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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 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</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	-	37.939	274.838	281.239	-	281.239	331.362	324.855	422.392	455.779	Continuing	Continuing
CR9: <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>	-	-	197.279	110.625	-	110.625	125.703	157.015	221.637	252.084	Continuing	Continuing
CS1: <i>M-SHORAD Inc 3</i>	-	-	67.196	160.426	-	160.426	195.469	152.605	190.546	193.372	Continuing	Continuing
FI4: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	-	37.939	10.363	10.188	-	10.188	10.190	15.235	10.209	10.323	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

The Maneuver-Short Range Air Defense (M-SHORAD) capability provides air protection to the maneuvering forces by defeating, destroying, or neutralizing Rotary-Wing (RW), Fixed-Wing (FW), Unmanned Aircraft Systems (UAS), and Rockets, Artillery and Mortar (RAM) threats. This capability will be provided through a multi-phase, Family of Systems (FoS) approach, to include the rapidly fielded M-SHORAD Increment 1 (Inc. 1) and follow-on M-SHORAD Increments 2 and 3. Increments 2 and 3 will develop nascent capability and support Army demonstration and test initiatives to increase integrated offensive and defensive capability across warfighter functions and multiple domains.

(FI4) Inc. 1 (formerly known as Initial Maneuver Short Range Air Defense (IM-SHORAD)) is an Air Defense weapon system consisting of multiple ground-to-air missile launchers, sensors, and a gun integrated on a Stryker Combat Vehicle. The Inc. 1 system provides the Army improved capabilities for defense of maneuver formations and other tactical echelons from low altitude air attack and surveillance. The system is in response to an adaptive suite of airborne threat capabilities, supported by an integrated mix of surface-to-air and surface-to-surface shooters that threaten the ability of maneuver forces to conduct operations. Specifically, maneuver formations require the Inc. 1 air defense identification and defeat capabilities to counter FW, RW, and UAS threats.

(CR9) Inc. 2 will provide a 50-kilowatt (kW)-class laser capability integrated onto a Stryker Combat Vehicle to provide an air defense capability to defeat RW, UAS, RAM, and Intelligence, Surveillance, and Reconnaissance (ISR) threats to the maneuvering forces. Provide a 20-kilowatt (kW) class laser capability integrated onto an Infantry Squad Vehicle to defeat Group 1 and 2 Unmanned Aerial Systems (UAS).

(CS1) Inc. 3 will provide a Next Generation Short Range Interceptor to replace the existing Stinger missile. The new interceptor with support equipment will improve targeting capabilities to acquire targets with increased lethality and range, providing increased protection to the maneuver formations. Additionally, the Inc. 3 interceptor will be compatible with the existing M-SHORAD Inc.1 platform and will provide a Soldier Portable Capability (SPC) to meet the need for dismounted Air Defense.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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B. Program Change Summary (\$ in Millions)	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>
Previous President's Budget	39.376	225.147	461.536	-	461.536
Current President's Budget	37.939	274.838	281.239	-	281.239
Total Adjustments	-1.437	49.691	-180.297	-	-180.297
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-70.309			
• Congressional Rescissions	-	-			
• Congressional Adds	-	120.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.437	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-180.297	-	-180.297

Change Summary Explanation

FY 2024 decrease of \$180.297 million due to the reallocation of funds across the Air and Missile Defense portfolio.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>				Project (Number/Name) CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</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
CR9: <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>	-	-	197.279	110.625	-	110.625	125.703	157.015	221.637	252.084	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

Maneuver Short Range Air Defense Increment 2 (M-SHORAD Inc. 2) / Directed Energy Maneuver-Short Range Air Defense (DE M-SHORAD) is a 50 kW-class laser weapon system integrated onto a Stryker Combat Vehicle. The system will provide air defense capability to defeat Rotary Wing (RW); Groups 1-3 Unmanned Aircraft Systems (UAS), Rocket, Artillery, and Mortar (RAM), and Intelligence, Surveillance, and Reconnaissance (ISR) threats to a maneuver unit. Developing the prototype system known as DE M-SHORAD which will transition to M-SHORAD Product Office in FY 2025 and become M-SHORAD Inc. 2.

Army Multi-Purpose High Energy Laser (AMP-HEL) is a 20kW-class laser weapon system integrated onto an Infantry Squad Vehicle to provide hard-kill defeat capability against Group 1 and 2 UAS.

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

	FY 2022	FY 2023	FY 2024
Title: DE M-SHORAD RCCTO Prototype Efforts	-	123.447	106.891
FY 2023 Plans: FY 2023 funds (\$126.970 million) will continue building and integrating prototype vehicles for deliveries through FY 2024 and continue Contractor Logistic Support (CLS) for a prototype platoon.			
FY 2024 Plans: FY 2024 funds (\$106.891 million) will complete integration and support demonstrations and experimentation of the prototype vehicles for delivery at the end of FY 2024 and continue Contractor Logistic Support (CLS).			
FY 2023 to FY 2024 Increase/Decrease Statement: The decrease of funding represents progression from hardware purchase and integration to delivery of prototypes in FY 2024.			
Title: Army Multi-Purpose High Energy Laser (AMP-HEL)	-	58.513	-
FY 2023 Plans: The RCCTO will use the FY 2023 funds (\$60.000 million) to build and integrate four (4) AMP-HEL prototypes with deliveries through FY 2024.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Decrease in funding from \$60.000 million in FY 2023 to \$0.000 million in FY 2024 is attributed to completion of prototype fabrication.				
Title: M-SHORAD Inc. 2 PEO MS Transition Efforts		-	10.309	3.734
<p>FY 2023 Plans: The M-SHORAD Product Office will use the FY 2023 funds (\$10.309 million) to conduct a user assessment with the prototype platoon delivered in FY 2023 and to support transition team initiation of acquisition activities and contract documents to support a competitive production decision.</p> <p>FY 2024 Plans: The M-SHORAD Product Office will use the FY 2024 funds (\$3.734 million) to expand the program office to support future acquisition activities and to continue the development of acquisition and contract documents to support a competitive production decision.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: The decrease in funding from \$10.309 million in FY 2023 to \$3.734 million in FY 2024 is due to the completion of User Assessment in FY 2023 to inform requirements development in FY 2024.</p>				
Title: DE MSHORAD SBIR/STTR		-	3.523	-
<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>				
Title: AMP-HEL SBIR/STTR		-	1.487	-
<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>				
Accomplishments/Planned Programs Subtotals		-	197.279	110.625
C. Other Program Funding Summary (\$ in Millions)				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>

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

Remarks

D. Acquisition Strategy

The Army Rapid Capabilities and Critical Technologies Office (RCCTO) is developing the prototype system known as DE M-SHORAD which will transition to the Program Executive Office Missiles and Space (PEO M&S) M-SHORAD Product Office in FY 2025 and become M-SHORAD Inc. 2. The RCCTO will utilize an Other Transaction Authority (OTA) contract to develop additional vehicle prototypes; the M-SHORAD Product Office will continue system development capitalizing on the RCCTO efforts and initiate future acquisition and contract documents.

Sensor/Weapon Component Effort: The M-SHORAD Inc 2 system is a component of an integrated fires development effort that includes survivability, resiliency, and effectiveness improvements against advanced threats from near-peer adversaries. This effort includes integration with an evolving common fires mission command, common development tools and processes, and annual test and evaluation to provide data to support program assessments and progress toward closure of performance gaps.

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) CR9 / Directed Energy M-SHORAD / M-SHORAD Inc 2
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Management Services (\$ in Millions)				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			
Product Management	Various	Various : Huntsville, AL	-	-		10.509	Dec 2022	11.014	Dec 2023	-		11.014	Continuing	Continuing	-
SBIR/STTR	TBD	TBD : TBD	-	-		3.523		-		-		-	0.000	3.523	-
AMP-HEL Product Management	Various	Various : Various	-	-		1.570	Jun 2023	-		-		-	0.000	1.570	-
AMP-HEL SBIR/STTR Transfer	TBD	TBD : TBD	-	-		1.487		-		-		-	0.000	1.487	-
Subtotal			-	-		17.089		11.014		-		11.014	Continuing	Continuing	N/A

Product Development (\$ in Millions)				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			
DE M-SHORAD Systems Development, Prototypes and Integration Inc. 2	C/CPFF	RCCTO OTA : TBD	-	-		91.073	Apr 2023	55.434	Dec 2023	-		55.434	Continuing	Continuing	-
DE M-SHORAD Software Support	MIPR	various : various	-	-		1.400	Oct 2022	-		-		-	0.000	1.400	-
DE M-SHORAD GFE	MIPR	PM Stryker : Warren, MI	-	-		10.922	Apr 2023	-		-		-	0.000	10.922	-
AMP-HEL Development Contract	C/CPFF	RCCTO OTA : TBD	-	-		55.114	Mar 2023	-		-		-	0.000	55.114	-
PEO CS&CSS to procure (4) Govt ISVs	MIPR	PEO CS&CSS : Warren, MI	-	-		1.000	May 2023	-		-		-	0.000	1.000	-
Subtotal			-	-		159.509		55.434		-		55.434	Continuing	Continuing	N/A

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) CR9 / Directed Energy M-SHORAD / M-SHORAD Inc 2
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Support (\$ in Millions)				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			
Contractor Logistics Support (CLS)	C/CPFF	RCCTO OTA : TBD	-	-		-		23.079	Nov 2023	-		23.079	Continuing	Continuing	-
Support Costs	MIPR	OGA : Multiple	-	-		-		6.608	Oct 2023	-		6.608	Continuing	Continuing	-
Subtotal			-	-		-		29.687		-		29.687	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				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			
DE M-SHORAD Developmental Test / Demonstration and Evaluation	MIPR	support demonstrations and experimentation : Various	-	-		-		14.490	Jan 2024	-		14.490	Continuing	Continuing	-
PEO Developmental Testing/User Assessment	MIPR	PEO M&S : Huntsville, AL	-	-		16.931	Feb 2023	-		-		-	0.000	16.931	-
DE M-SHORAD NEF Test Support	MIPR	Various : Various	-	-		1.750	May 2023	-		-		-	0.000	1.750	-
AMP-HEL Testing	MIPR	Various : Various	-	-		2.000	Jun 2023	-		-		-	0.000	2.000	-
Subtotal			-	-		20.681		14.490		-		14.490	Continuing	Continuing	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	-	197.279	110.625	110.625	Continuing	Continuing	N/A

Remarks
FY 2022 cost data for CR9 Directed Energy M-SHORAD / M-SHORAD Inc 2 is shown in the R-3 Exhibit for F14 (M-SHORAD Inc.1).

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) CR9 / Directed Energy M-SHORAD / M-SHORAD Inc 2

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	
M-SHORAD Inc. 2 Other Transaction Authority (OTA) Award					▲ 2 OTA Award																								
M-SHORAD Inc. 2 Prototyping																													
M-SHORAD Inc. 2 Contractor Logistics Support (CLS)																													
M-SHORAD Inc. 2 Development Testing																													
M-SHORAD Inc. 2 User Assessment																													
M-SHORAD Inc. 2 Prototype Delivery																	▲ 3												
M-SHORAD Inc. 2 Transition to PEO Missiles and Space																													
M-SHORAD Inc. 2 Future Acquisition Activities																													
AMP-HEL Other Transaction Authority (OTA) Award									▲ 1 AMP-HEL OTA Award																				
AMP-HEL Prototyping																													
AMP-HEL Acceptance Testing (AT)																													
AMP-HEL Prototype Deliveries (4)																	▲ 4 AMP-HEL Prototype Deliveries												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
M-SHORAD Inc. 2 Other Transaction Authority (OTA) Award	3	2023	3	2023
M-SHORAD Inc. 2 Prototyping	3	2023	4	2024
M-SHORAD Inc. 2 Contractor Logistics Support (CLS)	1	2024	4	2025
M-SHORAD Inc. 2 Development Testing	2	2023	3	2023
M-SHORAD Inc. 2 User Assessment	4	2023	1	2024
M-SHORAD Inc. 2 Prototype Delivery	4	2024	4	2024
M-SHORAD Inc. 2 Transition to PEO Missiles and Space	1	2025	4	2025
M-SHORAD Inc. 2 Future Acquisition Activities	1	2026	4	2030
AMP-HEL Other Transaction Authority (OTA) Award	2	2023	2	2023
AMP-HEL Prototyping	2	2023	4	2024
AMP-HEL Acceptance Testing (AT)	4	2024	4	2024
AMP-HEL Prototype Deliveries (4)	4	2024	4	2024

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CS1 / <i>M-SHORAD Inc 3</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
CS1: <i>M-SHORAD Inc 3</i>	-	-	67.196	160.426	-	160.426	195.469	152.605	190.546	193.372	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This project is a continuation of work previously justified in PE0604117A/Project F14.

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

Inc. 3 will provide a next generation short range interceptor to replace the existing Stinger missile. The new interceptor with support equipment will improve targeting capabilities to acquire targets with increased lethality and range, providing increased protection to the maneuver formations. Additionally, Inc. 3 will be compatible with the existing M-SHORAD Inc.1 platform and will provide a Soldier Portable Capability (SPC) to meet the need for dismounted air defense.

FY 2024 funding (CS1) in the amount of \$160.426 million supports Inc. 3 prototype and development effort and Technology Demonstration of critical technologies.

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

	FY 2022	FY 2023	FY 2024
<p>Title: M-SHORAD Inc. 3 Materiel Development/Integration</p> <p>FY 2023 Plans: Conduct program initiation activities to include technical evaluations, development of appropriate milestone documentation, and initiation of contract award activities for planned Inc. 3 prototyping and development contract award scheduled for FY 2023.</p> <p>FY 2024 Plans: Continue product development and conduct early technology demonstrations of critical technologies with multiple vendors. Perform Design Reviews.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: The increase from FY 2023 to FY 2024 is to accelerate technology maturation by continuing product development with multiple vendors. Vendors will demonstrate technologies at the FY 2024 Technology Demonstration.</p>	-	66.933	160.426
<p>Title: SBIR/STTR</p> <p>FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement:</p>	-	0.263	-

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CS1 / <i>M-SHORAD Inc 3</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638.			
Accomplishments/Planned Programs Subtotals	-	67.196	160.426

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

N/A

Remarks

D. Acquisition Strategy

The Inc. 3 Next Generation Short Range Interceptor (NGSRI) will replace the current Stinger capability with a new Short Range Air Defense missile that is both Soldier-portable and compatible with existing Stinger Vehicle Universal Launchers. FY 2023 is program initiation. The NGSRI will be developed through the Middle Tier of Acquisition Rapid Prototyping pathway using the Aviation and Missile Consortium Cost Plus Fixed Fee (CPFF) Other Transaction Authority (OTA) awarded to up to three suppliers. The program will transition to Major Capabilities Acquisition following the Operational Assessment and final down-select to one vendor prior to Milestone C production decision. Two integration efforts will begin during the OTA; integration of the new 30mm Multi-Mode Proximity Airburst (MMPA) ammunition (hardware and software) onto the platform, and software integration efforts for the NGSRI to effectively operate with the existing launcher platforms' fire control computers. The Program Office will minimize integration costs by conducting both integration efforts at the same time.

Sensor/Weapon Component Effort: The M-SHORAD Inc 3 system is a component of an integrated fires development effort that includes survivability, resiliency, and effectiveness improvements against advanced threats from near-peer adversaries. This effort includes integration with an evolving common fires mission command, common development tools and processes, and annual test and evaluation to provide data to support program assessments and progress toward closure of performance gaps.

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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 / 4				PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)				CS1 / M-SHORAD Inc 3							
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
Product Management Inc. 3	C/LH	Trident, Intuitive Research and others : Huntsville, AL	-	-		2.707	Oct 2022	2.888	Oct 2023	-		2.888	Continuing	Continuing	-
FY 2023 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.263		-		-		-	0.000	0.263	-
Subtotal			-	-		2.970		2.888		-		2.888	Continuing	Continuing	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
Engineering & Technical Support	MIPR	Combat Capabilities Development Command : Redstone Arsenal, AL	-	-		2.598	Oct 2022	2.657	Oct 2023	-		2.657	Continuing	Continuing	-
Systems Development and Integration	C/CPFF	Contractors : TBD	-	-		52.568	Jul 2023	152.556	Dec 2023	-		152.556	Continuing	Continuing	-
Subtotal			-	-		55.166		155.213		-		155.213	Continuing	Continuing	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
Technology Demonstration	MIPR	Army Test and Evaluation Center : Redstone Arsenal, Alabama	-	-		-		0.750	Oct 2023	-		0.750	Continuing	Continuing	-
Test Support	MIPR	Combat Capabilities Development Command :	-	-		-		1.325	Oct 2023	-		1.325	Continuing	Continuing	-

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) CS1 / M-SHORAD Inc 3
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Test and Evaluation (\$ in Millions)				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			
		Redstone Arsenal, Alabama													
Modeling and Simulation Development	MIPR	Combat Capabilities Development Command : Redstone Arsenal, AL	-	-		9.060	Oct 2022	0.250	Oct 2023	-		0.250	Continuing	Continuing	-
Subtotal			-	-		9.060		2.325		-		2.325	Continuing	Continuing	N/A
Project Cost Totals			-	-		67.196		160.426		-		160.426	Continuing	Continuing	N/A

Remarks
FY 2022 CS1 cost data for M-SHORAD Inc. 3 is shown in the R-3 Exhibit for FI4 (M-SHORAD Inc.1).

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CS1 / <i>M-SHORAD Inc 3</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				
Industry Collaboration																																
Prototype contract awards									▲ 1																							
Design, Development and Prototype Build																																
Technology Demonstration													■																			
Developmental Testing																																
Operational Assessment																					■											
Low Rate Initial Production (LRIP) Award																									▲ 2							
LRIP 1																																
LRIP 2																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) CS1 / <i>M-SHORAD Inc 3</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Industry Collaboration	4	2022	1	2023
Prototype contract awards	3	2023	3	2023
Design, Development and Prototype Build	3	2023	3	2027
Technology Demonstration	3	2024	4	2024
Developmental Testing	2	2026	3	2027
Operational Assessment	3	2027	3	2027
Low Rate Initial Production (LRIP) Award	4	2027	4	2027
LRIP 1	4	2027	4	2028
LRIP 2	4	2028	4	2029

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>				Project (Number/Name) F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</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
F14: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	-	37.939	10.363	10.188	-	10.188	10.190	15.235	10.209	10.323	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Army Air and Missile Defense Modernization Priority.

The Maneuver Short Range Air Defense (M-SHORAD) Increment 1 (Inc.1) systems add commensurate mobility and survivability to the maneuvering forces through protection against enemy air threats. The system consists of existing capabilities integrated onto a Stryker A1 Double-V Hull (DVH) Infantry Carrier Vehicle (ICV). The Reconfigurable Integrated-weapons Platform (RIWP) and Mission Equipment Package (MEP) house multiple missile and gun effectors integrated onto the Stryker A1 DVH vehicle.

FY 2024 funding (F14) in the amount of \$10.188 million supports upgrades for the M-SHORAD Inc. 1 systems through individual materiel changes to address operational lessons-learned and other system performance improvements/enhancements providing capability overmatch against emerging threats.

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

	FY 2022	FY 2023	FY 2024
Title: Initial M-SHORAD Materiel Development/Integration	37.939	9.985	10.188
Description: Funding is in support of development, integration, and testing of the M-SHORAD Inc 1. capability.			
FY 2023 Plans: Continue Engineering & Technical Support to ensure support of future planning for M-SHORAD Inc.1 technology insertions, upgrades through individual materiel changes to address operational lessons learned, and other system performance improvements/enhancements to provide overmatch capability against emerging threats. The M-SHORAD PO also plans to conduct an Operational Utility Assessment (OUA), as well as Dual Stinger Vehicle Universal Launcher (SVUL) Validation/ Verification testing to assess constraints/limitations of the M-SHORAD Inc. 1 system. Data from this event will support follow-on Program of Record Requirements.			
FY 2024 Plans: Continue Engineering & Technical Support for dual SVUL developmental testing (DT) and support of future planning for MSHORAD Inc.1 technology insertions, upgrades through individual materiel changes to address operational lessons learned, and other system performance improvements/enhancements to provide overmatch capability against emerging threats.			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army	Date: March 2023
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Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Increase funding represent slight cost increase for development, integration, and testing of the M-SHORAD Inc 1. capability.			
Title: FY 2023 SBIR/STTR Transfer Inc 1	-	0.378	-
FY 2023 Plans: Funding transferred in accordance with Title 15 USC §638.			
FY 2023 to FY 2024 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC §638.			
Accomplishments/Planned Programs Subtotals	37.939	10.363	10.188

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>
• C14301: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	332.984	135.747	400.697	-	400.697	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

M-SHORAD Increment 1 is a Rapid Acquisition Program responding to a Directed Requirement signed by the Vice Chief of Staff of the Army (VCSA) on 21 February 2018 to provide a short-term solution to address the lack of air defense capability in current maneuver formations. Prototyping and integration activities were conducted with three vendors utilizing three separate Other Transaction Authority (OTA) contracts. The M-SHORAD PO awarded a production IDIQ Unfinitized Contract Action (UCA) on September 30, 2020, to field four M-SHORAD Battalions. The production contract was definitized on 4 February 2022.

Recurring RDT&E in FY 2023 and beyond will provide for upgrades of the M-SHORAD Inc. 1 systems through materiel changes and upgrades, addressing operational lessons-learned and other system performance improvements/enhancements to provide overmatch capability against emerging threats.

Sensor/Weapon Component Effort: The M-SHORAD Increment 1 program is a component of an integrated fires development effort that includes survivability, resiliency, and effectiveness improvements against advanced threats from near-peer adversaries. This effort includes integration with an evolving common fires mission command, common development tools and processes, and annual test and evaluation to provide data to support program assessments and progress toward closure of performance gaps.

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) F14 / Maneuver - Short Range Air Defense (M-SHORAD)
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Management Services (\$ in Millions)				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			
Product Management Inc. 1	Various	Trident, Intuitive Research and others : Huntsville, Alabama	7.290	-		0.350	Oct 2022	0.342	Oct 2023	-		0.342	Continuing	Continuing	-
Product Management Inc. 2	TBD	Trident, Intuitive Research and others : Huntsville, Alabama	-	2.300	Oct 2021	-		-		-		-	0.000	2.300	-
FY 2023 SBIR/STTR Transfer Inc. 1	TBD	Various : Various	-	-		0.378	Feb 2023	-		-		-	0.000	0.378	-
Subtotal			7.290	2.300		0.728		0.342		-		0.342	Continuing	Continuing	N/A

Product Development (\$ in Millions)				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			
System Development, Prototypes and Integration Inc. 1	C/CPIF	Defense Ordnance Technology Consortium (DOTC) : Various	137.387	-		-		-		-		-	0.000	137.387	-
Government Furnished Equipment (GFE) Inc. 1	MIPR	Program Executive Officer Missiles and Space : Various	8.079	-		-		-		-		-	0.000	8.079	-
Product Improvements - Inc. 1	SS/CPFF	GDLS : Huntsville, AL	-	3.479	Oct 2021	4.883	Oct 2022	5.150	Oct 2023	-		5.150	Continuing	Continuing	-
Next Gen M-SHORAD Interceptor Inc. 3	C/CPFF	TBD : Huntsville, AL	-	1.186	Oct 2021	-		-		-		-	0.000	1.186	-
Engineering Changes from M-SHORAD (Inc. 1) Fielding	C/CPAF	GDLS : Huntsville, AL	1.000	8.674	Feb 2022	-		-		-		-	0.000	9.674	-
System Development, Prototypes and Integration Inc. 2	Various	Defense Ordnance Technology	-	22.300	Jan 2022	-		-		-		-	0.000	22.300	-

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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 / 4				PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)				F14 / Maneuver - Short Range Air Defense (M-SHORAD)								
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	
		Consortium (DOTC) : Various														
Subtotal			146.466	35.639		4.883		5.150		-		5.150	Continuing	Continuing	N/A	
Support (\$ 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	
Support Costs Inc. 1	MIPR	Aviation and Missiles Command (AMCOM) : Redstone Arsenal, AL	6.570	-		-		-		-		-	0.000	6.570	-	
Subtotal			6.570	-		-		-		-		-	0.000	6.570	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	
Developmental Testing Inc. 1	MIPR	Redstone Test Center (RTC) and White Sands Missile Range (WSMR) : Redstone, AL and WSMR, NM	12.573	-		1.420	Oct 2022	1.390	Oct 2023	-		1.390	0.000	15.383	-	
Test Support Inc. 1	MIPR	RTC, WSMR, Target Management Office and others : Redstone, AL and WSMR, NM	16.331	-		1.420	Oct 2022	1.390	Oct 2023	-		1.390	0.000	19.141	-	
Engineering & Technical Support Inc. 1	MIPR	Combat Capabilities Development Command :	3.148	-		1.912	Oct 2022	1.916	Oct 2023	-		1.916	Continuing	Continuing	-	

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

Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) FI4 / Maneuver - Short Range Air Defense (M-SHORAD)
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Test and Evaluation (\$ in Millions)				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			
		Redstone Arsenal, AL													
Subtotal			32.052	-		4.752		4.696		-		4.696	Continuing	Continuing	N/A
Project Cost Totals			192.378	37.939		10.363		10.188		-		10.188	Continuing	Continuing	N/A

Remarks
 To provide more detail, funding for Inc. 2 and Inc. 3 were broken out (CR9 and CS1) in FY 2023. Prior Year cost data for CR9 Directed Energy M-SHORAD / M-SHORAD Inc. 2 and CS1 M-SHORAD Inc. 3 is shown in the R-3 Exhibit for FI4 (M-SHORAD Inc.1).

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	Project (Number/Name) F14 / Maneuver - Short Range Air Defense (M-SHORAD)	

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	
Engineering and Technical Support / Emerging Threat Analysis																													
CDD approval for additional systems above Directed Requi...					1																								
Operational Utility Assessment (OUA)					2																								
Dual SVUL Developmental Testing									■																				
Developmental Testing													■																
Initial Operational Test																	■												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	Project (Number/Name) F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Technical Support / Emerging Threat Analysis	1	2022	4	2027
CDD approval for additional systems above Directed Requirement	1	2023	1	2023
Operational Utility Assessment (OUA)	3	2023	3	2023
Dual SVUL Developmental Testing	4	2023	4	2023
Developmental Testing	4	2024	4	2024
Initial Operational Test	4	2025	4	2025