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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	33.780	76.728	120.374	-	120.374	125.772	376.738	332.322	241.461	Continuing	Continuing
EX2: Lower Tier Air Missile Defense (LTAMD) Capability	-	33.780	76.728	120.374	-	120.374	125.772	376.738	332.322	241.461	Continuing	Continuing

Note

Starting in FY17, funding realigned from PE 0607865A, PATRIOT Product Improvement (Project DV8).

A. Mission Description and Budget Item Justification

Lower Tier Air Missile Defense (LTAMD) Capability program will provide the required sensing capabilities in the lower tier portion of the ballistic missile defense battlespace. The acquisition program will competitively select the sensor/radar set (RS) to replace the baseline PATRIOT RS (AN/MPQ-65A) due to threat changes and the growing obsolescence and high Operational & Support (O&S) cost of the existing RS. The LTAMD Capability will address critical capability gaps, modernize technology, reduce O&S costs, mitigate obsolescence, and increase reliability and maintainability. The LTAMD Capability will increase sensor/radar performance to maximize the inherent PAC-3 Missile Segment Enhanced (MSE) Interceptor capabilities to engage threats.

Lower Tier Air Missile Defense (LTAMD) Capability tasks include the programmatic and engineering activities needed for LTAMD-Capability post Milestone A activities, and preparation required to execute the competitive Technology Maturation and Risk Reduction (TMRR) agreement. Once proposed TMRR materiel solutions have been evaluated, the development effort for LTAMD Capability will continue into the Engineering and Manufacturing Development (EMD) phase to enable the prototyping, development, and testing of the LTAMD Capability.

FY2019 base dollars in the amount of \$120.374 million continues Lower Tier Missile Defense Capability to include programmatic and engineering activities needed for TMRR activities described above.

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Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability			
B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	35.132	76.728	67.088	-	67.088
Current President's Budget	33.780	76.728	120.374	-	120.374
Total Adjustments	-1.352	0.000	53.286	-	53.286
• Congressional General Reductions	-0.017	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.335	-			
• Adjustments to Budget Years	-	-	53.286	-	53.286
Change Summary Explanation					
Funding increase of \$53.286M in FY19 is in support of the Army's Missile Defense modernization priorities.					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability				Project (Number/Name) EX2 / Lower Tier Air Missile Defense (LTAMD) Capability			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EX2: Lower Tier Air Missile Defense (LTAMD) Capability	-	33.780	76.728	120.374	-	120.374	125.772	376.738	332.322	241.461	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Lower Tier Air and Missile Defense Sensor (LTAMDS) satisfies the Warfighter's capability requirements in the integrated air and missile defense domain. The program provides the required sensing capabilities in the lower tier portion of the air and missile defense battlespace and expands the battlespace for the Patriot Advanced Capability (PAC-3) Missile Segment Enhancement (MSE) interceptor. The Army Requirements Oversight Council (AROC) approved LTAMDS requirements in April 2016. The Fires Center of Excellence (FCoE) draft LTAMDS Capability Development Document (CDD) synchronizes Warfighter needs with AROC-approved requirements.

LTAMDS will competitively select the sensor/radar set (RS) to replace the baseline PATRIOT RS (AN/MPQ-65A) to address emerging advances in threat systems, which, coupled with the growing obsolescence and high operations & support (O&S) costs of the current lower tier sensor, drives a materiel solution. Consequently, the collective purpose of LTAMDS is to address critical capability gaps using state of the art technology, reduce O&S costs, mitigate obsolescence, and increase reliability & maintainability (R&M).

LTAMDS FY2019 funding requirements include continuation of incremental funding up to three contractors conducting engineering and prototyping activities to integrate components into the next higher assembly (known as Line Replaceable Unit (LRU)), and Government/Other Transaction Agreement (OTA) knowledge point and functional reviews of vendors' prototypes. Additionally, LTAMDS will initiate programmatic and contracting efforts for the development of the Engineering and Manufacturing Development (EMD) phase. Additional funding allows early software design development and the beginning of software testing.

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

	FY 2017	FY 2018	FY 2019
Title: Lower Tier Missile Defense Sensor	33.780	76.728	120.374
Description: Provides the required sensing capabilities in the lower tier portion of the air and missile defense battlespace and expands the battlespace for the Patriot Advanced Capability (PAC-3) Missile Segment Enhancement (MSE) interceptor.			
FY 2018 Plans:			
- Conducted LTAMDS programmatic and engineering activities needed for Technology Maturity and Risk Reduction (TMRR) phase			
- Conducted Milestone A Defense Acquisition Board (DAB)			
- Completed Concept Definition activities and component level knowledge point evaluations			
- Awarded Defense Ordnance Technology Consortium (DOTC) TMRR contract agreements			

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B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019		
- Continued refinement of LTAMDS System Performance Specification FY 2019 Plans: - Conduct LTAMDS Technology Maturation and Risk Reduction (TMRR) phase vendor engineering and prototyping activities to integrate components into the next higher assembly (known as the Line Replaceable Unit --LRU). - Conduct Department of Defense Ordnance Technology Consortium (DOTC) TMRR knowledge point and functional reviews of vendor's prototypes. - Begin Engineering and Manufacturing Development (EMD) contract planning. - With additional funding, conduct engagements with industry to enable further software development and design concepts to accelerate capability. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in funding allows early software design development and the beginning of software testing. Utilizing additional funding allows the Army to be better informed enabling acceleration of capability.											
Accomplishments/Planned Programs Subtotals							33.780	76.728	120.374		
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• DV8: Patriot Product Improvement	48.073	90.217	65.369	-	65.369	42.803	61.495	78.745	94.510	0.000	481.212
Remarks											
D. Acquisition Strategy											
To enhance the Warfighter's lethality, survivability, and combat effectiveness, the Army is using the Department of Defense Ordnance Technology Consortium Other Transaction Agreement (DOTC OTA) for Concept Definition (CD) efforts. Based on CD results, the Army plans to continue using the DOTC OTA process to conduct TMRR activities. DOTC OTA promotes non-traditional contractor involvement, accelerates schedule, provides early government-contractor dialogue, provides detailed contractor cost and schedule estimates, verifies industry readiness, and informs the Milestone Decision Authority (MDA) on materiel solutions and design concepts for milestone events.											
Since this time last year, engagements with industry have enabled refinement of the schedule to accelerate capability. Utilizing DOTC contract agreements with four consortium members has better informed the Army. Through this refinement and agreement the net effect is acceleration of schedule and capability.											

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<p>The LTAMDS program will pursue a competitive approach that delivers the best materiel solution to meet LTAMDS performance requirements within cost and schedule. Using the DOTC process, the Army competitively selected four contractors for CD and will select up to three contractors for TMRR. Leading up to MS B, the Army will explore the continued use of OTAs to select a single contractor for EMD.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Missile Defense (LTAMD) Capability						Project (Number/Name) EX2 / Lower Tier Air Missile Defense (LTAMD) Capability			
Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Government Program Management	MIPR	Various : Redstone Arsenal, AL	-	6.285	Oct 2016	3.515	Oct 2017	4.515	Oct 2018	-		4.515	Continuing	Continuing	-
Systems Engineering and Technical Assistance (SETA)	Various	Systems Engineering and Technical Assistance : Huntsville, AL	-	3.000	Oct 2016	5.000	Oct 2017	5.000	Oct 2018	-		5.000	Continuing	Continuing	-
Subtotal			-	9.285		8.515		9.515		-		9.515	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Technical Maturation and Risk Reduction (TMRR)	C/TBD	TBD : TBD	-	-		12.197	Jul 2018	96.759	Mar 2019	-		96.759	Continuing	Continuing	-
Concept Definition	C/CPFF	Raytheon, Lockheed Martin, Technovative Applications, Northrop Grumman : Andover MA; Liverpool NY; Brea CA; Linthicum MD	-	24.495	Aug 2017	47.416	Mar 2018	-		-		-	0.000	71.911	-
Product Development Support	C/TBD	TBD : TBD	-	-		-		3.000	Oct 2018	-		3.000	0.000	3.000	-
Subtotal			-	24.495		59.613		99.759		-		99.759	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Test Planning/Targets/Interceptors/U.S. Other Government Agencies (OGAs)	MIPR	RDEC, SED, WSMR-T&E Support : Huntsville, AL; White Sands, NM	-	-		8.600	Jan 2018	11.100	Jan 2019	-		11.100	Continuing	Continuing	-

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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Subtotal			-	-		8.600		11.100		-		11.100	Continuing	Continuing	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	33.780	76.728	120.374	-	120.374	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

2040 / 4

R-1 Program Element (Number/Name)

PE 0604114A / Lower Tier Missile Defense
(LTAMD) Capability

Project (Number/Name)

EX2 / Lower Tier Air Missile Defense
(LTAMD) Capability

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Concept Definition																												
Milestone A																												
Technology Maturation and Risk Reduction																												
TMRR Contract Award																												
Preliminary Design Review																												
Hardware/Software Evaluation																												
Milestone B																												
Engineering and Manufacturing Development																												
Critical Design Review																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / <i>Lower Tier Missile Defense (LTAMD) Capability</i>	Project (Number/Name) EX2 / <i>Lower Tier Air Missile Defense (LTAMD) Capability</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Definition	4	2017	4	2018
Milestone A	3	2018	3	2018
Technology Maturation and Risk Reduction	3	2018	3	2022
TMRR Contract Award	3	2018	3	2018
Preliminary Design Review	2	2020	2	2020
Hardware/Software Evaluation	2	2020	1	2021
Milestone B	3	2022	3	2022
Engineering and Manufacturing Development	3	2022	4	2024
Critical Design Review	2	2021	2	2021