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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	5.776	39.376	225.147	-	225.147	461.536	519.511	252.825	271.364	Continuing	Continuing
CR9: <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>	-	-	-	207.588	-	207.588	248.884	212.212	78.942	61.771	0.000	809.397
CS1: <i>M-SHORAD Inc 3</i>	-	-	-	7.196	-	7.196	202.249	296.906	163.486	199.199	0.000	869.036
FI4: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	-	5.776	39.376	10.363	-	10.363	10.403	10.393	10.397	10.394	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 (Inc. 2 & 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 (formally 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 will provide 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. The Army definitized the production contract for 124 MSHORAD INC 1 systems on 4 February 2022. The negotiated prices resulted in a change in procurement quantities for all three years. Updated quantities by FY are, Prior Year (29 qty.), FY21 (62 qty.) and FY22 (33 qty.)

(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.

(CS1) Inc. 3 will provide next generation defeat capabilities with increased range and lethality, 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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Army	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	4.813	39.376	0.000	-	0.000
Current President's Budget	5.776	39.376	225.147	-	225.147
Total Adjustments	0.963	0.000	225.147	-	225.147
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.963	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	225.147	-	225.147

**Change Summary Explanation**

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>				<b>Project (Number/Name)</b> CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
CR9: <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>	-	-	-	207.588	-	207.588	248.884	212.212	78.942	61.771	0.000	809.397
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This project is a continuation of work previously justified in PE 0604117A/Project FI4 and PE 0605054A/Project FI3.

**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) 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. M-SHORAD Inc. 2 will transition from the Army Rapid Capabilities and Critical Technologies Office (RCCTO) to the Program Executive Office Missiles and Space (PEO M&S) M-SHORAD Product Office in FY 2025.

FY 2023 (CR9) funding in the amount of \$207.588 million ensures M-SHORAD Inc. 2 system development and maturation will allow transition of effort from RCCTO to PEO M&S.

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> M-SHORAD Inc. 2 RCCTO Prototype Efforts	-	-	186.970
<b>FY 2023 Plans:</b> The RCCTO will use a portion of the FY 2023 funds (\$186.970 million) to continue building and integrating prototype vehicles for deliveries through FY 2024 and conduct Contractor Logistic Support (CLS) for a prototype platoon.			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> FY 2022 funding was previously captured in FI4. Funding increase is due to integration costs associated with producing additional prototype vehicles.			
<b>Title:</b> M-SHORAD Inc. 2 PEO MS Transition Efforts	-	-	20.618
<b>FY 2023 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p>The M-SHORAD Product Office will use a portion of the FY 2023 funds (\$20.618 million) to initiate acquisition and contract documents to support a competitive production decision and conduct a user assessment with the prototype platoon delivered in FY 2022.</p> <p><b><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></b>  FY 2022 funding was previously captured in FI4. Funding increase is due to program planning costs and transition efforts.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		-	-	207.588
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
Increment 2 will transition from the Army RCCTO to the PEO M&S M-SHORAD Product Office in FY 2025. The RCCTO will utilize an Other Transaction Authority (OTA) contract to buy additional vehicle prototypes; the M-SHORAD Product Office will initiate acquisition and contract documents to support a competitive production decision.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	<b>Project (Number/Name)</b> CR9 / Directed Energy M-SHORAD / M-SHORAD Inc 2
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<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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. 2	TBD	Trident, Intuitive Research and others : Huntsville, AL	-	-		-		2.698	Oct 2022	-		2.698	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		2.698		-		2.698	Continuing	Continuing	N/A

<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Systems Development, Prototypes and Integration Inc. 2	TBD	RCCTO OTA : Various	-	-		-		166.950	Jan 2023	-		166.950	Continuing	Continuing	-
User Assessment	TBD	OGA : Multiple	-	-		-		12.930	Oct 2022	-		12.930	0.000	12.930	-
<b>Subtotal</b>			-	-		-		179.880		-		179.880	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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) Inc. 2	TBD	To Be Determined : Various	-	-		-		20.020	Jan 2023	-		20.020	Continuing	Continuing	-
Support Costs	TBD	OGA : Multiple	-	-		-		4.990	Oct 2022	-		4.990	0.000	4.990	-
<b>Subtotal</b>			-	-		-		25.010		-		25.010	Continuing	Continuing	N/A

			Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-	-	207.588	-	207.588	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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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>			<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CR9 / <i>Directed Energy M-SHORAD / M-SHORAD Inc 2</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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						▲1																						
M-SHORAD Inc. 2 Prototyping									■																			
M-SHORAD Inc. 2 Prototype Platoon Second Unit Issued															▲3													
M-SHORAD Inc. 2 Contractor Logistics Support (CLS)									■																			
M-SHORAD Inc. 2 User Assessment											▲2																	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> 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	2	2022	2	2022
M-SHORAD Inc. 2 Prototyping	2	2022	4	2024
M-SHORAD Inc. 2 Prototype Platoon Second Unit Issued	4	2024	4	2024
M-SHORAD Inc. 2 Contractor Logistics Support (CLS)	1	2023	4	2025
M-SHORAD Inc. 2 User Assessment	4	2023	4	2023

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>				<b>Project (Number/Name)</b> CS1 / <i>M-SHORAD Inc 3</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
CS1: <i>M-SHORAD Inc 3</i>	-	-	-	7.196	-	7.196	202.249	296.906	163.486	199.199	0.000	869.036
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.

Maneuver Short Range Air Defense Increment 3 (M-SHORAD Inc. 3) will provide next generation defeat capabilities with increased range and lethality, 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 2023 funding (CS1) in the amount of \$7.196 million supports Inc. 3 program initiation in second quarter FY 2023 with a competitive source selection evaluation to initiate technology verification for the next generation interceptor. The funding also initiates the prototype and development effort with contract award(s) scheduled for fourth quarter FY 2023.

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> M-SHORAD Inc. 3 Materiel Development/Integration	-	-	7.196
<b>FY 2023 Plans:</b> 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 late FY23.			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding increase due to establishing new project code for M-SHORAD Inc. 3 in FY 2023.			
<b>Accomplishments/Planned Programs Subtotals</b>	-	-	7.196

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

N/A

**Remarks**

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CS1 / <i>M-SHORAD Inc 3</i>

**D. Acquisition Strategy**

Increment 3 will replace the current Stinger capability with a new Short Range Air Defense Missile that is both Soldier-portable and compatible with existing Stinger Universal Vehicle Launchers, in addition to adding 30mm Multi-Mode Proximity Ammunition. FY23 is program initiation, solicitation, and contract award.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CS1 / <i>M-SHORAD Inc 3</i>
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<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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. 3	C/T&M	Trident, Intuitive Research and others : Huntsville, AL	-	-		-		1.389	Oct 2022	-		1.389	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		1.389		-		1.389	Continuing	Continuing	N/A

<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Engineering & Technical Support Inc. 3	SS/T&M	Combat Capabilities Command : Redstone Arsenal, AL	-	-		-		2.083	Oct 2022	-		2.083	Continuing	Continuing	-
Systems Development and Integration Inc. 3	TBD	Contractor : Multiple	-	-		-		3.724	May 2023	-		3.724	Continuing	Continuing	-
<b>Subtotal</b>			-	-		-		5.807		-		5.807	Continuing	Continuing	N/A

			Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	-	-	7.196	-	7.196	Continuing	Continuing	N/A

**Remarks**  
 FY 2022 CS1 cost data for M-SHORAD Inc. 3 is shown in the R-3 Exhibit for F14 (M-SHORAD Inc.1).

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>			<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CS1 / <i>M-SHORAD Inc 3</i>	

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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. 3 Industry Collaboration																												
M-SHORAD Inc. 3 Prototype contract award(s)																												
M-SHORAD Inc. 3 Design, Development, Prototype Building & Performance Assessment																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> CS1 / <i>M-SHORAD Inc 3</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
M-SHORAD Inc. 3 Industry Collaboration	2	2022	4	2022
M-SHORAD Inc. 3 Prototype contract award(s)	4	2023	4	2023
M-SHORAD Inc. 3 Design, Development, Prototype Building & Performance Assessment	4	2023	4	2028

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>				<b>Project (Number/Name)</b> FI4 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
FI4: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	-	5.776	39.376	10.363	-	10.363	10.403	10.393	10.397	10.394	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

The Army definitized the production contract for 124 MSHORAD INC 1 systems on 4 February 2022. The negotiated prices resulted in a change in procurement quantities for all three years. Updated quantities by FY are, Prior Year (29 qty.), FY21 (62 qty.) and FY22 (33 qty.)

**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.

The Army definitized the production contract for 124 MSHORAD INC 1 systems on 4 February 2022. The negotiated prices resulted in a change in procurement quantities for all three years. Updated quantities by FY are, Prior Year (29 qty.), FY21 (62 qty.) and FY22 (33 qty.)

FY 2023 funding (FI4) in the amount of \$10.363 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)**

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Initial M-SHORAD Materiel Development/Integration	5.776	37.939	10.363
<b>FY 2022 Plans:</b> Inc.1. (\$13.600 million) Engineering & Technical Support- This RDTE funding supports OTA contracts for engineering design, analysis integration, and systems modifications for obsolescence associated with internal radar and command and control systems. Additionally, other product improvements are required to advance the discharge of 30mm munitions and modernize GPS equipment for GPS-denied environments. (\$8.674 million) Technical Support- This RDTE funding supports personnel assigned to government organizations to manage the various product improvements associated with OTA contracts. (\$3.479 million)			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p>Inc.2. (\$24.600 million)                      Program Management (PM) - Personnel in support of M-SHORAD Product Office (contractor support). FY 2022 PM costs support Inc. 2 planning. Current funding for Inc. 2 supports personnel currently working in the Inc. 2 Product Office (PO). The PO plans to transition the Inc. 2 team in FY 2024 to M-SHORAD PO. (\$3.000 million)                      System Development, Prototypes and Integration - RDTE dollars placed through Rapid Capabilities and Critical Technologies Office (RCCTO) Other Transaction Authority contract for vendors that produce components and integrate prototype systems. (\$21.600 million)</p> <p>Inc.3. (\$1.186 million)                      Prepare Requests for Information, conduct Industry Day, review white papers for Next Generation Interceptors. Industry Day will provide information for qualified contractors for a competitive shoot-off.</p> <p><b>FY 2023 Plans:</b>                      Continue Engineering &amp; 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 Expeditionary Operational Assessment (EOA) in late FY23 to assess constraints/limitations of the M-SHORAD Inc. 1 system. Data from this event will support follow-on Program of Record Requirements.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b>                      Funding decrease due to completion of Developmental Testing and Operational Assessment improvements and transition to continuous technical insertions/upgrades to keep pace with the evolving threat.</p>				
<p><b>Title:</b> FY22 SBIR/STTR Transfer</p> <p><b>FY 2022 Plans:</b>                      Funding transferred in accordance with Title 15 USC ?638</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b>                      Funding transferred in accordance with Title 15 USC ?638</p>		-	1.437	-
<b>Accomplishments/Planned Programs Subtotals</b>		5.776	39.376	10.363

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army	<b>Date:</b> April 2022
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<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• C14301: <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	517.287	331.575	135.747	-	135.747	58.336	-	-	-	Continuing	Continuing

**Remarks**

The Army definitized the production contract for 124 MSHORAD INC 1 systems on 4 February 2022. The negotiated prices resulted in a change in procurement quantities for all three years. Updated quantities by FY are, Prior Year (29 qty.), FY21 (62 qty.) and FY22 (33 qty.)

**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 Undefinitized Contract Action (UCA) on September 30, 2020 to field four M-SHORAD Battalions. The production contract was definitized on 4 February 2022.

Initially, logistics and maintenance support for Inc. 1 systems will be provided through Interim Contractor Support (ICS) using the Production Indefinite Delivery, Indefinite Quantity (IDIQ) Contract. A Business Case Analysis (BCA) will be performed during the ICS phase to determine the most economical and beneficial way to support the production units in the out years through either CLS, Organic Depot support, or a hybrid of Contractor Logistics Support (CLS)/Organic logistics and maintenance support. Recurring RDT&E in FY 2023 and beyond provides for the upgrade of the M-SHORAD Inc. 1 systems through individual materiel changes and upgrades to address operational lessons-learned and other system performance improvements/enhancements to provide overmatch capability against emerging threats.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	<b>Project (Number/Name)</b> F14 / Maneuver - Short Range Air Defense (M-SHORAD)
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<b>Management Services (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	5.704	0.376	Apr 2021	-		0.350	Oct 2021	-		0.350	Continuing	Continuing	-
FY 2020 SBIR/STTR Transfer Inc. 1	TBD	Various : Various	1.210	-		-		-		-		-	0.000	1.210	-
Product Management Inc. 2	TBD	Trident, Intuitive Research and others : Huntsville, Alabama	-	-		2.300	Oct 2021	-		-		-	0.000	2.300	-
SBIR/STTR TRANSFER	SS/TBD	Various : Various	-	-		1.437		-		-		-	0.000	1.437	-
<b>Subtotal</b>			6.914	0.376		3.737		0.350		-		0.350	Continuing	Continuing	N/A

<b>Product Development (\$ in Millions)</b>				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Engineering & Technical Support Inc. 1	MIPR	Combat Capabilities Development Command : Redstone Arsenal, AL	3.148	-		-		1.912	Oct 2022	-		1.912	Continuing	Continuing	-
System Development, Prototypes and Integration Inc. 1	C/CPIF	Defense Ordnance Technology Consortium (DOTC) : Various	135.387	2.000	Mar 2021	-		-		-		-	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	TBD	To Be Determined : Huntsville, AL	-	-		3.479	Oct 2021	5.261	Oct 2022	-		5.261	Continuing	Continuing	-
Next Gen M-SHORAD Interceptor Inc. 3	Various	Contractor : TBD	-	-		1.186	Oct 2021	-		-		-	0.000	1.186	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
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 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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 Changes from M-SHORAD (Inc. 1) Fielding	Various	Contractor : TBD	-	1.000		8.674	Feb 2022	-		-		-	0.000	9.674	-
System Development, Prototypes and Integration Inc. 2	Various	Defense Ordnance Technology Consortium (DOTC) : Various	-	-		22.300	Jan 2022	-		-		-	0.000	22.300	-
<b>Subtotal</b>			146.614	3.000		35.639		7.173		-		7.173	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	5.570	1.000	May 2021	-		-		-		-	0.000	6.570	-
<b>Subtotal</b>			5.570	1.000		-		-		-		-	0.000	6.570	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	-		-		-		-		-	0.000	12.573	-
Test Support Inc. 1	MIPR	RTC, WSMR, Target Management Office and others :	14.931	1.400	Mar 2021	-		2.840	Oct 2020	-		2.840	0.000	19.171	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> FI4 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>
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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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, AL and WSMR, NM													
<b>Subtotal</b>			27.504	1.400		-		2.840		-		2.840	0.000	31.744	N/A
<b>Project Cost Totals</b>			186.602	5.776		39.376		10.363		-		10.363	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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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2023 Army</b>		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / Maneuver - Short Range Air Defense (M-SHORAD)	<b>Project (Number/Name)</b> F14 / Maneuver - Short Range Air Defense (M-SHORAD)

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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. 1) Testing	[Redacted]				M-SHORAD (Inc. 1) Testing																							
M-SHORAD (Inc. 1) Contract Definitization					3																							
M-SHORAD (Inc. 1) Urgent Materiel Release (UMR)	1				M-SHORAD (Inc. 1) Contract Definitization																							
M-SHORAD (Inc. 1) First Unit Equipped (FUE)	2				M-SHORAD (Inc. 1) Urgent Materiel Release (UMR)																							
Engineering and Technical Support	M-SHORAD (Inc. 1) First Unit Equipped (FUE)				Engineering and Technical Support																							
Expeditionary Operational Assessment (EOA)									4				Expeditionary Operational Assessment (EOA)															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604117A / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>	<b>Project (Number/Name)</b> F14 / <i>Maneuver - Short Range Air Defense (M-SHORAD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Directed Requirement	2	2018	2	2018
M-SHORAD Increment 1 (Inc. 1) Material Development/Integration	4	2018	1	2020
M-SHORAD (Inc. 1) Testing	4	2019	1	2021
M-SHORAD (Inc. 1) Contract Definitization	2	2022	2	2022
M-SHORAD (Inc. 1) Urgent Materiel Release (UMR)	3	2021	3	2021
M-SHORAD (Inc. 1) First Unit Equipped (FUE)	3	2021	3	2021
Engineering and Technical Support	1	2022	4	2027
Expeditionary Operational Assessment (EOA)	4	2023	4	2023