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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0207163F / <i>Advanced Medium Range Air-to-Air Missile (AMRAAM)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	655.966	53.681	51.705	51.288	0.000	51.288	-	-	-	-	-	-
673777: <i>AMRAAM</i>	655.966	53.681	51.705	51.288	0.000	51.288	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 185

A. Mission Description and Budget Item Justification

The Air Force and Navy continue to develop improvements to the Advanced Medium Range Air-to-Air Missile (AMRAAM) to counter existing and emerging air vehicle threats operating at high or low altitude, and having advanced Electronic Attack (EA) capabilities. The development program also enables AMRAAM compatibility with advanced fighters, enhances AMRAAM capability and operational flexibility against current and projected threats, incorporates high payoff technology development, performs risk reduction activities, and investigates new variants and/or alternate missions that may use AMRAAM attributes. The latest AMRAAM variant, the AIM-120D, delivers improved performance via Global Positioning System (GPS)-aided navigation; two-way datalink capability for enhanced aircrew survivability and improved network compatibility; and incorporates new guidance software that improves kinematic performance and weapon effectiveness. Operational Testing (OT) was completed in Jul 14 and the Air Force and Navy authorized operational fielding in Jan 15. The Navy declared Initial Operational Capability (IOC) in Jan 15 and the Air Force declared IOC in Jul 15. The program continues to address aircraft integration efforts to maintain compatibility/performance of the missile with changes occurring on threshold AMRAAM platforms per the Capability Production Document (CPD). To keep the existing inventory as effective as possible and address findings from the field, the Air Force and Navy also develop, test, and field improvements that are implemented via software upgrades reprogrammed into fielded AMRAAMs, and/or hardware upgrades inserted into production units. AMRAAM is a joint Air Force/Navy, Acquisition Category IC (ACAT IC) program with Air Force as lead service.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver WEAPON SYSTEM capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

FY 2022 funding totals include \$51.288M requested for the Pacific Defense Initiative.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	55.384	51.799	54.993	0.000	54.993
Current President's Budget	53.681	51.705	51.288	0.000	51.288
Total Adjustments	-1.703	-0.094	-3.705	0.000	-3.705
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.094			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-1.703	0.000			
• Other Adjustments	0.000	0.000	-3.705	0.000	-3.705

Change Summary Explanation

FY2021 reduction of \$0.094M for Congressional Undistributed Mark

FY2022 reduction of \$4.196M for higher Air Force priorities; increase of \$0.491M for Inflation Adjustment

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
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Title: System Improvement Program (SIP)	28.587	24.244	26.193
Description: Continuation of System Improvement Program (SIP) / Risk Reduction (RR) efforts for the AMRAAM weapons system. These include systems engineering, program management, missile software and/or hardware upgrades to increase capability, survivability, lethality, as well as aircraft Operational Flight Program (OFP) updates on a recurring basis. AIM-120D SIP-3F will host SIP-3 software on AIM-120D3 hardware. SIP 4 will exploit new Form, Fit, Function (F3R) hardware to maximize missile performance. SIP 3 Tape 2 will address newly matured capabilities, emerging threats, and Operational Test (OT) deficiencies. AIM-120C3-C7 Counter Emergent Threat (CET) software will maintain inventory viability by addressing emerging electronic attack threats.			
FY 2021 Plans: Conduct SIP-3 Functional Configuration Audit (FCA) and Operational Test. Continue SIP-3F software development builds and complete SIP-4 RR to mature software for the AIM-120D3 configuration. Continue the AIM-120 Candidate Selection Program (CSP) to analyze warfighters' priority deficiencies and enhancements. Continue AIM-120C3-C7 software development to address emerging threats.			
FY 2022 Plans: Deliver the SIP-3 software upgrade to the field. Complete SIP-3F and Counter Emergent Threat (CET) FCAs and flight test requirements. Field CET tactical software. Continue AIM-120 CSP to analyze warfighter's priority deficiencies and			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
enhancements. Begin SIP 4 development to exploit Form, Fit, Function Refresh (F3R) hardware to maximize missile performance. Begin SIP-3 Tape 2 development to address newly matured capabilities, emerging threats, and deficiencies. FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased due to completion of SIP-4 RR.				
Title: Test and Evaluation Description: Provides support to flight test efforts; develops test resources and equipment necessary to complete test events; provides contractor field team support personnel and services. FY 2021 Plans: Continue to develop and procure test resources required to meet test requirements and provide support personnel to complete AIM-120 test events. FY 2022 Plans: Continue to develop and procure test resources required to meet test requirements and provide support personnel to complete AIM-120 test events. FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased from FY21 to FY22 due to a decrease in FY22 test requirements for ongoing efforts.		21.124	22.602	20.148
Title: Aircraft Integration Description: Supports the integration of AIM-120 on multiple aircraft platforms as AIM-120 software/hardware is updated and as aircraft OFPs are updated. FY 2021 Plans: Continue integration and testing of AIM-120 on multiple aircraft platforms. FY 2022 Plans: Continue integration and testing of AIM-120 on multiple aircraft platforms. FY 2021 to FY 2022 Increase/Decrease Statement: Funding increased due to efforts to maintain compatibility and performance with changes on threshold platforms per the Capability Production Document (CPD).		3.970	4.859	4.947
Accomplishments/Planned Programs Subtotals		53.681	51.705	51.288

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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• MPAF 02 Line Item MAMRA0: <i>Missile Procurement, Air Force</i>	311.730	313.223	214.002	-	214.002	-	-	-	-	-	-
• MPAF 04 Line Item 000999: <i>Initial Spares/Repair Parts</i>	0.529	2.091	3.003	-	3.003	-	-	-	-	-	-
• MPAF 04 Line Item 000999 <i>Replen: Replen Spares/Repair Parts</i>	0.854	0.868	873.000	-	873.000	-	-	-	-	-	-
• MPAF 02 Line Item 2206: <i>Weapons Procurement, Navy</i>	211.827	204.251	0.000	-	0.000	-	-	-	-	-	-
• RDTE 07 Line Item 0981: <i>RDTE, Navy</i>	33.289	40.253	32.722	-	32.722	-	-	-	-	-	-

Remarks

E. Acquisition Strategy

AMRAAM Acquisition Strategy Report (ASR) was updated on 16 May 2018.

System Improvement Program (SIP) development efforts continually mature capabilities through software and/or hardware upgrades to maximize missile performance to address current and emerging threats. These missile performance improvements are incrementally fielded ensuring inventory viability into the future. SIP development contracts are cost type contract efforts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
3600 / 7				PE 0207163F / Advanced Medium Range Air-to-Air Missile (AMRAAM)						673777 / AMRAAM					
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Electronic Protection Improvement Program (EPIP)	Various	Raytheon : Tucson, AZ	86.959	-		-		-		-		-	-	-	86.959
System Improvement Program (SIP)	Various	Raytheon : Tucson, AZ	207.645	26.466	Jun 2020	20.971	Jun 2021	23.548	Jun 2022	-		23.548	-	-	405.098
F-22 Aircraft Integration	MIPR	Wright-Patterson AFB : Dayton, OH	114.890	-		-		-		-		-	-	-	114.890
Aircraft Integration Support	SS/CPFF	Raytheon : Tucson, AZ	14.318	3.970	May 2020	4.859	May 2021	4.947	May 2022	-		4.947	-	-	73.378
Subtotal			423.812	30.436		25.830		28.495		-		28.495	-	-	N/A
Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 Test	Various	Various : Various	85.637	5.726	Jan 2020	7.837	Jan 2021	7.285	Jan 2022	-		7.285	-	-	35.169
Test Support	SS/CPFF	Raytheon : Various	129.508	15.398	Jan 2020	14.765	Jan 2021	12.863	Jan 2022	-		12.863	-	-	292.585
Subtotal			215.145	21.124		22.602		20.148		-		20.148	-	-	N/A
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 Administration	Various	Various : Various	17.009	2.121	Jan 2020	3.273	Jan 2021	2.645	Jan 2022	-		2.645	-	-	0.000
Subtotal			17.009	2.121		3.273		2.645		-		2.645	-	-	N/A
Project Cost Totals			655.966	53.681		51.705		51.288		-		51.288	-	-	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force **Date: May 2021**

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207163F / <i>Advanced Medium Range Air-to-Air Missile (AMRAAM)</i>	Project (Number/Name) 673777 / AMRAAM
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
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

AMRAAM Development Program																												
AIM-120C CET Development																												
AIM-120C CET Test																												
AIM-120C CET FCA																												
AIM-120C CET IOC																												
AIM-120D SIP-2 EMD																												
AIM-120D SIP-2 IOC																												
AIM-120D SIP-3 EMD																												
AIM-120D SIP-3 Test																												
AIM-120D SIP-3 FCA																												
AIM-120D SIP-3 IOC																												
AIM-120D SIP-3 Tape 2 Development																												
AIM-120D SIP-3 Tape 2 Test																												
AIM-120D SIP-3 Tape 2 FCA																												
AIM-120D SIP-3 Tape 2 IOC																												
AIM-120D3 SIP-3F Development																												
AIM-120D3 SIP-3F Test																												
AIM-120D3 SIP-3F FCA																												
AIM-120D3 SIP-3F IOC																												
AIM-120D3 SIP-4 Risk Reduction																												
AIM-120D3 SIP-4 Development																												
AIM-120D3 SIP-4 Test																												
AIM-120D3 SIP-4 FCA																												
AIM-120D3 SIP-4 IOC																												

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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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

AIM-120D3 SIP-5 Development	
AIM-120D3 SIP-5 Test	

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AMRAAM Development Program				
AIM-120C CET Development	1	2020	2	2022
AIM-120C CET Test	1	2022	2	2022
AIM-120C CET FCA	2	2022	2	2022
AIM-120C CET IOC	2	2022	2	2022
AIM-120D SIP-2 EMD	1	2020	2	2020
AIM-120D SIP-2 IOC	2	2020	2	2020
AIM-120D SIP-3 EMD	1	2020	2	2022
AIM-120D SIP-3 Test	1	2020	2	2022
AIM-120D SIP-3 FCA	3	2021	3	2021
AIM-120D SIP-3 IOC	2	2022	2	2022
AIM-120D SIP-3 Tape 2 Development	4	2022	1	2025
AIM-120D SIP-3 Tape 2 Test	4	2024	1	2025
AIM-120D SIP-3 Tape 2 FCA	1	2025	1	2025
AIM-120D SIP-3 Tape 2 IOC	1	2025	1	2025
AIM-120D3 SIP-3F Development	1	2020	3	2023
AIM-120D3 SIP-3F Test	4	2021	3	2023
AIM-120D3 SIP-3F FCA	2	2023	2	2023
AIM-120D3 SIP-3F IOC	3	2023	3	2023
AIM-120D3 SIP-4 Risk Reduction	1	2020	4	2021
AIM-120D3 SIP-4 Development	1	2022	3	2025
AIM-120D3 SIP-4 Test	2	2024	3	2025

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force **Date:** May 2021

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIM-120D3 SIP-4 FCA	1	2025	1	2025
AIM-120D3 SIP-4 IOC	3	2025	3	2025
AIM-120D3 SIP-5 Development	2	2024	4	2026
AIM-120D3 SIP-5 Test	4	2026	4	2026

Note

Actual Dates:

- AIM-120D SIP-2 EMD began 03 Jul 2015
- AIM-120D SIP-3 EMD began 05 Sep 2017
- AIM-120D3 SIP-5 Development ends 4QFY27
- AIM-120D3 SIP-5 Test ends 4QFY27