12.300 million for Project DD4 supports funding for: Army requested changes and those stemming from the Initial Operational Test and initiates development and integration of Enhanced Driver Viewer System (EDVS) and Composite Rubber Track (CRT) on the AMPV FOV. The EDVS color camera system will provide the driver high definition, low and visible light capability to provide the driver substantially improved situational awareness while driving in all weather conditions. The CRT offers significant advantages compared to traditional linked steel track currently utilized to include vehicle weight savings, improved fuel economy, improved track and road wheel durability, reduced Soldier maintenance.</p> <p>Stryker Improvement will address the development of Lethality, Survivability, Mobility, Network Lethality, and Communication, Command and Control (C3) improvements within the Stryker Family of Vehicles (FOVs). Principal development efforts include upgrades associated with the Stryker Double V-Hull A1 (DVH A1) Engineering Change Proposal (ECP), Common Remotely Operated Weapon Station-Javelin (CROWS-J) ONS, Stryker Survivability Enhancement, and Stryker Lethality ECPs. DVH A1 ECP upgrades restore Stryker DVH Space, Weight, and Power-Cooling (SWaP-C) lost as a result of incorporating vehicle changes to counter threats encountered during deployment operations while allowing the future network to be hosted without further degradation in vehicle protection and mobility. The Stryker CROWS-J ONS efforts addressed Urgent Operational Need to increase the lethality of Stryker Infantry Carrier Vehicles (ICV) within the United States Army European Command (USAREUR). The Stryker Survivability Enhancements address evolving threats by assessing survivability improvements, to include but not limited to, 360 Situational</p>		

**UNCLASSIFIED**

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Awareness, reactive armor tiles, and integration of emerging and existing technologies and other Stryker based platform solutions. The Stryker platform will also include future Mission Equipment Package (MEP) integration that includes but not limited to the Fire Direction Center (FDC) providing an on-the-move capability that processes voice and digital data while maintaining contact with the indirect fire team over extended distances. Stryker Lethality ECP efforts (CROWS-J, Anti-Tank Guided Missile (ATGM), and other capabilities) focus on the integration of a suite of complementary MEP lethality upgrades that will improve the suppressive fire and armored vehicle engagement capabilities across the Army's Stryker Brigade Combat Teams (SBCTs). Additionally, the Lethality MEP upgrades will address existing obsolescence issues of the Remote Weapon Station (RWS) with the CROWS and CROWS-J upgrade. The ATGM ECP will upgrade the Modified Improved Target Acquisitions System (MITAS), incorporating a far target locator and enabling the dissemination of target acquirement information utilizing networked lethality, providing a common operating picture. Stryker Network Modernization will formalize the system integration of the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS), and Tactical Cloud Package (TCP) as part of Mounted Capability Set 23 (MCS23) for the Stryker platform. Upgrades of the Stryker flat-bottom hull and DVH variants were completed to mitigate known system deficiencies. In support of Readiness, Training-Rapid Fielding of Digitization of Stryker, Army Rapid Sustainment Improvement Process (RSIP) to develop two-way interface between Global Combat Support System - Army (GCSS-Army) and the Operator Tablet to support data transfers of maintenance work orders, parts ordering and updating of maintenance plans.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	280.107	192.310	120.410	-	120.410
Current President's Budget	272.438	194.229	146.635	-	146.635
Total Adjustments	-7.669	1.919	26.225	-	26.225
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-4.557			
• Congressional Rescissions	-	-			
• Congressional Adds	-	6.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-7.669	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	26.225	-	26.225
• FFRDC Transfer	-	-0.024	-	-	-

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

**Project: 280: RECOV VEH IMPROV PROG**

Congressional Add: *Wireless Intercommunication System Encryption*

Congressional Add Subtotals for Project: 280

**Project: 330: Abrams Tank Improve Prog**

Congressional Add: *CONGRESSIONAL ADD - Abrams Modernization*

	<b>FY 2022</b>	<b>FY 2023</b>
	-	6.500
	-	6.500
	65.000	-

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Army	<b>Date:</b> March 2023
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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

Congressional Add: *CONGRESSIONAL ADD - Next Generation Auxiliary Power Unit*

Congressional Add Subtotals for Project: 330

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	5.000	-
	70.000	-
	70.000	6.500

**Change Summary Explanation**

The FY24 increase for Abrams (330) reflects an expansion of Abrams Modernization efforts.

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				<b>Project (Number/Name)</b> 280 / <i>RECOV VEH IMPROV PROG</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
280: <i>RECOV VEH IMPROV PROG</i>	-	104.977	66.435	13.197	-	13.197	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The M88 Heavy Equipment Recovery Combat Utility Lift and Evacuation System (HERCULES), designated as an Acquisition Category (ACAT) IC program on 15 Jun 2016, has been providing towing, winching, and hoisting operations to support battlefield recovery operations and evacuation of heavy tanks and other tracked combat vehicles since its production and deployment in 1998. The M88 HERCULES recovers tanks mired to different depths, removes M1 Abrams turrets and power packs, and uprights overturned heavy combat vehicles. Currently, the M88A2 is unable to safely perform Single Vehicle Recovery (SVR) of the Abrams tank in all conditions, due to added weight/survivability improvements made to the tank. To ensure single vehicle recovery is met, Project Manager-Main Battle Tank Systems (PM-MBTS) will develop and integrate Engineering Change Proposal (ECP) technologies for the M88A2 HERCULES through an initiative to meet its operational requirements of single vehicle recovery throughout its life cycle. This initiative is not intended to exceed current operational capability but will instead regain single vehicle recovery capability of the heaviest tracked combat vehicle.

Fiscal Year (FY) 2024 Base dollars will fund product development, continued USG prototype testing and program management office support; to include labor, training, travel, supplies, and equipment to effectively manage the program. The program completes government system level test and verification, along with logistics demonstration activities within FY 2024. The program will conduct a Production Readiness Review (PRR) to ensure readiness to proceed to vehicle production.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Product Development	102.311	35.548	4.401
<b>Description:</b> Design and Development of ECPs.			
<b>FY 2023 Plans:</b> The program continues OTA project oversight, supports completion of the last of (8) M88A3 prototype builds, identifies user touch points and preparation of production contract(s).			
<b>FY 2024 Plans:</b> The program begins ramping down the OTA project oversight, support for system level verification and test execution, as well as user touch points; begins preparation of production contract(s).			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>PD CRS Product Development will decrease from FY 2023 to FY 2024. The period of performance for the M88A3 OTA will conclude 1Q FY 2025, significantly lowering overall design and logistics burden during FY 2024.</p> <p><b>Title:</b> Test and Evaluation</p> <p><b>Description:</b> The Army is conducting Developmental Test and Evaluation (DT&amp;E) on (8) prototype M88A3 vehicles to confirm Single Vehicle Recovery capability for an 80T Main Battle Tank. Test data supports an evaluation of the M88A3 for use in a production decision in 1Q FY 2025. DT&amp;E for the M88A3 includes safety testing, automotive performance, recovery, transportability, Reliability Availability and Maintainability (RAM), Electromagnetic Interference (EMI), Cybersecurity, Survivability-Live Fire Test &amp; Evaluation (LFT&amp;E), Environmental Effects, Logistics Demonstration, and Soldier Touch Point.</p> <p><b>FY 2023 Plans:</b> The USG will continue test planning and preparation activities started in FY 2022 leading into a full M88A3 test program starting in FY 2023. The test program will consist of the DT&amp;E effort, conducted at both Aberdeen Test Center (ATC) and Yuma Proving Grounds (YPG) and technical manual validation located at the contractor facility.</p> <p><b>FY 2024 Plans:</b> The USG will continue all test activities started in FY 2023 i.e., DT&amp;E conducted at both Aberdeen Test Center (ATC) and Yuma Proving Grounds (YPG), as well as technical manual validation and the logistics demonstration occurring at the contractor facility.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to partial completion of the M88A3 test program. FY 2024 funding will be used to address test delays and/or vehicle deficiencies identified during testing. M88A3 test program will ramp up in 4Q of FY 2023 and will continue into FY 2024 for 8 vehicles. This includes RAM, Live Fire, Soldier Touch Points, as well as Logistics Demonstration performed at 2 USG locations, Aberdeen Test Center, and Yuma Proving Ground.</p>		0.712	19.849	6.408
<p><b>Title:</b> Program Management Office (PMO) Support</p> <p><b>Description:</b> PMO support includes Systems Engineering, Logistics, Government and in-house support Contractor salaries, travel and other support costs required to effectively manage the program.</p> <p><b>FY 2023 Plans:</b> The FY 2023 program management office support continues for government systems engineering, logistics and test support at multiple sites in FY 2023 to include labor, training, travel, supplies, and equipment to effectively manage the program. Labor efforts continue with OTA project oversight and supports completion of the last of (8) M88A3 prototype builds. Lastly, PMO</p>		1.954	2.350	2.388

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army	<b>Date:</b> March 2023
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2022	FY 2023	FY 2024
<p>supports activities transitioning into test and evaluation support for system-level verification and test and preparation of production contract(s).</p> <p><b>FY 2024 Plans:</b> The FY 2024 program management office completes it's support towards the OTA project oversight, government systems engineering, logistics and test support at multiple sites as the program transitions into preparation of the M88A3 production contracting efforts. PMO support includes labor, training, travel, supplies, and equipment to effectively manage the program.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> FY 2024 increase reflects economic assumptions.</p>			
<p><b>Title:</b> SBRR/STTR</p> <p><b>Description:</b> Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)</p> <p><b>FY 2023 Plans:</b> Funding transferred in accordance with Title 15 USC 638.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.</p>	-	2.188	-
<b>Accomplishments/Planned Programs Subtotals</b>	104.977	59.935	13.197

	FY 2022	FY 2023
<p><b>Congressional Add:</b> Wireless Intercommunication System Encryption</p> <p><b>FY 2023 Plans:</b> The USG will contract with the M88 Original Equipment Manufacturer (OEM) and wireless communication supplier to begin integration design work for system encryption capability, leading to demonstration and test.</p>	-	6.500
<b>Congressional Adds Subtotals</b>	-	6.500

<b>C. Other Program Funding Summary (\$ in Millions)</b>			<u>FY 2024</u>	<u>FY 2024</u>	<u>FY 2024</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Complete</u>	<u>Total Cost</u>
• GA0570: <i>IMPROVED RECOVERY VEHICLE (M88 HERCULES)</i>	51.725	132.203	41.058	-	41.058	151.351	158.437	153.870	144.625	0.000	833.269
<b>Remarks</b>											

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 280 / <i>RECOV VEH IMPROV PROG</i>

**D. Acquisition Strategy**

The Project Manager (PM) for Main Battle Tank Systems (MBTS) is executing an Engineering Change Proposal (ECP) to regain single vehicle recovery capability of the M88A2 HERCULES vehicle. The strategy utilizes the Detroit Arsenal Automotive Other Transaction Authority (DA2 OTA) which competitively awarded a single contract to develop, integrate and produce (8) prototype vehicles entering testing in FY 2023. After achieving OTA success criteria, a contract award using procurement dollars procures up to (70) initial production vehicles, as well as the procurement of hardware kits/components comprised of engines, transmissions, track and suspensions. Follow on M88A3 production will utilize a Federal Acquisition Regulation (FAR) based contract through the defined Army Acquisition Objective (AAO). The M88A2 HERCULES production vehicles continue fielding to units through FY 2026.

**UNCLASSIFIED**

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 7				PE 0203735A / Combat Vehicle Improvement Programs				280 / RECOV VEH IMPROV PROG								
<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR/STTR Transfer	TBD	Various : Various	-	-		2.118		-		-		-	0.000	2.118	-	
<b>Subtotal</b>			-	-		2.118		-		-		-	0.000	2.118	N/A	
<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Product Development	Various	BAE Systems : TBD	215.599	97.859	Oct 2021	35.618	Oct 2022	4.401	Nov 2023	-		4.401	0.000	353.477	-	
Wireless Intercommunication System Encryption	TBD	BAE Systems : York, PA	-	-		6.500	Mar 2023	-		-		-	0.000	6.500	-	
<b>Subtotal</b>			215.599	97.859		42.118		4.401		-		4.401	0.000	359.977	N/A	
<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Office (PMO) Support	MIPR	PMO Support Offices, Ricardo Defense, DCS and Army Research Labs (ARL) : Various	6.861	1.971	Dec 2021	2.350	Dec 2022	2.388	Dec 2023	-		2.388	0.000	13.570	-	
<b>Subtotal</b>			6.861	1.971		2.350		2.388		-		2.388	0.000	13.570	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test and Evaluation	Various	Aberdeen Test Center (ATC), Yuma	1.009	5.147	Aug 2022	19.849	Feb 2023	6.408	Jan 2024	-		6.408	0.000	32.413	-	



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 280 / <i>RECOV VEH IMPROV PROG</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
M88A3 ECP Design/Develop Prototype Build/Component Quali.																												
Initial Log- Technical Manual Validation																												
Test Readiness Review (TRR)													▲ 1															
M88A3 ECP Government Test Program																												
System Verification Review (SVR)													▲ 2															
Log Demo Test													▲ 3															
M88A3 ECP Production Award Decision Point													▲ 4															
M88A3 ECP Production Award													▲ 5															
Production Validation Test (PVT)																					▲ 6							
M88A3 ECP Fielding Start Date (First Unit Equipped)																									▲ 7			

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 280 / <i>RECOV VEH IMPROV PROG</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
M88A3 ECP Design/Develop Prototype Build/Component Qualification	4	2019	3	2023
Initial Log- Technical Manual Validation	3	2023	2	2024
Test Readiness Review (TRR)	4	2023	4	2023
M88A3 ECP Government Test Program	4	2023	4	2024
System Verification Review (SVR)	3	2024	3	2024
Log Demo Test	3	2024	4	2024
M88A3 ECP Production Award Decision Point	1	2025	1	2025
M88A3 ECP Production Award	2	2025	2	2025
Production Validation Test (PVT)	4	2026	3	2027
M88A3 ECP Fielding Start Date (First Unit Equipped)	3	2027	3	2027

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Army **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
330: <i>Abrams Tank Improve Prog</i>	-	118.471	61.205	96.240	-	96.240	83.621	83.688	84.581	85.524	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Army has approved Engineering Change Proposals (ECPs) for the Abrams Main Battle Tank to restore lost capability, host inbound technologies, and to meet objective performance requirements called out in approved platform requirements documents. The strategy for Abrams will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future. This approach was approved by the Army Acquisition Executive in 3rd Quarter (Q) Fiscal Year (FY) 2011 and revalidated in an AROC decision in 2018.

The Army will modernize the tank fleet through a series of deliberate, incremental Engineering Change Proposals (ECPs). The current M1A2 SEPv3 tank (Engineering Change Proposal (ECP) 1A - Power) is in production and is designed to mitigate Space, Weight, and Power (SWaP) limitations as well as create additional margin for integration of future technologies being developed by existing Programs of Record (POR). The M1A2 SEPv4 tank is a follow-on ECP (ECP 1B - Lethality) focused on lethality improvements to integrate higher functioning sensors, modules, and fire control. The Army anticipates achieving a two-variant (M1A2 SEPv3 and M1A2 SEPv4) fleet by 2038.

In FY22, MBTS received a \$65M Congressional Add for efforts to mature technology for the next Abrams modernization program. The FY22 congressional add was received in 4th Quarter FY22 and will carry the effort through FY23. In FY24, a new cost element was added for Abrams Modernization. This work is a continuation of work from the FY22 Congressional Add. FY24 efforts continue to mature technologies to help Army Senior Leaders shape the next Abrams modernization program. Focus is on, but not limited to, weight reduction to reclaim operational mobility, improve Abrams lethality, and survivability beyond M1A2 SEPv4.

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

	FY 2022	FY 2023	FY 2024
<b>Title:</b> Abrams Lethality Engineering Change Proposal M1A2SEP V4/ECP 1B	33.097	6.062	12.446
<b>Description:</b> The Abrams SEP (System Enhancement Package) v4 program consists of lethality improvements primarily focused on the integration of 3rd Generation Forward Looking Infrared (FLIR). Additional improvements include a Laser Warning Receiver (LWR), Improved Thermal Management System (ITMS), and target acquisition sensor upgrades consisting of inclusion of color cameras, laser capabilities, and image processing. Other potential improvements include vehicle smoke generation, survivability enhancements, signature management improvements, embedded training enhancements, 360 Situational Awareness cameras, and weight reduction efforts. Trade studies, analysis and technology maturation will be performed to evaluate prospective improvements, along with obsolescence mitigation, and incorporation of inbound technologies currently under development.			
<b>FY 2023 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>SEPV4 program completes contractor led OEM testing and begins Army developmental test and evaluation in 3QFY23.</p> <p><b>FY 2024 Plans:</b> SEPV4 program will continue and complete Army developmental test and evaluation. Begin Army Live Fire Testing in Q4. Majority of contractor activities will focus on logistics products and resolving issues found in Army test and evaluation report.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The increase will be associated with resolving issues discovered during Army Test and Evaluation and SEPV4 vehicle logistics product development.</p>				
<p><b>Title:</b> Program Management Office (PMO) Support</p> <p><b>Description:</b> PMO Support includes Systems Engineering and Government and Contractor salaries, travel and other support costs required to effectively manage the program.</p> <p><b>FY 2023 Plans:</b> Continue Government Systems Engineering and Program Management office support. This will include labor, training, travel, supplies, and equipment to effectively manage the program.</p> <p><b>FY 2024 Plans:</b> Continue Government Systems Engineering and Program Management office support. This will include labor, training, travel, supplies, and equipment to effectively manage the program.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The slight increase in PMO support is due to salary increases. There is no anticipated change to headcount.</p>		2.064	5.394	5.825
<p><b>Title:</b> Test &amp; Evaluation - Engineering Change Proposal M1A2SEP V4/ECP 1B</p> <p><b>Description:</b> Comprises government test and evaluation of the SEP (System Enhancement Package) v4. Testing includes developmental, operational, and live fire test and evaluation. Government test modeling and simulation, detailed vehicle test planning, and initial test site preparation are also included.</p> <p><b>FY 2023 Plans:</b> SEPV4 program completes OEM testing and begins government developmental test and evaluation.</p> <p><b>FY 2024 Plans:</b> Will continue and complete Army developmental test and evaluation activities. Will begin Army Live Fire Testing in Q4.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>		3.410	9.829	7.081

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
The decrease is due to the conclusion of Army developmental testing and the transition to Army Live Fire Testing in Q4.				
<p><b>Title:</b> Lethality and Survivability Enhancements</p> <p><b>Description:</b> Enhances lethality primarily through integration of improved munitions (smart rounds), gun turret drive improvements, cannon improvements, image processing enhancements and advanced algorithms. Survivability enhancements will focus on improved sensors, 360 Situational Awareness, active protection systems, armor improvements, and unmanned system defeat. Mobility enhancements will focus on efforts to reduce the weight of the tank to ensure operational mobility.</p> <p><b>FY 2023 Plans:</b> Abrams continues integration of survivability enhancements and further investigates technologies that may reduce crew cognitive burden and overall weight of the tank to ensure operational mobility.</p> <p><b>FY 2024 Plans:</b> Abrams will continue integration of survivability enhancements and will further investigate mature technologies for future integration efforts.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The decrease is a result of FY23 activities narrowing the breadth of mature technologies.</p>		9.900	37.686	8.150
<p><b>Title:</b> Abrams Modernization</p> <p><b>Description:</b> Matures technologies to help Army Senior Leaders shape the next Abrams modernization program. Focus is on, but not limited to, weight reduction to reclaim operational mobility, improve Abrams lethality, and survivability beyond M1A2 SEpv4.</p> <p><b>FY 2024 Plans:</b> Will investigate, mature, and demonstrate candidate technology options in accordance with Army Senior Leader guidance.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> This is a new cost element in FY24 but a continuation of work from the FY22 Congressional Add for Abrams Modernization. This is work that continues to mature technology for the next Abrams modernization program.</p>		-	-	62.738
<p><b>Title:</b> SBIR/STTR Transfer</p> <p><b>FY 2023 Plans:</b> Actual SBIR/STTR Tax amount shown.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.</p>		-	2.234	-
<b>Accomplishments/Planned Programs Subtotals</b>		48.471	61.205	96.240

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>

	FY 2022	FY 2023
<b>Congressional Add:</b> CONGRESSIONAL ADD - Abrams Modernization <i>FY 2022 Accomplishments:</i> The Congressional Add of \$65M reflects an increase for Abrams Modernization efforts to include, but not limited to: Unmanned Turret, Autoloader and Automated Ammunition Handling System, Hydro-Pneumatic suspension, Integration APS, and Hybrid Electric Drive.	65.000	-
<b>Congressional Add:</b> CONGRESSIONAL ADD - Next Generation Auxiliary Power Unit <i>FY 2022 Accomplishments:</i> The Congressional Add of \$5M reflects an increase to evaluate integration of Hydro-Pneumatic Suspension Units onto the Abrams chassis.	5.000	-
<b>Congressional Adds Subtotals</b>	70.000	-

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• GA0750: <i>Abrams Upgrade Program</i>	1,145.837	1,247.340	800.323	-	800.323	1,094.468	1,156.019	784.931	1,404.395	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

Research & Development Contract - Sole Source, Cost Plus Incentive Fee (CPIF); SEP v4 - Research & Development Contract - Sole Source, CPIF.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 7				PE 0203735A / Combat Vehicle Improvement Programs				330 / Abrams Tank Improve Prog								
<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		2.234		-		-		-	0.000	2.234	-	
<b>Subtotal</b>			-	-		2.234		-		-		-	0.000	2.234	N/A	
<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Abrams SEPv4	SS/CIPIF	General Dynamics Land Systems : Sterling Heights, MI	371.959	33.097	Dec 2021	6.062	Oct 2022	12.446	Nov 2023	-		12.446	Continuing	Continuing	Continuing	
Lethality and, Survivability Enhancements	Option/ Various	Various : Various	14.361	9.900	May 2022	37.686	Jan 2023	8.150	May 2024	-		8.150	Continuing	Continuing	Continuing	
CONGRESSIONAL ADD - Abrams Mobility	TBD	General Dynamics Land Systems : Sterling Heights, MI	-	65.000	Jul 2022	-		-		-		-	0.000	65.000	-	
CONGRESSIONAL ADD - Auxiliary Power Unit	Various	Ricardo Defense and Blue Sky : Ricardo (MI); Blue Sky (FL)	-	5.000	Jul 2022	-		-		-		-	0.000	5.000	-	
Abrams Modernization	TBD	TBD : TBD	-	-		-		62.738	May 2024	-		62.738	0.000	62.738	Continuing	
<b>Subtotal</b>			386.320	112.997		43.748		83.334		-		83.334	Continuing	Continuing	N/A	
<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Office (PMO) Support	MIPR	PMO Support Offices : TACOM, GVSC, ARDEC, ARL, Picatinny	95.973	2.064	Dec 2021	5.394	Dec 2022	5.825	Dec 2023	-		5.825	Continuing	Continuing	Continuing	
<b>Subtotal</b>			95.973	2.064		5.394		5.825		-		5.825	Continuing	Continuing	N/A	



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Original Equipment Manufacturer (OEM) Testing																												
SEP V4 Developmental Testing																												
SEP V4 Test Readiness Review									▲ 1																			
Future Capability Enhancements																												
SEP V4 Live Fire Testing																												
SEP V4 Log Demo																												
SEP V4 Operational Testing																												
SEP V4 Materiel Release																	▲ 2											

**Note**  
SEP (System Enhancement Program)

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 330 / <i>Abrams Tank Improve Prog</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Original Equipment Manufacturer (OEM) Testing	3	2022	3	2023
SEP V4 Developmental Testing	3	2023	4	2024
SEP V4 Test Readiness Review	3	2023	3	2023
Future Capability Enhancements	2	2024	4	2026
SEP V4 Live Fire Testing	4	2024	2	2025
SEP V4 Log Demo	4	2024	1	2025
SEP V4 Operational Testing	2	2025	3	2025
SEP V4 Materiel Release	1	2026	1	2026
SEP V4 First Unit Equipped	4	2029	4	2029

**Note**

SEP (System Enhancement Program)

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				<b>Project (Number/Name)</b> 371 / <i>Bradley Improve Prog</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
371: <i>Bradley Improve Prog</i>	-	19.153	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Bradley Fighting Vehicle will continue to be a major combat vehicle in the Army Operational Force for the next 20-25 years. Current modernization efforts, such as the Track and Suspension Engineering Change Proposal (ECP) and the A4 Mobility ECP, address current space, weight, and power-cooling (SWAP-C) limitations. The Bradley will continue to modernize to support additional capabilities required to counter evolving threats in multi-domain operations including, but not limited to improved vehicle diagnostics and systems to increase maintainability, mobility, survivability, sensor digitization, improved power distribution, and cyber and software improvements. These improvements increase the Bradley Fighting Vehicle's ability to survive in a cyber and electronic warfare permissive environment.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Bradley Improvements	17.760	-	-
<b>Description:</b> Provided funding for the analysis, engineering, development, and integration to support Army directed inbound technologies, address critical obsolescence concerns and other improvements to the Bradley vehicles.			
<b>Title:</b> Bradley A4 ECP Program	0.253	-	-
<b>Description:</b> Current projections indicate the Bradley Fighting Vehicle and the Bradley Fire Support Vehicle will remain in the Armored Brigade Combat Team (ABCT) formation until the 2050s. Given this, additional Research and Development (R&D) is required to keep the force relevant. The Bradley Fighting Vehicle System (BFVS) improvements implemented through the ECP Program will focus on restoring lost platform capability and provide capacity to support Army inbound technologies and to facilitate integration of technologies currently in development under other existing programs of record.			
<b>Title:</b> Program Management Office (PMO) Support	1.140	-	-
<b>Description:</b> PMO Support included systems engineering, government and contractor salaries, travel, training and other support costs required to effectively manage the program.			
<b>Accomplishments/Planned Programs Subtotals</b>	19.153	-	-

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

<b>Line Item</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• GZ2400: <i>Bradley Program (MOD)</i>	460.385	260.398	158.274	-	158.274	129.907	102.738	101.136	104.154	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 371 / <i>Bradley Improve Prog</i>

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**D. Acquisition Strategy**

Product Manager Bradley will execute modification work orders following completion of development to support integrating FY 2022 funded capabilities into the formation at an average rate of three ABCTs per year. Software capability upgrades, including cyber, will be included in the next iteration of Voice, Video and Integrated Data (VVID) software in FY 2022 - FY 2024 time frame.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
2040 / 7				PE 0203735A / Combat Vehicle Improvement Programs				371 / Bradley Improve Program								
<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Bradley Improvements	MIPR	TBD : TBD	79.533	17.603	Feb 2022	-		-		-		-	Continuing	Continuing	Continuing	
Bradley A4 Engineering Change Proposal (ECP) Program	MIPR	PMO : Warren, Picatinny NJ	103.878	0.254	Dec 2022	-		-		-		-	0.000	104.132	-	
<b>Subtotal</b>			183.411	17.857		-		-		-		-	Continuing	Continuing	N/A	
<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
PMO/PEO Support/OGA	MIPR	PMO/PEO : Bradley ECP Program	38.312	0.783	Dec 2022	-		-		-		-	Continuing	Continuing	Continuing	
Government Engineering Support	MIPR	Various : Bradley ECP Program	53.034	0.513	Dec 2022	-		-		-		-	Continuing	Continuing	Continuing	
<b>Subtotal</b>			91.346	1.296		-		-		-		-	Continuing	Continuing	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Government Testing	MIPR	Various : Test Sites	58.020	-		-		-		-		-	Continuing	Continuing	Continuing	
<b>Subtotal</b>			58.020	-		-		-		-		-	Continuing	Continuing	N/A	
<b>Project Cost Totals</b>			332.777	19.153		-		-		-		-	Continuing	Continuing	N/A	
<b>Remarks</b>																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date: March 2023</b>		
<b>Appropriation/Budget Activity</b> 2040 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>		<b>Project (Number/Name)</b> 371 / <i>Bradley Improve Prog</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Bradley Improvements - Sensor Digitization - IBAS Develo...	█																											
Bradley Improvements - Sensor Digitization - SA	█				█																							
Bradley Improvements - Power Architecture	█				█																							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2024 Army</b>		<b>Date: March 2023</b>
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> 371 / <i>Bradley Improve Prog</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Bradley M2A4 Engineering Change Proposal (ECP) Program	1	2012	3	2021
Operational Test and Evaluation - Bradley A4 ECP	4	2020	2	2021
Bradley Improvements - Sensor Digitization - IBAS Development	4	2019	1	2022
Bradley Improvements - Sensor Digitization - SA	2	2020	4	2023
Bradley Improvements - Power Architecture	4	2019	4	2023

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				<b>Project (Number/Name)</b> DD4 / <i>AMPV Improvement Program</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
DD4: <i>AMPV Improvement Program</i>	-	-	-	12.354	-	12.354	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

AMPV Improvement Program is a new start within the Combat Vehicle Improvement Programs program in FY 2024.

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

The Armored Multi-Purpose Vehicle (AMPV) is the materiel solution for replacement of the Army's Armored Personnel Carrier (M113) Family of Vehicles (FoV) within the Armored Brigade Combat Team (ABCT). It will mitigate current and future capability gaps in force protection, survivability, mobility, reliability, and interoperability across the Spectrum of Conflict. AMPV Improvement will address the development of Survivability, Lethality, Mobility, Network Lethality, and Communication, Command and Control (C3) improvements within the AMPV Family of Vehicles (FOVs). The strategy for AMPV Combat Vehicle Improvement line will focus on incrementally delivering capability to the warfighter to meet both near-term limitations as well as mitigating gaps and maintaining combat overmatch in the future while transitioning material solutions for integration and implementation to the AMPV FOV fleet to increase combat capability.

FY 2024 Base funding in the amount of \$12.354 million for Project DD4 supports funding for: Army requested changes and those stemming from the Initial Operational Test and initiates development and integration of Composite Rubber Track (CRT), Fire Direction Center (FDC) and Modular Turreted Mortar System (MTMS) on the AMPV FOV. As required, support Army assessment, experimentation, testing efforts relating to emerging Army requirements impacting the AMPV design. Composite Rubber Track (CRT) is a single continuous 'band' of track manufactured from multiple rubber compounds, Kevlar, steel reinforcement, and metallic composite stiffeners. The CRT offers significant advantages compared to traditional linked steel track currently utilized to include vehicle weight savings, improved fuel economy, improved track and road wheel durability, reduced Soldier maintenance. Fire Direction Center (FDC) mission role needs to include capability to support the ability to conduct analog fire mission processing (i.e., "Charts and Darts"). Modular Turreted Mortar System (MTMS) will provide added capabilities in 120mm caliber: low angle fires, fire on the move capability, increased range, and improved crew protection with turret.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Armored Multi Purpose Vehicle (AMPV) Product Development	-	-	11.520
<b>Description:</b> Provides funding for the analysis, engineering, development, and integration to support Army directed inbound technologies as well as any additional fixes that resulted from AMPV Test and Evaluation. As required, support Army assessment, experimentation, and testing efforts relating to emerging Army requirements impacting the AMPV design.			
<b>FY 2024 Plans:</b> Conduct system level integration and engineering efforts to upgrade and design mobility, survivability, reliability, and lethality upgrades. Will conduct trade studies, market surveys, select and demonstrate capability for FCD and MTMS projects. CRT will			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> DD4 / <i>AMPV Improvement Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>start the design and related engineering changes, start track qualification, and begin logistical development packages for the AMPV FOV. FDC will start the design and related engineering efforts to reconfigure the AMPV variant to execute the necessary functions. MTMS will execute technology demonstration to provide body of knowledge for future decisions on acquisition and integration on the AMPV vehicle.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> New start program for AMPV Combat Improvement Program in FY24.</p>				
<p><b>Title:</b> Program Management Office (PMO) Support</p> <p><b>Description:</b> Program Office Support include systems engineering, government and contractor salaries, travel, training, and other support costs required to effectively manage the program.</p> <p><b>FY 2024 Plans:</b> Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) for Research, Development, Test, &amp; Evaluation (RDT&amp;E) efforts related to emerging Army requirements impacting the AMPV design.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> New start program for AMPV Combat Improvement Program in FY24.</p>		-	-	0.834
<b>Accomplishments/Planned Programs Subtotals</b>		-	-	12.354
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
<p>The AMPV program was initiated at Milestone B (MS B). The 22 December 2014 MS B Acquisition Decision Memorandum (ADM) approved contract award for the Engineering and Manufacturing Development phase plus three Low Rate Initial Production (LRIP) options to BAE Systems Land &amp; Armaments, L.P. on a competitive basis. The Army Acquisition Executive (AAE) approved the Milestone C ADM on January 25, 2019, authorizing Low Rate Initial Production. All three LRIP options have since been exercised. As a result of vehicle delivery delays, the AAE approved a revised Acquisition Program Baseline to adjust the program schedule on January 7, 2021. The program is scheduled for a Full Rate Production Decision in FY23.</p>				

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Army</b>												<b>Date: March 2023</b>				
<b>Appropriation/Budget Activity</b> 2040 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				<b>Project (Number/Name)</b> DD4 / <i>AMPV Improvement Program</i>								
<b>Product Development (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>				
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
Product Development	C/TBD	TBD : TBD	-	-		-		11.520	Nov 2023	-		11.520	0.000	11.520	Continuing	
<b>Subtotal</b>			-	-		-		11.520		-		11.520	0.000	11.520	N/A	
<b>Support (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>				
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
Program Management	RO	TBD : Warren, MI	-	-		-		0.834	Dec 2023	-		0.834	0.000	0.834	Continuing	
<b>Subtotal</b>			-	-		-		0.834		-		0.834	0.000	0.834	N/A	
<b>Project Cost Totals</b>			-	-		-		12.354		-		12.354	0.000	12.354	N/A	
<b>Remarks</b>																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> DD4 / <i>AMPV Improvement Program</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Product Development									██████████				██████████				██████████				██████████				██████████							
Enhanced Drivers Vision System Improvement									██████████				██████████				██████████				██████████				██████████				██████████			
AMPV Composite Rubber Track Improvement									██████████				██████████				██████████				██████████				██████████				██████████			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> DD4 / <i>AMPV Improvement Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Product Development	1	2024	4	2029
Enhanced Drivers Vision System Improvement	1	2024	4	2027
AMPV Composite Rubber Track Improvement	1	2024	2	2027

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>				<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
EE2: <i>Stryker Improvement</i>	-	29.837	66.589	24.844	-	24.844	14.098	14.111	14.261	14.420	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Stryker Improvement will address the development of Lethality, Survivability, Mobility, Network Lethality, and Communication, Command and Control (C3) improvements within the Stryker Family of Vehicles (FOVs). Principal development efforts include upgrades associated with the Stryker Double V-Hull A1 (DVH A1) Engineering Change Proposal (ECP), Common Remotely Operated Weapon Station-Javelin (CROWS-J) ONS, Stryker Survivability Enhancement, and Stryker Lethality ECPs. DVH A1 ECP upgrades restore Stryker DVH Space, Weight, and Power-Cooling (SWaP-C) lost as a result of incorporating vehicle changes to counter threats encountered during deployment operations while allowing the future network to be hosted without further degradation in vehicle protection and mobility. The Stryker CROWS-J ONS efforts addressed Urgent Operational Need to increase the lethality of Stryker Infantry Carrier Vehicles (ICV) within the United States Army European Command (USAREUR). The Stryker Survivability Enhancements address evolving threats by assessing survivability improvements, to include but not limited to, 360 Situational Awareness, reactive armor tiles, and integration of emerging and existing technologies and other Stryker based platform solutions. The Stryker platform will also include future Mission Equipment Package (MEP) integration that includes but not limited to the Fire Direction Center (FDC) providing an on-the move capability that processes voice and digital data while maintaining contact with the indirect fire team over extended distances. Stryker Lethality ECP efforts (CROWS-J, Anti-Tank Guided Missile (ATGM), and other capabilities) focus on the integration of a suite of complementary MEP lethality upgrades that will improve the suppressive fire and armored vehicle engagement capabilities across the Army's Stryker Brigade Combat Teams (SBCTs). Additionally, the Lethality MEP upgrades will address existing obsolescence issues of the Remote Weapon Station (RWS) with the CROWS and CROWS-J upgrade. The ATGM ECP will upgrade the Modified Improved Target Acquisitions System (MITAS), incorporating a far target locator and enabling the dissemination of target acquirement information utilizing networked lethality, providing a common operating picture. Stryker Network Modernization will formalize the system integration of the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS), and Tactical Cloud Package (TCP) as part of Mounted Capability Set 23 (MCS23) for the Stryker platform. Upgrades of the Stryker flat-bottom hull and DVH variants were completed to mitigate known system deficiencies. In support of Readiness, Training-Rapid Fielding of Digitization of Stryker, Army Rapid Sustainment Improvement Process (RSIP) to develop two-way interface between Global Combat Support System - Army (GCSS-Army) and the Operator Tablet to support data transfers of maintenance work orders, parts ordering and updating of maintenance plans.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Stryker DVH A1 ECP Development (Engineering/Prototypes)	3.728	-	-
<b>Description:</b> The Stryker DVH A1 ECP is a fleet-wide initiative that mitigates mobility degradation caused by survivability improvements. Addresses vehicle space, weight, power, cooling and computing challenges. Returns the performance of the DVH nearly back to the original design capacity and provides approximately 20% growth potential in gross vehicle weight and power generation capacity posturing these vehicles for efficient upgrades in the future.			
<b>Title:</b> Stryker Lethality ECPs Development (Engineering/Prototypes)	3.415	4.448	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p><b>Description:</b> Lethality ECPs encompass the integration of a 30 millimeter (mm) (ICVVA1-30mm), under armor Javelin fire capability (Common Remotely Operated Weapon Station-Javelin (CROWS-J)), improved optics and targeting systems, Inertial Navigation Unit (INU) sensor, and other capabilities into the Stryker fleet. These improvements will provide for increased under armor fire capability, target identification range, provide over-match against peer threats and supporting infantry assault, and address obsolescence within the targeting and reconnaissance systems utilized on the Stryker FoV.</p> <p><b>FY 2023 Plans:</b> Continuing Stryker Lethality ECPs development to integrate the Inertial Navigation Unit (INU) sensor and Global Positioning System (GPS) information with CROWS-J to communicate with the Joint Battle Command - Platform (JBC-P). Complete ATGM ECP logistic products.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to completion of Stryker Lethality ECPs development of integrating the Inertial Navigation Unit (INU) sensor and Global Positioning System (GPS) information with CROWS-J to communicate with the Joint Battle Command - Platform (JBC-P). Completion of ATGM ECP logistic products.</p>				
<p><b>Title:</b> Stryker Lethality ECPs Testing</p> <p><b>Description:</b> Government and Contractor Support for developmental, operational and live fire testing in support of Lethality ECPs, including Inertial Navigation Unit (INU) sensor testing.</p> <p><b>FY 2023 Plans:</b> Initiate development of test plans and procedures for the Inertial Navigation Unit (INU) sensor testing.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to completion of development test plans and procedures for the Inertial Navigation Unit (INU) sensor testing.</p>		2.590	0.080	-
<p><b>Title:</b> Government Systems Engineering and Project Management</p> <p><b>Description:</b> Government Systems Engineering and Program Management includes salaries, travel and other support costs required to effectively manage all Research, Development, Test, &amp; Evaluation (RDT&amp;E) efforts.</p> <p><b>FY 2023 Plans:</b> Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) for Research, Development, Test, &amp; Evaluation (RDT&amp;E) efforts, including Survivability Enhancement, Non Primary Power Systems, Fire Direction Center development, and Stryker Network Modernization Development.</p> <p><b>FY 2024 Plans:</b></p>		4.660	4.854	3.290

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
Government Systems Engineering and Program Management support (labor, travel, training, supplies, and equipment) for Research, Development, Test, & Evaluation (RDT&E) efforts, including Survivability Enhancement, Non Primary Power Systems, Fire Direction Center development, and Stryker Network Modernization Development.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due completion of Lethality ECPs development and testing.				
<b>Title:</b> Stryker Power System  <b>Description:</b> Development and testing of a non-primary power solution for the Stryker platform. The non-primary power enhancement incorporates multiple components and capabilities, including the battery box container, Auxiliary Power Unit (APU) and interface kits.  <b>FY 2023 Plans:</b> Continuing of the integration design effort, testing and logistics product development for the non-primary solution. Conduct a Soldier Touch Point in an Operational Environment.  <b>FY 2024 Plans:</b> Completion of the non-primary power design effort and integration. Testing and logistics product development and execution continues.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to completion of the non-primary power design effort and integration. Testing and logistics product development continues.		7.426	6.983	3.024
<b>Title:</b> Stryker Platform Mission Equipment Packages Integration  <b>Description:</b> Development engineering of MEP onto the Stryker platforms. Integration of the Fire Direction Center MEP onto the DVH A1 platform.  <b>FY 2023 Plans:</b> Continue integration engineering and procurement of prototype hardware for the Fire Direction Center MEP onto the DVHA1.  <b>FY 2024 Plans:</b> Continue integration engineering for the Fire Direction Center MEP onto the DVHA1.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to completion of procurement of prototype hardware for the Fire Direction Center MEP onto the DVHA1.		2.716	3.132	0.270
<b>Title:</b> Stryker Survivability Enhancements		2.224	8.212	4.232

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p><b>Description:</b> The Stryker Survivability Enhancements will develop strategies, through technical and engineering analyses, for the integration of emerging technologies onto the Stryker Platforms. The Stryker Survivability Enhancements will include, but are not limited to, the fleet wide 360 degree Situational Awareness, hardware convergence, and sensor suite collaboration.</p> <p><b>FY 2023 Plans:</b> Funding supports 360-degree Situational Awareness B-kit Request for Proposal and Source Selection Processes.</p> <p><b>FY 2024 Plans:</b> Funding supports 360-degree Situational Awareness A-kit and B-kit non-recurring engineering (NRE).</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Increase due to the continuation of the 360-degree Situational Awareness (360 SA) effort with prototyping and testing, along with other emerging technologies.</p>				
<p><b>Title:</b> Stryker Network Modernization Development (Engineering / Prototypes)</p> <p><b>Description:</b> Stryker Network Modernization will formally integrate the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS) vehicle support kit, and Tactical Cloud Package (TCP) as part of Mounted Capability Set 23 (MCS23) at the System of Systems level. Effort will prioritize the DVHA1 Platform and include DVHA0. With the Army's Network Vision 2028, and Army 2030 planning, the Network CFT has coordinated closely with PEO C3T, PEO GCS, PEO Soldier, and PEO IEW&amp;S to deliver a suite of capabilities as part of M-CS23 for DVHA1 and DVHA0. These capabilities are required in SBCT formations to provide Soldiers with a resilient and assured data transport network to the tactical edge, provide a robust and real-time common tactical operating picture among friendly forces and ensure overmatch with near-peer adversaries.</p> <p><b>FY 2023 Plans:</b> Begin to develop formalized system integration of M-CS23, develop and validate operator and maintainer manual updates, and deliver production-level installation kit technical data package (TDP) that can be used for a competitive production and retrofit installation.</p> <p><b>FY 2024 Plans:</b> Continue integration engineering and procurement of prototype hardware, and initiate logistics product development for M-CS23 on the DVHA1 and DVHA0.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to completion of some integration engineering efforts.</p>		0.661	30.099	9.328
<p><b>Title:</b> Stryker Network Modernization Testing</p>		0.453	4.220	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p><b>Description:</b> Government and Contractor support for developmental and operational testing of the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS) vehicle support kit, and Tactical Cloud Package (TCP).</p> <p><b>FY 2023 Plans:</b> Government and Contractor support for executing system level testing to achieve all safety and interoperability certifications to field the installation kits and provision components for the supply system.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease required to allow Engineering Designs to mature to Critical Design maturity and A-kit prototypes kits to be built for safety confirmation and interoperability certification to enable fielding installation kits and provision components for log products.</p>				
<p><b>Title:</b> Stryker DVH A1 ECP Testing</p> <p><b>Description:</b> Government and Contractor testing for developmental, operational and live fire in support of DVH A1 ECP.</p>		0.208	-	-
<p><b>Title:</b> Stryker Lethality ECPs Contractor Support to Test</p> <p><b>Description:</b> Contractor support to Lethality ECPs upgrade testing, to include system troubleshooting, maintenance, repair of prototypes during execution of tests, and Failure Analysis and Corrective Action Reporting (FACAR).</p> <p><b>FY 2023 Plans:</b> Contractor technical support (system troubleshooting, maintenance and repair of prototypes during execution of tests) to Lethality ECPs developmental test.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease due to the completion of testing efforts.</p>		0.626	0.031	-
<p><b>Title:</b> Stryker Network Modernization Contractor Support to Test</p> <p><b>Description:</b> Government and Contractor support for integration of the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS) vehicle support kit, and Tactical Cloud Package (TCP) as part of Mounted Capability Set 23 (MCS23) at the System of Systems level.</p> <p><b>FY 2023 Plans:</b> Contractor technical support for integration of the Integrated Tactical Network (ITN), Integrated Visual Augmentation System (IVAS) vehicle support kit, and Tactical Cloud Package (TCP) as part of Mounted Capability Set 23 (MCS23) at the System of Systems level.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>		-	2.100	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
Decrease due to some completion of test efforts.			
<p><b>Title:</b> Stryker Predictive Logistics (Engineering/Prototypes)</p> <p><b>Description:</b> Readiness / Training-Rapid Fielding of Digitization of Stryker, Army Rapid Sustainment Improvement Process (RSIP). Develop two-way interface between Global Combat Support System - Army (GCSS - Army) and the Operator Tablet to support data transfers of maintenance work order, parts ordering and updating of maintenance plans. Further development will incorporate health data elements from platform diagnostics.</p> <p><b>FY 2024 Plans:</b> Develop two-way interface between Global Combat Support System - Army (GCSS - Army) and the Operator Tablet in support of the Army's Prognostic and Predictive Maintenance (PPMx) vision.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> This is a new effort in FY24 in support of the Department of Army Rapid Sustainment Improvement Process (RSIP).</p>	-	-	4.700
<p><b>Title:</b> SIBR STTR Transfer</p> <p><b>Description:</b> Funding transferred in accordance with Title 15 USC 638.</p> <p><b>FY 2023 Plans:</b> Funding transferred in accordance with Title 15 USC 638.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.</p>	1.130	2.430	-
<b>Accomplishments/Planned Programs Subtotals</b>	29.837	66.589	24.844

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• GM0100: <i>Stryker (Mod)</i>	-	-	0.000	-	0.000	78.094	82.614	89.360	92.722	Continuing	Continuing
• G85200: <i>Stryker Upgrade</i>	1,082.828	891.171	614.282	-	614.282	654.326	865.441	816.703	860.055	Continuing	Continuing

**Remarks**  
23 March 2018 Army Requirements Oversight Council (AROC) decision to exchange all remaining flat-bottom brigades results in continuing exchange production beginning in FY 2018 funded in Stryker Upgrade (G85200). Stryker MOD (GM0100) will support Command Post Integrated Infrastructure (CPI2) platform procurement beginning in FY 2025.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
In FY 2022, funding in the amount of \$0.183 million for manpower was realigned to Operation and Maintenance. Program support costs have been accurately updated to reflect the realignments.											

**D. Acquisition Strategy**

The Stryker ECP 1 effort will buy back the vehicle space, weight, and power margin lost due to the addition of numerous kits in response to eleven years of war (20-combat rotations & 37+ million total miles), in order to allow integration of the future network (as directed by VCSA in August 2011) without further degrading the performance of the platform. In May 2012, Stryker ECP 1 program (Phase I) was approved, permitting preliminary design and integration efforts on both the Flat Bottom (FB) and DVH variants. In March 2013, Phase II was approved continuing design and integration of ECP 1 mechanical power, electrical power generation, chassis upgrades, and the in-vehicle network upgrades. Based on additional testing conducted in the summer of 2013, the decision was made to focus ECP 1 efforts on the DVH platform and defer efforts on flat-bottom Stryker vehicles. The effort has subsequently been renamed the Stryker DVH A1 ECP. The DVH A1 ECP Phase II contract, awarded November 25, 2013, continued development engineering, prototype build test and evaluation. The initial DVH A1 ECP production contract was awarded in October 2016 (Sole-Source Firm Fixed Price arrangement). A second and third buy of DVH A1 ECP vehicles was awarded as a Fixed Price Incentive Fee arrangement. A March 2018 AROC decision was made to pure fleet the Stryker brigades to DVH with the initial approval for 6 DVH A1 brigades. The objective acquisition strategy is to annually procure 1/2 of a brigade.

On July 2, 2015, Army Systems Acquisitions and Review Council (ASARC) authorization was granted to execute the Stryker 30mm ICVD ONS effort. 30mm ICVD Engineering, Manufacturing, and Development (EMD) contracts for Non-Recurring Engineering (NRE) and Logistics Products Development/Test Support were awarded in January 2016 and May 2016, respectively (Cost Plus Incentive-Fee basis). The 30mm ICVD ONS Production/Retrofit contract was awarded in May 2016 through an Undefined Contract Action (UCA). Definitization of the Fixed Price Incentive Fee (FPIF) Production contract occurred in March 2017.

The Stryker Lethality ECP efforts will focus on the integration of a suite of complementary Mission Equipment Package MEP lethality upgrades, which include the CROWS-J, ATGM target acquisition optics, integration of emerging and existing technologies such as the Fire Direction Center requirement, Integrated Visual Augmentation System (IVAS), and other Stryker-based platform solutions, as well as additional capabilities that will improve the suppressive fire and armored vehicle engagement capabilities across the Army's SBCTs. Army Acquisition Executive (AAE) approval to initiate the Stryker CROWS-J and ATGM ECP efforts was received in a September 30, 2016, Acquisition Decision Memorandum (ADM). A ICVVA1-30mm decision was made in March 2019. The ICVVA1-30mm effort awarded design studies to multiple vendors and evaluated the bid samples and awarded a production ready solution meeting requirements at the best value to the Army. To improve platform survivability fleet wide, 360 Situational Awareness is being developed by integrating existing technologies, for fleet wide installation over a period of six years to allow the occupants during both open and closed hatch operations to visualize their immediate surrounding while stationary and on the move in adverse weather conditions.

In 2016, the Army approved the FDC requirement and the Field Artillery Battalion TAC using excess Flat Bottom Hull (FBH) Stryker during Force Design Update (FDU) process. Following the March 2018 Pure fleet AROC decision, Force Design Division (FDD) identified the Double V Hull A1 (DVH A1) as the platform for the FDC.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>
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<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Management Office (PMO)	MIPR	PEO GCS/TACOM : Various	68.878	4.660	Jan 2022	2.424	Jan 2023	3.290	Jan 2024	-		3.290	17.797	97.049	-
SBIR/STTR Transfer	TBD	various : various	-	-		2.430	Feb 2023	-		-		-	0.000	2.430	-
<b>Subtotal</b>			68.878	4.660		4.854		3.290		-		3.290	17.797	99.479	N/A

<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Stryker DVH A1 ECP Development	SS/CIPIF	GDLS, MI : Various	174.652	3.728	Jan 2022	-		-		-		-	0.000	178.380	-
Stryker Lethality ECPs Development	C/Various	PM CSW; PM CCWS : Various	54.500	3.415	Jan 2022	4.448	Jan 2023	-		-		-	0.000	62.363	-
Stryker Survivability Enhancement	Various	US Army CCDC GVSC, Various : Various	-	1.771	Jul 2022	8.172	Feb 2023	3.727	Feb 2024	-		3.727	0.700	14.370	-
Stryker Power System Development	MIPR	US Army CCDC GVSC, Various : Various	13.268	4.398	Mar 2022	1.086	Mar 2023	1.052	Mar 2024	-		1.052	0.000	19.804	-
Stryker Fire Direction Center Variant Development	TBD	TBD : TBD	-	2.716	Sep 2022	5.073	Jun 2023	0.270	Jun 2024	-		0.270	28.560	36.619	-
Stryker Network Modernization Development	TBD	TBD : TBD	0.438	0.661		30.099	Jan 2023	9.328	Jan 2024	-		9.328	0.000	40.526	-
Stryker Predictive Logistics Development	TBD	TBD : TBD	-	-		-		4.700	Jan 2024	-		4.700	0.000	4.700	-
<b>Subtotal</b>			242.858	16.689		48.878		19.077		-		19.077	29.260	356.762	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>
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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Stryker Lethality ECPs Testing	MIPR	Army Test Centers : Various	30.628	3.720	Dec 2021	0.080		-		-		-	0.000	34.428	-
Stryker Survivability Enhancement	MIPR	Army Test Centers : Various	2.543	0.453	Dec 2021	0.040	Dec 2022	0.505	Dec 2023	-		0.505	0.705	4.246	-
Stryker Power System Testing	MIPR	Army Test Centers : Various	4.702	3.028	Dec 2021	5.897	Dec 2022	1.972	Dec 2023	-		1.972	0.000	15.599	-
Stryker Fire Direction Center Variant Testing	TBD	TBD : TBD	-	-		0.489	Jul 2023	-		-		-	9.224	9.713	-
Stryker Network Modernization Testing	TBD	TBD : TBD	2.862	0.453	Dec 2021	4.220	Apr 2023	-		-		-	0.000	7.535	-
Stryker Network Modernization Contractor Support to Test	TBD	TBD : TBD	0.212	-		2.100	Apr 2023	-		-		-	0.000	2.312	-
Stryker DVH A1 ECP Testing	MIPR	Army Test Centers : Various	42.621	0.208		-		-		-		-	0.000	42.829	-
Stryker Lethality ECPs Contractor Support to Test	TBD	TBD : TBD	10.719	0.626		0.031		-		-		-	0.000	11.376	-
<b>Subtotal</b>			94.287	8.488		12.857		2.477		-		2.477	9.929	128.038	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	406.023	29.837	66.589	24.844	-	24.844	56.986	584.279	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Stryker DVH A1 ECP (Phase II)	[Redacted]				[Redacted]																							
	DVH A1 ECP Design/Prototype/Logistics Products																											
Stryker DVH A1 ECP Production (Phase III)	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
	DVH A1 ECP Production																											
Stryker CROWS-J ECP Design/Prototype/Logistic Products	[Redacted]				[Redacted]																							
	CROWS-J ECP Design/Prototype/Logistics Products																											
Stryker CROWS-J ECP Production/Retrofit	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
	CROWS-J ECP Production/Retrofit																											
Stryker CROWS-J ECP First Unit Equipped (FUE)	1																											
	CROWS-J ECP FUE																											
Stryker ATGM ECP Production/Retrofit	[Redacted]				[Redacted]				[Redacted]																			
	ATGM ECP Production/Retrofit																											
Stryker ICVVA1-30mm Gun Production	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	ICVVA1-30mm Gun Production																											
Stryker ICVVA1-30mm Mission Equipment Package (MEP) Production	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]											
	ICVVA1-30mm Mission Equipment Package (MEP) Production																											
Stryker ICVVA1-30mm Safety/Perf./Live Fire/Electronics Testing	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	ICVVA1-30mm Safety/Perf./Live Fire/Electronics Testing																											
Stryker ICVVA1-30mm Fielding	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
	ICVVA1-30mm Fielding																											
Stryker ICVVA1-30mm Design/Prototype/Logistic Products	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]											
	ICVVA1-30mm Design/Prototype/Logistic Products																											
Stryker Lethality ECP Inertial Navigation Unit Sensor Design/Prototypes/Logistics	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	Inertial Navigation Unit Sensor Design/Prototypes/Logistics																											
Stryker Lethality ECP Inertial Navigation Unit Sensor Testing	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	[Redacted]				[Redacted]				[Redacted]				[Redacted]															
	Inertial Navigation Unit Sensor Testing																											

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4						
Stryker Power System	[Redacted]																																	
Stryker Fire Direction Center Variant (FDC) Design/Proto...																																		
Stryker 360 Situational Awareness: Design/Test/Prod/Logi...	[Redacted]																																	
Stryker Network Modernization Development																																		
Stryker Network Modernization Testing																																		
Stryker Predictive Logistics Development																																		

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Army **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203735A / <i>Combat Vehicle Improvement Programs</i>	<b>Project (Number/Name)</b> EE2 / <i>Stryker Improvement</i>
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**Schedule Details**

Events	Start		End	
	Quarter	Year	Quarter	Year
Stryker DVH A1 ECP (Phase II)	1	2014	3	2022
Stryker DVH A1 ECP Production (Phase III)	1	2017	4	2030
Stryker CROWS-J ECP Design/Prototype/Logistic Products	1	2019	3	2023
Stryker CROWS-J ECP Production/Retrofit	3	2019	4	2029
Stryker CROWS-J ECP First Unit Equipped (FUE)	2	2022	2	2022
Stryker ATGM ECP Production/Retrofit	1	2020	4	2024
Stryker ICVVA1-30mm Gun Production	4	2020	4	2025
Stryker ICVVA1-30mm Mission Equipment Package (MEP) Production	3	2021	1	2026
Stryker ICVVA1-30mm Safety/Perf./Live Fire/Electronics Testing	4	2021	1	2025
Stryker ICVVA1-30mm Fielding	2	2025	1	2028
Stryker ICVVA1-30mm Design/Prototype/Logistic Products	2	2019	4	2025
Stryker Lethality ECP Inertial Navigation Unit Sensor Development	3	2022	3	2024
Stryker Lethality ECP Inertial Navigation Unit Sensor Testing	3	2023	2	2024
Stryker Power System	2	2019	4	2025
Stryker Fire Direction Center Variant (FDC) Design/Prototype/Logistics Products	4	2022	2	2027
Stryker 360 Situational Awareness: Design/Test/Prod/Logistics	3	2021	3	2026
Stryker Network Modernization Development	2	2023	3	2026
Stryker Network Modernization Testing	3	2023	2	2026
Stryker Predictive Logistics Development	2	2024	4	2025

**Note**  
Schedule includes the major Stryker RDTE and Procurement (WTCV) funded activities.