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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	709.648	50.074	51.288	52.704	0.000	52.704	33.557	53.724	51.403	52.547	127.764	1,182.709
673777: <i>AMRAAM</i>	709.648	50.074	51.288	52.704	0.000	52.704	33.557	53.724	51.403	52.547	127.764	1,182.709
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 185

A. Mission Description and Budget Item Justification

The Advanced Medium Range Air-to-Air Missile (AMRAAM) is a joint Air Force/Navy, Acquisition Category 1C program with Air Force as lead service. AMRAAM is the premier all-weather, all-environment, radar guided missile with improved capabilities against very low and high-altitude targets in an electronic attack environment. The current 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.

This Air Force/Navy program is structured in response to the Joint Service Operational Requirement Document and Mission Element Need Statement to develop an air superiority air-to-air missile with significant improvements in operational utility and combat effectiveness. The development program 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. To maximize effectiveness of existing inventory and address findings from the field, the Navy and Air Force also develop, test, and field improvements via software upgrades into fielded missiles, and/or hardware upgrades inserted into the production line.

This program supports the integration of the Advanced Medium Range Air-to-Air Missile (AMRAAM) into Air Force aircraft with analysis of Air Force unique applications, aircraft missile integration tasks, product improvement efforts including missile software upgrade development and procurement of hardware to support Air Force test and evaluation tasks.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, or 0606398F. In FY21 \$0 were expended for civilian pay expenses in this program element, and in FY22 \$0 is forecasted for civilian pay expenses in this program element.

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	51.705	51.288	0.000	0.000	0.000
Current President's Budget	50.074	51.288	52.704	0.000	52.704
Total Adjustments	-1.631	0.000	52.704	0.000	52.704
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• 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	-1.628	0.000			
• Other Adjustments	-0.003	0.000	52.704	0.000	52.704

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
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Title: System Improvement Program (SIP)	26.614	26.193	28.264
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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. SIP-3F will host AIM-120D SIP-3 software on AIM-120D3 hardware. AIM-120D3 SIP 4 will exploit new Form, Fit, Function (F3R) hardware to maximize missile performance. AIM-120D 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. Candidate Selection Process (CSP) analyzes warfighter priority deficiencies and enhancements to feed risk reduction efforts and future SIP efforts.

FY 2022 Plans:

Deliver the SIP 3 software upgrade to the field. Complete FCAs and flight test requirements. Field CET tactical software. Continue SIP 3F software builds and begin flight test. Begin SIP 4 development efforts for the AIM-120D3 (F3R) configuration. Begin SIP-3 Tape 2.

FY 2023 Plans:

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Complete SIP 3F FCA and flight test requirements. Field SIP 3F with F3R hardware to maximize missile performance. Continue CSP. Continue SIP 4 development and complete Minimum Viable Product (MVP) milestone demonstrating software maturity. Continue SIP-3 Tape 2.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased due to increase in SIP 3 Tape 2 and SIP 4 Dev efforts.</p>				
<p>Title: Test and Evaluation</p> <p>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.</p> <p>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.</p> <p>FY 2023 Plans: Continue to develop and procure test resources required to meet test requirements and provide support personnel to complete AIM-120 test events.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased due to SIP 3F Test.</p>		19.289	20.148	20.549
<p>Title: Aircraft Integration</p> <p>Description: Supports the integration of AIM-120 on multiple aircraft platforms as AIM-120 software/hardware is updated and as aircraft OFPs are updated.</p> <p>FY 2022 Plans: Continue integration and testing of AIM-120 on multiple aircraft platforms.</p> <p>FY 2023 Plans: Continue integration and testing of AIM-120 on multiple aircraft platforms.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to reduction in Aircraft Integration requirement.</p>		4.171	4.947	3.891
Accomplishments/Planned Programs Subtotals		50.074	51.288	52.704

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MPAF 02 Line Item MAMRA0: <i>Missile Procurement, Air Force</i>	306.023	214.002	320.056	-	320.056	231.473	330.822	462.367	306.098	1,040.926	3,211.767
• MPAF 04 Line Item 000999: <i>Initial Spares/Repair Parts</i>	2.404	3.003	3.165	-	3.165	2.273	2.314	2.343	2.381	0.000	17.883
• MPAF 04 Line Item 000999 <i>Replen: Replen Spares/Repair Parts</i>	0.868	0.873	0.925	-	0.925	0.945	0.963	0.974	0.990	0.000	6.538
• MPAF 02 Line Item 2206: <i>Weapons Procurement, Navy</i>	204.251	0.000	335.900	-	335.900	285.401	269.078	85.545	84.685	207.024	1,471.884

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 2023 Air Force **Date:** April 2022

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 / <i>AMRAAM</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Electronic Protection Improvement Program (EPIP)	Various	Raytheon : Tucson, AZ	86.959	-		-		-		-		-	0.000	86.959	86.959
System Improvement Program (SIP)	Various	Raytheon : Tucson, AZ	234.112	22.878	Jun 2021	23.548	Jun 2022	25.452	Jun 2023	-		25.452	116.369	422.359	405.098
F-22 Aircraft Integration	MIPR	Wright-Patterson AFB : Dayton, OH	114.890	-		-		-		-		-	0.000	114.890	114.890
Aircraft Integration Support	SS/CPFF	Raytheon : Tucson, AZ	18.288	4.171	May 2021	4.947	May 2022	3.891	May 2023	-		3.891	29.506	60.803	73.378
Subtotal			454.249	27.049		28.495		29.343		-		29.343	145.875	685.011	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Test	Various	Various : Various	91.363	5.544	Jan 2021	7.285	Jan 2022	8.911	Jan 2023	-		8.911	56.862	169.965	35.169
Test Support	SS/CPFF	Raytheon : Various	144.906	13.745	Jan 2021	12.863	Jan 2022	11.638	Jan 2023	-		11.638	91.679	274.831	292.585
Subtotal			236.269	19.289		20.148		20.549		-		20.549	148.541	444.796	N/A

Remarks
 Total Cost amount consists of test cost other government agencies and small contracts not associated with the prime vendor, Raytheon. Test cost for manpower at Test Wing. Small various contracts such as Dept of Energy, MANTRAC, SURVICE, and DOTC.
 The Target Value of Contract amount consists of the small various contracts such as Dept of Energy, MANTRAC, SURVICE, and DOTC. This amount does not include the various costs sent to Test Wing for government test.

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various	19.130	3.736	Jan 2021	2.645	Jan 2022	2.812	Jan 2023	-		2.812	24.579	52.902	0.000
Subtotal			19.130	3.736		2.645		2.812		-		2.812	24.579	52.902	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force **Date:** April 2022

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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
	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-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													████																			
AIM-120D3 SIP-5 Development													██																			
AIM-120D3 SIP-5 Test																					████											

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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
	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-6 Development																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
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

Schedule Details

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

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIM-120D3 SIP-5 Development	2	2024	4	2026
AIM-120D3 SIP-5 Test	4	2026	4	2026
AIM-120D3 SIP-6 Development	4	2026	4	2027

Note

Actual Dates:

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