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

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</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
Total Program Element	-	0.122	3.109	4.520	-	4.520	1.508	1.510	-	-	0.000	10.769
038: <i>Avenger PIP</i>	-	0.122	3.109	4.520	-	4.520	1.508	1.510	-	-	0.000	10.769

A. Mission Description and Budget Item Justification

This funding line is a key enabler of the Army Modernization Priorities in support of the Stinger missile program.

Avenger is a lightweight, ground-to-air missile and gun weapon system mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV). The system protects against unmanned aircraft systems, cruise missiles, and fixed and rotary wing threats. Avenger provides day/night adverse weather operations, shoot on the move capability, rapid target engagement, and remote firing capability. It can be air dropped, lifted by helicopter and is air transportable. The system employs up to eight Stinger missiles to counter aerial threats and a .50 Caliber Machine Gun (M3P) for close-in ground and air threats. An Identification Friend or Foe (IFF) system aids in the identification of friendly aircraft in order to minimize the potential for fratricide. The Avenger fleet of 453 systems includes 169 systems that are equipped with a digital Slew-to-Cue (STC) capability to speed target detection and engagement.

The Avenger Modification - Service Life Extension Program (MOD-SLEP) consists of Project 038: Avenger Production Improvement Program (PIP) and Program Element CE8710: Avenger MODS. The ongoing MOD-SLEP addresses obsolescence of Avenger components to ensure Avenger maintains operational capability through FY 2031. Key MOD-SLEP components are: the Targeting Console (TC), the M3P, the Avenger Fire Control Computer (AFCC), the Mode 5 IFF, the Vehicle Internal Communications (VIC-5), and the Assured Positioning Navigation and Timing (A-PNT) capability. The AFCC and TC are fielded to the STC Avengers. All other components are fielded to the entire Avenger fleet.

FY 2024 funding of \$4.520 million provides for multiple projects. First, \$3.071 million continues development, integration, prototyping and testing of technologies that will provide A-PNT capability, including the Anti-Jam Antenna and DAGR Distributed Device (D3), which will provide M-Code capability. Secondly, \$1.449 million continues obsolescence mitigation (Avenger Product Improvement).

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.127	3.109	0.000	-	0.000
Current President's Budget	0.122	3.109	4.520	-	4.520
Total Adjustments	-0.005	0.000	4.520	-	4.520
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.005	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	4.520	-	4.520

Change Summary Explanation

FY 2024 increase reflects Army's continued investment in the Avenger A-PNT and obsolescence mitigation efforts.

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Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>				Project (Number/Name) 038 / <i>Avenger PIP</i>			
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
038: <i>Avenger PIP</i>	-	0.122	3.109	4.520	-	4.520	1.508	1.510	-	-	0.000	10.769
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Avenger is a lightweight, ground-to-air missile and gun weapon system mounted on a High Mobility Multi-purpose Wheeled Vehicle. The system protects against unmanned aircraft systems, cruise missiles, and fixed and rotary wing threats. Avenger provides day/night adverse weather operations, shoot on the move capability, rapid target engagement, and remote firing capability. It can be air dropped, lifted by helicopter and is air transportable. The system employs up to eight Stinger missiles to counter aerial threats and a .50 Caliber Machine Gun (M3P) for close-in ground and air threats. An Identification Friend or Foe (IFF) system aids in the identification of friendly aircraft in order to minimize the potential for fratricide. The Avenger fleet of 453 systems includes 169 systems that are equipped with a digital Slew-to-Cue (STC) capability to speed target detection and engagement.

The Avenger Modification - Service Life Extension Program (MOD-SLEP) consists of Project 038: Avenger Production Improvement Program (PIP) and Program Element CE8710: Avenger MODS. The ongoing MOD-SLEP addresses obsolescence of Avenger components to ensure Avenger maintains operational capability through Fiscal Year (FY) 2031. Key MOD-SLEP components are: the Targeting Console (TC), the M3P, the Avenger Fire Control Computer (AFCC), the Mode 5 IFF, the Vehicle Internal Communications (VIC-5), and the Assured Positioning Navigation and Timing (A-PNT) capability. The AFCC and TC are fielded to the STC Avengers. All other components are fielded to the entire Avenger fleet.

FY 2024 funding of \$4.520 million provides for multiple projects. First, \$3.071 million continues development, integration, prototyping and testing of technologies that will provide A-PNT capability, including the Anti-Jam Antenna and DAGR Distributed Device (D3), which will provide M-Code capability. Secondly, \$1.449 million continues obsolescence mitigation (Avenger Product Improvement).

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

	FY 2022	FY 2023	FY 2024
Title: Avenger MOD-SLEP	0.122	-	1.449
Description: The Avenger MOD-SLEP consists of development activities for platform integration, software upgrades, and capability enhancements. Develops and executes test requirements and conducts limited contractor and government testing. Performs technical assessments, concept studies, cost reduction, risk reduction and development documentation.			
FY 2024 Plans: The Avenger MOD-SLEP consists of development activities for platform integration, software upgrades, and capability enhancements. Develops and executes test requirements and conducts limited contractor and government testing. Performs technical assessments, concept studies, cost reduction, risk reduction and development documentation.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
The FY 2023 to FY 2024 increase supports the MOD-SLEP obsolescence mitigation effort.			
<p>Title: A-PNT</p> <p>Description: This effort consists of development, integration, prototyping and testing of technologies that will provide Assured Positioning, Navigation and Timing (A-PNT) capability. The A-PNT capability, including the Anti-Jam Antenna and DAGR Distributed Device (D3), will provide M-Code capability to the Avenger system.</p> <p>FY 2023 Plans: Funding continues integration, prototyping and testing of the A-PNT capability, including the Anti-Jam Antenna and DAGR D3, which will provide M-Code capability.</p> <p>FY 2024 Plans: Funding continues integration, prototyping and testing of the A-PNT capability, including the Anti-Jam Antenna and DAGR D3, which will provide M-Code capability.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Decrease from FY 2023 to FY 2024 is due to the decrease of the work to be performed on this effort.</p>	-	2.996	3.071
<p>Title: SBIR/STTR</p> <p>Description: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.</p>	-	0.113	-
Accomplishments/Planned Programs Subtotals	0.122	3.109	4.520

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2024</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• CE8710: AVENGER MODS	11.227	-	22.274	-	22.274	2.317	-	-	-	0.000	35.818

Remarks
CE8710 Avenger MODS procures the MOD-SLEP components for the Avenger system. This ensures that Avenger is viable and sustainable through FY 2031. This program is an integral part of the Army Air and Missile Defense Modernization strategy.

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D. Acquisition Strategy

The Avenger MOD-SLEP addresses obsolescence of key components and ensures that Avenger is viable and sustainable through FY 2031.

The MOD-SLEP components are the TC, the AFCC, the Mode 5 IFF, the VIC-5, the M3P machine gun and A-PNT. The M3P machine gun will be fielded through attrition. The other MOD-SLEP components will be installed in the field.




Development and testing of hardware and software modifications necessary to fully integrate the A-PNT capability into the Avenger will be performed by a combination of Government and Original Equipment Manufacturer efforts, using the existing and new Engineering Service contracts. Modifications will be completed with organic efforts with A-PNT hardware provided by Program Manager PNT.

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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 0203801A / Missile/Air Defense Product Improvement Program				038 / Avenger PIP								
Management Services (\$ in Millions)				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	Allot	Various : Various	-	-		0.113		-		-		-	0.000	0.113	-	
Subtotal			-	-		0.113		-		-		-	0.000	0.113	N/A	
Product Development (\$ in Millions)				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	
Avenger Modification Product Development	SS/ Various	Raytheon, The Boeing Company and others : Aberdeen Proving Grounds, MD and Huntsville, AL	10.245	0.122	Oct 2021	2.696	Oct 2022	3.540	Oct 2023	-		3.540	0.000	16.603	-	
Subtotal			10.245	0.122		2.696		3.540		-		3.540	0.000	16.603	N/A	
Test and Evaluation (\$ in Millions)				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	
Avenger Modification Test Support	Various	The Boeing Company, U.S. Army Combat Capabilities Development Command Aviation and Missiles Center and others : Huntsville, AL and Redstone Arsenal, AL	8.018	-		0.300	Oct 2022	0.980	Oct 2023	-		0.980	0.000	9.298	-	
Subtotal			8.018	-		0.300		0.980		-		0.980	0.000	9.298	N/A	

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
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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
Materiel Release (MOD-SLEP)					 Materiel Release																							
A-PNT Integration					 A-PNT Integration																							
Continuing Avenger Product Improvement / Evolving Threats					 Continuing Product Improvement																							

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

Events	Start		End	
	Quarter	Year	Quarter	Year
Integration and Testing (MOD-SLEP Phase II)	2	2018	2	2020
Live Fire Testing (MOD-SLEP Phase II)	4	2018	4	2018
Logistics Demo (MOD-SLEP Phase II)	2	2019	4	2019
Materiel Release (MOD-SLEP)	4	2023	4	2023
A-PNT Integration	1	2023	4	2024
Continuing Avenger Product Improvement / Evolving Threats	1	2020	4	2026

Note
 MOD-SLEP components are the TC, AFCC, IFF, VIC-5, M3P machine gun and A-PNT.
 TC: Targeting Console
 AFCC: Avenger Fire Control Computer
 IFF: Identification Friend or Foe
 MOD-SLEP: Modification - Service Life Extension Program
 VIC: Vehicle Internal Communications
 A-PNT: Assured Positioning, Navigation and Timing