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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing
FI4: Short Range Air Defense (M-SHORAD)	-	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note
The efforts in this PE are a continuation of the SHORAD “shoot off” in Fourth Quarter FY 2017, which was requested in Program Element 0203801, Project DT5. The “shoot off” will evaluate industry solutions for mitigating the maneuver SHORAD capability gap.

A. Mission Description and Budget Item Justification
The Army has a need to improve capabilities to defend maneuver formations and other tactical echelons from low altitude air attack and surveillance. Adaptive threats have developed a suite of airborne threat capabilities, supported by an integrated mix of surface-to-air and surface-to-surface shooters that threaten maneuver forces’ ability to conduct operations. Specifically, maneuver formations require improved air defense identification and defeat capabilities to counter Rocket Artillery and Mortar (RAM), Fixed Wing (FW), Rotary Wing (RW), and Unmanned Aerial Systems (UAS)).

This additional capability will be provided through a multi-phase approach that enables rapid fielding of an initial capability, culminating in a program of record that will field a full capability. Initially, the Army will field an interim, near-term Maneuver-Short Range Air Defense (M-SHORAD) solution using an Army Senior Leader Directed Requirement, informed by a FY 2017 “SHORAD Shoot Off”. The system or system-of-systems solution will provide the capability to identify, track, and neutralize or destroy low-altitude air threats to include Rotary Wing (RW), Group 1 – 3 Unmanned Aircraft Systems (UAS), and Fixed Wing (FW) while keeping pace and surviving with the armored and infantry maneuver forces. This interim solution will be fielded to one M-SHORAD battalion.

The FY 2018 will begin the initial interim M-SHORAD capability development and integration of the identified solution into existing maneuver formation equipment. The interim solution requirements will be identified in an Army Senior Leader Directed Requirement and based on the FY 2017 “SHORAD Shoot Off”. Efforts will include: hardware/software modifications and integration of sensors and defeat mechanisms; initial development of tactics, techniques, and procedures (TTPs); initial development of logistics products to include training requirements; and planning for testing required to obtain a material release.

FY2018 base dollars in the amount of \$20,000 million are required to support the analysis and design, integration, and testing of the M-SHORAD solutions.

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Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0604117A I Short Range Air Defense (M-SHORAD)			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	20.000	-	20.000
Total Adjustments	0.000	0.000	20.000	-	20.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	0.000	0.000	20.000	-	20.000
Change Summary Explanation					
Additional funding is to begin interim M-SHORAD development efforts, leveraging the FY17 M-SHORAD Shoot off.					

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Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)				Project (Number/Name) FI4 / Short Range Air Defense (M-SHORAD)			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
FI4: Short Range Air Defense (M-SHORAD)	-	0.000	0.000	20.000	-	20.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a New Start.

A. Mission Description and Budget Item Justification

The Army has a need to improve capabilities to defend maneuver formations and other tactical echelons from low altitude air attack and surveillance. Adaptive threats have developed a suite of airborne threat capabilities, supported by an integrated mix of surface-to-air and surface-to-surface shooters that threaten maneuver forces' ability to conduct operations. Specifically, maneuver formations require improved air defense identification and defeat capabilities to counter Rocket Artillery and Mortar (RAM), Fixed Wing (FW), Rotary Wing (RW), and Unmanned Aerial Systems (UAS)).

This additional capability will be provided through a multi-phase approach that enables rapid fielding of an initial capability, culminating in a program of record that will field a full capability. Initially, the Army will field an interim, near-term Maneuver-Short Range Air Defense (M-SHORAD) solution using an Army Senior Leader Directed Requirement, informed by a FY 2017 "SHORAD Shoot Off". The system or system-of-systems solution will provide the capability to identify, track, and neutralize or destroy low-altitude air threats to include Rotary Wing (RW), Group 1 – 3 Unmanned Aircraft Systems (UAS), and Fixed Wing (FW) while keeping pace and surviving with the armored and infantry maneuver forces. This interim solution will be fielded to one M-SHORAD battalion.

The FY 2018 will begin the initial interim M-SHORAD capability development and integration of the identified solution into existing maneuver formation equipment. The interim solution requirements will be identified in an Army Senior Leader Directed Requirement and based on the FY 2017 "SHORAD Shoot Off". Efforts will include: hardware/software modifications and integration of sensors and defeat mechanisms; initial development of tactics, techniques, and procedures (TTPs); initial development of logistics products to include training requirements; and planning for testing required to obtain a material release.

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

	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Interim Solution Material Development/Integration	-	-	15.000	-	15.000
Description: Funding is provided for the following efforts:					
FY 2018 Base Plans:					
- Leverage information gathered during the SHORAD "Shoot Off" to begin hardware/software modifications and integration of sensors and defeat mechanisms based on the Directed Requirement.					
- Begin purchasing components and/or manufacturing of prototype hardware for the interim solution.					

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Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)				Project (Number/Name) FI4 / Short Range Air Defense (M-SHORAD)			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Assess the interim solution to begin shaping requirements for the longer-term solution.											
Title: Logistics and Test Planning							-	-	5.000	-	5.000
Description: Funding is provided for the following efforts:											
FY 2018 Base Plans:											
- Begin initial development of logistics products to include training requirements, an assessment of changes to school, unit collective training, and potentially training devices.											
- Begin initial TTP efforts to conduct Air and Missile Defense operations in support of the maneuvering force.											
- Leverage the SHORAD Shoot Off testing to begin test planning supporting material release requirements.											
Accomplishments/Planned Programs Subtotals							-	-	20.000	-	20.000
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• PE 0605456A Proj PA3: PAC-3/MSE MISSILE	2.201	-	-	-	-	-	-	-	-	0	2.201
• SSN C53101: MSE Missile	514.946	702.201	459.040	-	459.040	499.915	540.669	523.413	524.934	Continuing	Continuing
• PE 0205456A Proj EF9: System Integration and Test	61.653	73.417	78.926	-	78.926	80.314	109.222	112.614	123.007	Continuing	Continuing
• PE 0604114A Proj EX2: Lower Tier Air Missile Defense (LTAMD) Capability	-	35.132	76.728	-	76.728	67.088	83.195	141.185	142.000	Continuing	Continuing
• SSN C50016: Lower Tier Air and Missile Defense (AMD)	130.275	126.470	140.826	-	140.826	125.161	144.243	119.282	121.825	Continuing	Continuing
• PE 0604319A Proj DU: IFPC2	149.222	-	11.303	-	11.303	52.604	239.305	259.804	316.104	Continuing	Continuing
• PE 0605052A Proj EY7: IFPC Increment 2 - Block 1	-	83.995	175.069	-	175.069	149.506	52.300	24.700	-	0.000	485.570
• SSN C62001: IFPC Inc 2-I Block 1 Missile 1	-	-	57.742	-	57.742	157.406	144.740	100.400	14.600	Continuing	Continuing
• SSN C62002: IFPC Inc 2-I Block 1 System	-	19.319	-	-	-	31.641	191.830	315.025	277.500	Continuing	Continuing

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Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)				Project (Number/Name) F14 / Short Range Air Defense (M-SHORAD)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• SSN C62004: IFPC Inc 2-I Block 2 Missile	-	-	-	-	-	-	-	-	12.300	Continuing	Continuing
• PE 0604820A Proj E10: Sentinel	11.821	15.983	32.968	-	32.968	31.761	51.897	72.562	81.351	Continuing	Continuing
• PE 0605457A Proj S40: Army Integrated Air and Missile Defense (AIAMD)	222.074	272.811	336.420	-	336.420	290.250	190.600	117.470	64.510	Continuing	Continuing
• SSN BZ5075: IAMD Battle Command System	20.917	204.969	-	-	-	-	274.494	375.026	513.464	Continuing	Continuing
• PE 0604741A Proj 146: Air Defense C2I Eng Dev	33.619	61.532	28.726	-	28.726	28.320	14.638	8.674	-	0	175.509
• SSN AD50700: AIR & MSL Defense Planning & Control Sys	28.176	126.539	26.635	24.100	50.735	17.960	6.366	32.397	-	0	262.173
Remarks											
This program is an integral part of the Army Integrated Air and Missile Defense (IAMD) architecture.											
D. Acquisition Strategy											
Multi-phase approach using the SHORAD “Shoot off” as the initial basis to identify near-term interim solutions. The acquisition strategy for this near-term interim solution will be driven by identification of the solution that best addresses the capability gaps in a short timeframe and the content of the directed requirement. Given the urgency of the requirement, existing contracts will be leveraged to the maximum extent possible.											
The Army continues to develop the strategy for the longer-term program of record solution and will request follow-on resources based on emerging plans. The longer-term process to a program of record may involve additional near-to-mid-term interim solutions using maturing technology prior to the program of record development. Outyear resources will be applied as the solutions are more fully identified and cost estimates are refined.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army													Date: May 2017		
Appropriation/Budget Activity 2040 / 4				R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)					Project (Number/Name) FI4 / Short Range Air Defense (M-SHORAD)						
Management Services (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	TBD	Cruise Missile Defense Systems Project Office : Huntsville, Alabama	0.000	-		-		1.000	Oct 2017	-		1.000	Continuing	Continuing	Continuing
Subtotal			0.000	-		-		1.000		-		1.000	-	-	-
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
System/Sub-system Development Engineering	Various	Multiple Activities : Multiple Locations	0.000	-		-		12.000		-		12.000	0.000	12.000	0.000
System/Sub-system Prototype Manufacturing	TBD	To Be Determined : To Be Determined	0.000	-		-		2.000		-		2.000	0.000	2.000	0.000
Subtotal			0.000	-		-		14.000		-		14.000	0.000	14.000	0.000
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
System/Subsystem Developmental Testing	Various	Multiple Activities : Multiple Locations	0.000	-		-		5.000		-		5.000	0.000	5.000	0.000
Subtotal			0.000	-		-		5.000		-		5.000	0.000	5.000	0.000
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		0.000		20.000		-		20.000	-	-	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army																Date: May 2017																
Appropriation/Budget Activity 2040 / 4								R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)								Project (Number/Name) FI4 / Short Range Air Defense (M-SHORAD)																
Event Name	FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	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				
(1) Directed Requirement									1																							
Interim Solution Material Development/Integration									Directed Requirement																							
									Interim Solution Material Development/Integration																							

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army			Date: May 2017
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604117A / Short Range Air Defense (M-SHORAD)	Project (Number/Name) FI4 / Short Range Air Defense (M-SHORAD)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Directed Requirement	1	2018	1	2018
Interim Solution Material Development/Integration	2	2018	1	2019