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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019			
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 0604114A I Lower Tier Air Missile Defense (LTAMD) Sensor								
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
Total Program Element	-	57.437	89.248	427.772	-	427.772	376.738	332.322	241.461	87.500	Continuing	Continuing	
EX2: Lower Tier Air Missile Defense (LTAMD) Capability	-	57.437	89.248	427.772	-	427.772	376.738	332.322	241.461	87.500	Continuing	Continuing	

Note

LTAMDS is currently scheduled to begin receiving procurement funds in FY 2022.

A. Mission Description and Budget Item Justification

Lower Tier Air Missile Defense Sensor (LTAMDS) program will provide the required sensing capabilities, surveillance and fire control in the lower tier portion of the Army Integrated Air and Missile Defense (IAMD) 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 LTAMDS capability will address critical capability gaps, modernize technology, reduce O&S costs, mitigate obsolescence, and increase reliability and maintainability. The LTAMDS capability will increase sensor/radar performance to maximize the inherent PAC-3 Missile Segment Enhanced (MSE) Interceptor capabilities to engage threats.

FY 2020 base dollars in the amount of \$427.772 million supports acceleration of the Lower Tier Air Missile Defense (LTAMDS) Sensor program. FY 2020 tasks include purchase of prototypes, purchase of test equipment, and supports programmatic and engineering activities needed to select the best technical approach that meets accelerated fielding timelines and facilitates incremental capability enhancements.

B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	76.728	120.374	125.772	-	125.772
Current President's Budget	57.437	89.248	427.772	-	427.772
Total Adjustments	-19.291	-31.126	302.000	-	302.000
• Congressional General Reductions	-0.049	-0.111			
• Congressional Directed Reductions	-16.900	-31.015			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.342	-			
• Adjustments to Budget Years	-	-	302.000	-	302.000

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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 Air Missile Defense (LTAMD) Sensor	
Change Summary Explanation FY 2020 funding increase of \$302.000 million to accelerate program's IOC to select the best technical approach that meets accelerated fielding timelines and facilitates incremental capability enhancements in accordance with FY 2018 NDAA requirement to accelerate LTAMDS Initial Operational Capability to not later than December 2023. FY 2019 funding reduction of \$31.126 million. FY 2018 funding reduction of \$16.900 million for contract award delay, Congressional rescission \$0.049 million, and \$2.342 million for SBIR/STTR transfer.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Air Missile Defense (LTAMD) Sensor				Project (Number/Name) EX2 / Lower Tier Air Missile Defense (LTAMD) Capability			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
EX2: Lower Tier Air Missile Defense (LTAMD) Capability	-	57.437	89.248	427.772	-	427.772	376.738	332.322	241.461	87.500	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Starting in FY 2017, funding realigned from PE 0607865A, PATRIOT Product Improvement (Project DV8).

CFT Supported, LTAMDS.

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 Army will competitively select the LTAMDS to service Air and Missile Defense threats using state of the art technology, reduce Operating and Sustainment, mitigate obsolescence, and increase reliability and maintainability.

LTAMDS FY 2020 funding will be utilized for procurement of prototypes, integration of LTAMDS technology into prototypes, further development of system performance specifications, and to initiate contractor verification testing. FY 2020 activities support the FY 2018 NDAA requirement to accelerate LTAMDS Initial Operational Capability to not later than December 2023.

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

	FY 2018	FY 2019	FY 2020
Title: Lower Tier Missile Defense Sensor	57.388	84.981	427.772
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 2019 Plans:			
- Coordinate competitive LTAMDS Sense-Off demonstration			
- Conduct LTAMDS Sense-Off demonstration			
- Select single vendor to integrate LTAMDS solution			
- Execute System Requirements Review with selected vendor			
- Award OTA agreement to build and integrate LTAMDS solution for Initial Operational Capability / Urgent Material Release			

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B. Accomplishments/Planned Programs (\$ in Millions)										FY 2018	FY 2019	FY 2020
- Identify and purchase long-lead items												
FY 2020 Plans:												
- Initiate LTAMDS prototype manufacture and integration activities												
- Conduct knowledge point and functional reviews of vendor prototypes												
- Initiate Contractor Verification Testing												
FY 2019 to FY 2020 Increase/Decrease Statement:												
FY 2019 to FY 2020 funding increase of \$342.791 million funds activities to achieve FY2018 NDAA requirement to accelerate LTAMDS Initial Operational Capability to not later than December 2023.												
Title: FY18 Congressional Rescission										0.049	-	-
Title: FY 2019 SBIR/STTR TRANSFER										-	4.267	-
Description: FY 2019 SBIR/STTR TRANSFER												
FY 2019 Plans:												
FY 2019 SBIR/STTR TRANSFER												
FY 2019 to FY 2020 Increase/Decrease Statement:												
FY 2019 SBIR/STTR TRANSFER												
Accomplishments/Planned Programs Subtotals										57.437	89.248	427.772
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
• DV8: Patriot Product Improvement	77.391	75.288	96.430	-	96.430	102.095	81.545	97.510	96.395	0.000	626.654	
• C12101: Lower Tier Air and Missile Defense Sensor	-	-	0.000	-	0.000	-	36.000	66.300	195.000	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
To enhance the Warfighter's lethality, survivability, and combat effectiveness, the Army is using full and open competitive processes within Other Transactions Authority (OTA) agreements for rapid prototyping, qualification, and initial fielding efforts to meet the intent of FY 2018 NDAA Congressional language. Middle Tier Acquisition approach (Section 804, FY 2016 NDAA) authorities will be leveraged in conjunction with the OTA to facilitate and accelerate the LTAMDS program. OTA promotes non-traditional defense contractor involvement, cost sharing arrangements, and accelerates schedules. A FEDBIZOPS announcement and subsequent LTAMDS												

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / <i>Lower Tier Air Missile Defense (LTAMD) Sensor</i>	Project (Number/Name) EX2 / <i>Lower Tier Air Missile Defense (LTAMD) Capability</i>
<p>Industry Day generated government-contractor dialogue, provided contractor cost and schedule estimates, verified industry technology and manufacturing readiness, and informed stakeholders on design approaches and potential materiel solutions. This approach also provides senior leader decision points along the way to make informed decisions based on industry ability to meet threshold requirements.</p> <p><u>E. Performance Metrics</u> N/A</p>		

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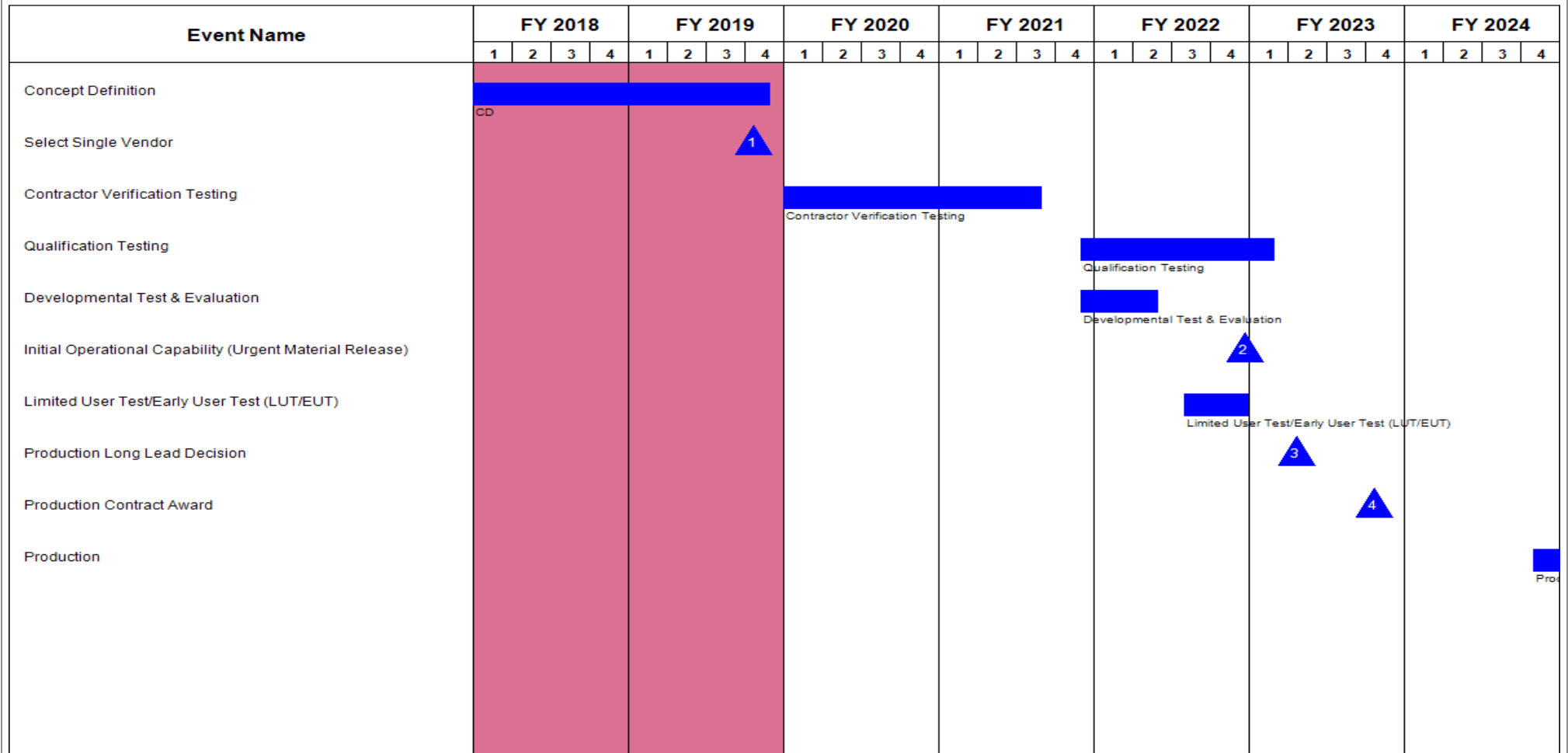
Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Air Missile Defense (LTAMD) Sensor						Project (Number/Name) EX2 / Lower Tier Air Missile Defense (LTAMD) Capability			
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	3.515	Oct 2017	4.515	Oct 2018	2.350	Oct 2019	-		2.350	Continuing	Continuing	-
Systems Engineering and Technical Assistance (SETA)	Various	Systems Engineering and Technical Assistance : Huntsville, AL	3.000	5.000	Oct 2017	5.000	Oct 2018	6.000	Oct 2019	-		6.000	Continuing	Continuing	-
Subtotal			9.285	8.515		9.515		8.350		-		8.350	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Concept Definition	C/CPFF	Raytheon, Lockheed Martin, Technovative Applications, Northrop Grumman : Andover MA; Liverpool NY; Brea CA; Linthicum MD	24.495	40.322	Mar 2018	10.000	Jan 2019	-		-		-	Continuing	Continuing	-
Product Development Support	C/TBD	TBD : TBD	-	-		3.000	Oct 2018	4.000	Oct 2019	-		4.000	Continuing	Continuing	-
Rapid Prototyping	TBD	TBD : TBD	-	-		51.366	Sep 2019	369.172	Jan 2020	-		369.172	Continuing	Continuing	-
SBIR/STTR	TBD	TBD : TBD	-	-		4.267		-		-		-	0.000	4.267	-
Subtotal			24.495	40.322		68.633		373.172		-		373.172	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Development	TBD	TBD : TBD	-	-		-		2.250		-		2.250	Continuing	Continuing	-
Subtotal			-	-		-		2.250		-		2.250	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 4						R-1 Program Element (Number/Name) PE 0604114A / Lower Tier Air Missile Defense (LTAMD) Sensor				Project (Number/Name) EX2 / Lower Tier Air Missile Defense (LTAMD) Capability					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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	44.000	Jan 2020	-		44.000	Continuing	Continuing	-
Subtotal			-	8.600		11.100		44.000		-		44.000	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			33.780	57.437		89.248		427.772		-		427.772	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604114A / <i>Lower Tier Air Missile Defense (LTAMD) Sensor</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	2019
Select Single Vendor	4	2019	4	2019
Contractor Verification Testing	1	2020	3	2021
Qualification Testing	4	2021	1	2023
Developmental Test & Evaluation	4	2021	2	2022
Initial Operational Capability (Urgent Material Release)	4	2022	4	2022
Limited User Test/Early User Test (LUT/EUT)	3	2022	4	2022
Production Long Lead Decision	2	2023	2	2023
Production Contract Award	4	2023	4	2023
Production	4	2024	4	2027