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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 I BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605457A I Army Integrated Air and Missile Defense (AIAMD)							
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	-	273.240	336.420	277.607	-	277.607	200.275	130.860	63.741	33.196	0.000	1,315.339
S40: Army Integrated Air and Missile Defense	-	273.240	336.420	277.607	-	277.607	200.275	130.860	63.741	33.196	0.000	1,315.339

A. Mission Description and Budget Item Justification

The Army Integrated Air and Missile Defense (AIAMD) program is a designated Major Defense Acquisition Program (MDAP).

The AIAMD program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational (O&O) Plan for the Future Force, the AIAMD System of Systems (SoS) Capabilities Development Document (CDD) and the Air and Missile Defense Task Force Concept of Operations (CONOPS). The AIAMD Program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery (ADA) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The AIAMD program achieves this objective by establishing the AIAMD architecture and developing (1) the IAMD Battle Command Systems (IBCS) Engagement Operations Center (EOC) that provides the common Mission Command capability, (2) the Integrated Fire Control Relay capability for fire control connectivity and distributed operations, and (3) the common Plug and Fight (P&F) Kits that network enable multiple sensor components, weapon components, and the IBCS EOC.

The AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric system-of-systems capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD SoS architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully. Further, it will mitigate the coverage gaps and the single points of failure that have plagued AMD defense design in the past. The AIAMD program will provide the user with the ability to train on a single Integrated Air and Missile Defense Battle Command System that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will build to established Integrated Fire Control interfaces alleviating the cost of procuring total system capabilities in the future.

Funding in FY 2019 will provide for continuation of software development and developmental test phase activities, to include preparation and conduct of developmental flight test.

Fielding of the IBCS is the Army Air Defense Artillery User's number one priority. The AIAMD Initial Operational Capability (IOC) will be delivered through fielding of the IBCS EOC-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot components connected via an IFCN, working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters, Army Air and Missile Defense Command (AAMDC) Headquarters, and Indirect Fire Protection Capability (IFPC). Future additional capabilities include incorporation of Terminal High Altitude Air Defense (THAAD) batteries into the AIAMD architecture.

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PE 0605457A: *Army Integrated Air and Missile Defense ...*
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Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)				Project (Number/Name) S40 / Army Integrated Air and Missile Defense			
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
S40: Army Integrated Air and Missile Defense	-	273.240	336.420	277.607	-	277.607	200.275	130.860	63.741	33.196	0.000	1,315.339
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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The AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric system-of-systems capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD SoS architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully. Further, it will mitigate the coverage gaps and the single points of failure that have plagued AMD defense design in the past. The AIAMD program will provide the user with the ability to train on a single Integrated Air and Missile Defense Battle Command System that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will build to established Integrated Fire Control interfaces alleviating the cost of procuring total system capabilities in the future.

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Fielding of the IBCS is the Army Air Defense Artillery User's number one priority. The AIAMD Initial Operational Capability (IOC) will be delivered through fielding of the IBCS EOC-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot components connected via an IFCN, working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters, Army Air and Missile Defense Command (AAMDC) Headquarters, and Indirect Fire Protection Capability (IFPC). Future additional capabilities include incorporation of Terminal High Altitude Air Defense (THAAD) batteries into the AIAMD architecture.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Product Development	184.079	262.891	218.106	-	218.106

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Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0605457A I Army Integrated Air and Missile Defense (AIAMD)		Project (Number/Name) S40 I Army Integrated Air and Missile Defense		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Product development in support of software development and developmental test phase activities.</p> <p>FY 2018 Plans: Provides for the continuation of software development and developmental test activities, and ongoing risk reduction test.</p> <p>FY 2019 Base Plans: Provides for the completion of software development with Patriot Radar/Launchers and Sentinel, continuation of software development with Patriot/Sentinel/IFPC MML, and start up of software development efforts to add AAMDC/BDE HQ ADAM and second IFPC missile. Funding also provides support for developmental test activities, to include software integration testing and preparation and conduct of developmental flight.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Increase is a result of EMD extension.</p>						
<p>Title: Government Program Management</p> <p>Description: Government program management in support of the developmental phase test activities.</p> <p>FY 2018 Plans: Provides for government program management in support of the developmental test phase activities and ongoing risk reduction test.</p> <p>FY 2019 Base Plans: Provides for government program management in support of the developmental test phase activities and ongoing risk reduction test.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: Decrease is a result of personnel labor cost transferring to Acquisition O&M.</p>		3.641	4.853	2.683	-	2.683
<p>Title: Test and Evaluation</p> <p>Description: Test and Evaluation support for modeling and simulation and developmental test phase activities.</p> <p>FY 2018 Plans:</p>		55.520	68.676	56.818	-	56.818

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Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)				Project (Number/Name) S40 / Army Integrated Air and Missile Defense			
B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Provides for continuation of Modeling and Simulation, Joint Interoperability Test Support, Army Evaluation Center/Developmental Test Command/Operational Test Command support and White Sands Missile Range Test Support for developmental test activities.											
FY 2019 Base Plans: Provides for continuation of Modeling and Simulation, Joint Interoperability Test Support, Army Evaluation Center/Developmental Test Command/Operational Test Command support and White Sands Missile Range Test Support for developmental test activities, including preparation and conduct of the developmental flight test.											
FY 2018 to FY 2019 Increase/Decrease Statement: Increase is a result of EMD extension.											
Accomplishments/Planned Programs Subtotals							243.240	336.420	277.607	-	277.607
							FY 2017	FY 2018			
Congressional Add: Product Development - Cybersecurity							15.000	-			
FY 2017 Accomplishments: N/A											
Congressional Add: Product Development - Rapid Threat							15.000	-			
FY 2017 Accomplishments: N/A											
Congressional Adds Subtotals							30.000	-			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• C53101: SSN	809.201	1,106.040	871.276	260.000	1,131.276	512.775	734.152	727.032	813.280	793.430	6,627.186
C53101, MSE Missile											
• EF9: PE 0205456, Project EF9, System Integration and Test	61.449	78.926	79.283	-	79.283	107.785	111.124	121.376	117.336	Continuing	Continuing
• EX2: PE 0604114A, Project EX2, Lower Tier Air and Missile Defense (LTAMD) Capability	33.780	76.728	120.374	-	120.374	125.772	376.738	332.322	241.461	Continuing	Continuing
• C50016: SSN C50016, Lower Tier Air and Missile Defense (AMD)	126.470	140.826	111.395	-	111.395	130.051	105.044	107.288	106.178	Continuing	Continuing

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• DU3: PE 0604319A, Proj DU3, IFPC2 (FY12 PE0603305A IFPC II- Intercept)	-	11.303	51.030	-	51.030	146.731	132.361	156.732	21.528	Continuing	Continuing
• EY7: PE 0605052A, Project EY7, IFPC Increment 2 - Block 1	80.781	175.069	157.710	-	157.710	77.599	32.517	-	-	Continuing	Continuing
• C62002: SSN C62002, IFPC Inc 2-I Block 1 System	-	-	0.000	-	0.000	175.576	303.422	273.802	388.377	Continuing	Continuing
• C62001: SSN C62001, IFPC INC 2-I Block 1 Missile	-	57.742	145.636	-	145.636	143.466	99.516	14.472	-	0.000	460.832
• E10: PE 0604820A, Proj E10, SENTINEL	15.368	32.968	39.338	-	39.338	91.534	96.427	80.394	43.874	Continuing	Continuing
• BZ5075: SSN BZ5075, Army IAMD Battle Command System (IBCS)	-	-	0.000	-	0.000	72.307	323.680	428.572	497.974	Continuing	Continuing
• 146: PE 0604741A, Proj 146, Air Defense C2I Eng Dev	14.987	24.306	24.326	-	24.326	14.300	8.401	2.915	1.228	Continuing	Continuing
• AD5070: AIR & MSL Defense Planning & Control Sys	126.539	35.735	33.837	-	33.837	24.983	49.385	68.021	63.273	0.000	401.773
• 149: PE 0604741A, 149, Air Defense C2I Eng Dev	24.899	4.420	1.846	-	1.846	1.277	0.909	-	-	0.000	33.351
Remarks											
This program is an integral part of the Army Integrated Air and Missile Defense (AIAMD) architecture. It provides for development of a common Integrated Fire Control System through an open architecture approach allowing for integration of Air Defense Artillery (ADA) components as they become available. This approach enables the AIAMD program to pursue its baseline program independent of fluctuation of other programs.											
D. Acquisition Strategy											
The AIAMD acquisition strategy is to deliver an Initial Operational Capability (IOC) in FY22. The capabilities are delivered through the fielding of the IAMD Battle Command System (IBCS) Engagement Operations Center (EOC)-based AIAMD architecture including the IBCS EOC, Sentinel, and Patriot (through a Radar Interface Unit (RIU)) components connected via an Integrated Fire Control Relay, working in an integrated manner. Additional capabilities include the incorporation of IBCS functionality into Air Defense Airspace Management (ADAM) Cells, ADA Brigade Headquarters, Army Air and Missile Defense Command (AAMDC) Headquarters, and Indirect Fire Protection Capabilities (IFPC). Future additional capabilities include incorporation of Terminal High Altitude Area Defense (THAAD) batteries and other Army and Joint net-centric architectures to ensure compatibility.											

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<p>Key principles of the AIAMD acquisition approach are the following:</p> <ul style="list-style-type: none"> - Migrate from system-based acquisition to component-based acquisition - Use system-of-systems acquisition approach with collaboration among AIAMD, PEO MS, PEO C3T, and Brigade Combat Team (BCT) Modernization Component Project Offices, Missile Defense Agency (MDA), and other Service Project Offices to network enable weapons and sensor components - Develop and procure common Army IAMD Battle Command System (IBCS) Engagement Operations Center (EOC) that replaces seven weapon system unique Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) components - Establish product lines used to evaluate and select, modify and integrate modular open systems hardware (HW) and software (SW) common configuration items - Conduct architecture-based System Engineering, Integration and Test (SEI&T) activities for an incremental fielded configuration of the AIAMD Integrated Fire Control (IFC) Network-compatible IBCS EOC, weapons and sensor system components <p><u>E. Performance Metrics</u></p> <p>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 / 5						R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)						Project (Number/Name) S40 / Army Integrated Air and Missile Defense			
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 : Huntsville, AL	27.384	3.641	Oct 2016	4.853	Oct 2017	2.683	Oct 2018	-		2.683	Continuing	Continuing	Continuing
Subtotal			27.384	3.641		4.853		2.683		-		2.683	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
Air Space and Missile Defense (ASMD) System of Systems (SOS) Hardware-in-the- Loop Testbed	C/CPFF	Various : Huntsville, AL and multiple other locations	17.697	-		-		-		-		-	0.000	17.697	-
AIAMD System Engineering & Integration	C/CPFF	Various : Huntsville, AL	124.703	28.115	Oct 2016	32.964	Oct 2017	27.880	Oct 2018	-		27.880	Continuing	Continuing	Continuing
IAMD Engineering Manufacturing and Development	C/CPIF	Northrop Grumman, Raytheon and Other : Huntsville, AL and Various other locations	981.383	138.539	Oct 2016	207.163	Oct 2017	170.614	Oct 2018	-		170.614	Continuing	Continuing	Continuing
Government Furnished Equipment	TBD	Various : Multiple	18.489	2.612	Oct 2016	7.482	Oct 2017	3.660	Oct 2018	-		3.660	Continuing	Continuing	Continuing
Government Systems Engineering and Logistics	TBD	Various : Huntsville, AL	57.812	14.813	Oct 2016	15.282	Oct 2017	15.952	Oct 2018	-		15.952	Continuing	Continuing	Continuing
Advanced Electronic Protection Enhancement (AEPE)	TBD	Various : TBD	21.000	-		-		-		-		-	0.000	21.000	-
Cyber Security	TBD	Huntsville, AL : TBD	23.000	15.000	Oct 2016	-		-		-		-	0.000	38.000	-
Rapid Threat	TBD	Huntsville, AL : TBD	-	15.000	Oct 2016	-		-		-		-	0.000	15.000	-
Subtotal			1,244.084	214.079		262.891		218.106		-		218.106	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605457A I Army Integrated Air and Missile Defense (AIAMD)				Project (Number/Name) S40 I Army Integrated Air and Missile Defense					
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
Army Evaluation Center/ Developmental Test Command/Operational Test Command	TBD	Various : Multiple Locations	28.047	15.705	Oct 2016	17.645	Oct 2017	16.531	Oct 2018	-		16.531	Continuing	Continuing	Continuing
Modeling & Sim/Joint Interoperability Test Spt	MIPR	SED : Huntsville, AL	133.491	31.913	Oct 2016	36.816	Oct 2017	27.342	Oct 2018	-		27.342	Continuing	Continuing	Continuing
Range Support	TBD	WSMR : White Sands, NM	37.125	7.902	Oct 2016	14.215	Oct 2017	12.945	Oct 2018	-		12.945	Continuing	Continuing	Continuing
Subtotal			198.663	55.520		68.676		56.818		-		56.818	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			1,470.131	273.240		336.420		277.607		-		277.607	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 / 5		R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)		Project (Number/Name) S40 / Army Integrated Air and Missile Defense	

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
Modeling and Simulation																												
EMD Developmental Test																												
EMD Continuation																												
Milestone C (MS C) Decision																												
Initial Operational Test and Evaluation																												
Initial Operational Capability (IOC)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>	Project (Number/Name) S40 / <i>Army Integrated Air and Missile Defense</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Modeling and Simulation	1	2013	4	2023
EMD Developmental Test	4	2014	4	2019
EMD Continuation	1	2016	4	2020
Milestone C (MS C) Decision	4	2020	4	2020
Initial Operational Test and Evaluation	4	2021	2	2022
Initial Operational Capability (IOC)	3	2022	3	2022