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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Army **Date:** May 2021

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	1.235	1.241	0.127	-	0.127	-	-	-	-	-	-
038: <i>Avenger PIP</i>	-	1.235	1.241	0.127	-	0.127	-	-	-	-	-	-

**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. Five key MOD-SLEP components are: the Targeting Console (TC), the M3P, the Avenger Fire Control Computer (AFCC), the Mode 5 IFF and the Vehicle Internal Communications (VIC-5). Additional Obsolescence Mitigation Items include Avenger Organizational Maintenance Tool Kits, AN/PSM-95 Electronic Systems Test Set and the Avenger Remote Handheld Terminal Unit mounting kits.

The Avenger MOD-SLEP is fielded in two phases. Phase I fields the TC to 169 STC Avengers. The M3P is fielded as spares through the supply system. Phase II fields the AFCC to 169 STC Avengers and both the VIC-5 and the Mode 5 IFF to all 453 Avengers.

FY 2022 funding of \$0.127 million ensures that several Avenger components are viable and sustainable through the end of program life. This includes continued investigation of technologies that will provide Assured Positioning Navigation and Timing capability, including the Anti-Jam Antenna and DAGR Distributed Device (D3), which will provide M-Code capability. Avenger MOD-SLEP maintains operational capability of Avenger until FY 2031.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	1.287	1.288	0.128	-	0.128
Current President's Budget	1.235	1.241	0.127	-	0.127
Total Adjustments	-0.052	-0.047	-0.001	-	-0.001
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.052	-0.047			
• Adjustments to Budget Years	-	-	-0.001	-	-0.001

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Army **Date:** May 2021

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	<b>Project (Number/Name)</b> 038 / <i>Avenger PIP</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
038: <i>Avenger PIP</i>	-	1.235	1.241	0.127	-	0.127	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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FY 2022 funding of \$0.127 million ensures that several Avenger components are viable and sustainable through the end of program life. This includes the continued investigation of technologies that will provide Assured Positioning Navigation and Timing (A-PNT) capability, including the Anti-Jam Antenna and DAGR Distributed Device (D3), which will provide M-Code capability. Avenger MOD-SLEP maintains operational capability of Avenger until FY 2031.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Avenger MOD-SLEP	1.235	1.241	0.127
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Army		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	<b>Project (Number/Name)</b> 038 / <i>Avenger PIP</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>Funding provides for the completion of the MOD-SLEP Phase II Materiel Release (MR). Funding provides for continuing mitigation of emerging obsolescence issues and maintains the viability of the Avenger system. This includes the initial investigation of technologies that will provide Assured Positioning Navigation and Timing (A-PNT) capability, including the Anti-Jam Antenna and DAGR D3, which will provide M-Code capability.</p> <p><b>FY 2022 Plans:</b> Funding provides for continuing mitigation of emerging obsolescence issues and maintains the viability of the Avenger system. This includes the continuing investigation of technologies that will provide A-PNT capability, including the Anti-Jam Antenna and DAGR D3, which will provide M-Code capability.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> The decrease from FY 2021 to FY 2022 is due to completion of MOD-SLEP Phase II MR and because of the level of effort required for the A-PNT capability.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.235	1.241	0.127

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CE8710: AVENGER MODS	14.107	13.942	11.227	-	11.227	-	-	-	-	-	-

**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.

**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 Phase I component is the TC.

The MOD-SLEP Phase II components are the AFCC, the Mode 5 IFF, the VIC-5 and the M3P machine gun. The M3P machine gun will be fielded through attrition. The other MOD-SLEP Phase II components will be installed in the field as a single installation package.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	<b>Project (Number/Name)</b> 038 / <i>Avenger PIP</i>
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<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Avenger Modification Management Services	Various	Various : Redstone Arsenal, AL	2.593	0.463	Oct 2019	0.178	Oct 2020	-		-		-	0.000	3.234	-
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	0.053	-		-		-		-		-	0.000	0.053	-
<b>Subtotal</b>			2.646	0.463		0.178		-		-		-	0.000	3.287	N/A

<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Avenger Modification Product Development	SS/ Various	Raytheon, The Boeing Company and others : Aberdeen Proving Grounds, MD and Huntsville, AL	9.625	0.224	Oct 2019	0.396	Oct 2020	0.127	Oct 2021	-		0.127	0.000	10.372	-
<b>Subtotal</b>			9.625	0.224		0.396		0.127		-		0.127	0.000	10.372	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Avenger Modification Test Support	Various	The Boeing Company, Aviation and Missile Research Development and Engineering Center (AMRDEC) and others : Huntsville, AL and Redstone Arsenal, AL	6.803	0.548	Oct 2019	0.667	Oct 2020	-		-		-	0.000	8.018	-
<b>Subtotal</b>			6.803	0.548		0.667		-		-		-	0.000	8.018	N/A


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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Army</b>							<b>Date: May 2021</b>				
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	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>		
<b>Project Cost Totals</b>	19.074	1.235	1.241	0.127	-	0.127	0.000	21.677	N/A		

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Army</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203801A / <i>Missile/Air Defense Product Improvement Program</i>	<b>Project (Number/Name)</b> 038 / <i>Avenger PIP</i>

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
Integration and Testing (MOD-SLEP Phase II)	[Redacted]				System Integration and Testing																							
Materiel Release (MOD-SLEP Phase II)					 Materiel Release																							
Future Modifications to Address Evolving Threats	[Redacted]				[Redacted]																							
	Evolving Threat Mods																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Army		<b>Date:</b> May 2021
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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 Phase II)	2	2021	2	2021
Future Modifications to Address Evolving Threats	1	2020	2	2022

**Note**

MOD-SLEP Phase II components are the AFCC, IFF, VIC-5 and M3P machine gun.  
 AFCC: Avenger Fire Control Computer  
 IFF: Identification Friend or Foe  
 MOD-SLEP: Modification - Service Life Extension Program  
 VIC: Vehicle Internal Communications