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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 0207161F / <i>Tactical AIM Missiles</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	223.665	10.012	19.382	32.974	0.000	32.974	-	-	-	-	-	-
674132: <i>AIM-9 Product Improvement</i>	223.665	10.012	19.382	32.974	0.000	32.974	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 442

A. Mission Description and Budget Item Justification

The AIM-9X Block II/II+ Sidewinder (AIM-9X Blk II/II+) continues the evolution of the AIM-9 series of missiles. This missile program delivers a launch and leave, air combat munition that uses passive Infrared (IR) energy to acquire and track enemy air targets and complements the radar guided Advanced Medium Range Air-to-Air Missile (AMRAAM). The missile provides first shot, first kill opportunities while conducting air combat maneuvering Within Visual Range (WVR) which is essential for aircrew survival. The AIM-9X provides these opportunities with unmatched offensive and defensive capabilities against threats WVR, even when IR countermeasures are employed. The AIM-9X also provides air superiority in the Beyond Visual Range (BVR) air-to-air battle. Anti-tamper features have been incorporated to protect improvements inherent in this design. The AIM-9X Block II missile is critical for projecting power and winning decisively against threats identified in Defense Planning Guidance and the Air Force Strategic Master Plan.

AIM-9X is a Post Milestone C, Acquisition Category IC (ACAT-IC) joint service program led by the Department of the Navy. The Block II program has completed independent operational testing and found to be operationally effective and operational/suitable. The program achieved Air Force Initial Operational Capability (IOC) in September 2016 and received Full Rate Production (FRP) decision in August 2015. The first Full Rate Production Lot contract was awarded in September 2015. This budget line will continue technical refresh of critical obsolete components, implement cost reduction initiatives, improve insensitive munitions performance, correct deficiencies, and increase capabilities through software enhancements, and conduct testing to ensure platform integration onto threshold US Air Force aircraft.

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.

The FY 2022 funding request was decreased by \$1.592 million to account for the availability of prior year execution balances

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	10.314	19.417	26.760	0.000	26.760
Current President's Budget	10.012	19.382	32.974	0.000	32.974
Total Adjustments	-0.302	-0.035	6.214	0.000	6.214
• Congressional General Reductions	0.000	-0.035			
• 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	-0.302	0.000			
• Other Adjustments	0.000	0.000	6.214	0.000	6.214

Change Summary Explanation

FY 2021 decrease of \$0.035 for Congressional undistributed mark

FY 2022 increase of \$8.300M for increased development activities; realigned from Missile Procurement, Air Force; decrease of \$1.592M to account for the availability of prior year execution balances; decrease of \$0.494 for inflation adjustment

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
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Title: AIM- 9X Product Development	9.162	17.664	31.574
Description: Continuation of Primary Hardware Development/Pre-Planned Product Improvement (Tech Refresh) efforts for the AIM-9X weapon system. This includes Systems Engineering & Program management, as well as support required to ensure AIM-9X missile integration with threshold US Air Force aircraft platforms. This also includes efforts to redesign missile components in order to resolve obsolescence to ensure missile producibility and increase reliability. It will incorporate anti-tamper and cyber security technology improvements, implement cost reduction initiatives, and comply with the Insensitive Munitions (IM) requirements. In addition, the program will evaluate and begin risk reduction efforts that will address hardware and software improvements to facilitate follow-on capability and mitigate obsolescence.			
FY 2021 Plans: Continue Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives to include execution of SIP III Inertial Measurement Unit and processor hardware. In addition, continue development of the version 10.4 software, as well continue to support v9.4 Block II software testing. Incorporate anti-tamper and cyber security technology improvements. Continue to develop missile hardware design			

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
improvements necessary to enhance IM performance. Continue evaluation and risk reduction efforts to address hardware and software improvements to facilitate follow-on capability and obsolescence mitigation. FY 2022 Plans: Complete AIM-9X SIP III 10.4 software and phase II hardware (Inertial Measurement Unit/ dome/processor) Engineering Change Proposal. In addition, the AIM-9X SIP-IV contract will be awarded in FY22 to address hardware and technological obsolescence in several missile sub-systems in order to maintain required performance against increasingly challenging threat platforms. Software will be developed to facilitate the use of the updated hardware. In particular, FY22 SIP-IV RDT&E funding will focus on the development of an advanced sensor replacement and electronic unit upgrades to address hardware obsolesce and processing improvement for the missile guidance system. FY 2021 to FY 2022 Increase/Decrease Statement: Funding increased in FY22 due to the ramp up of SIP IV development efforts.			
Title: AIM-9X, Test and Evaluation Description: Test and Evaluation (T&E) and associated governmental support required to ensure the AIM-9X missile integration with US Air Force aircraft platforms. Developmental and Operational testing of Operation Flight Software. FY 2021 Plans: Complete Operational Testing (OT-D1) of Operational Flight Software v9.4 and field v9.4 Block II software. Begin Flight test Operational Flight Software v10.4. FY 2022 Plans: Continue SIP-III hardware testing to include verification of the Phase II Hardware (Inertial Measurement Unit/dome/processor) as well as 10.4 Software. Start SIP IV effort testing of follow-on 9.5 and 10.5 software builds. FY 2021 to FY 2022 Increase/Decrease Statement: Funding decreased in FY22 due to completion of Operational Flight Software v9.4 testing in FY21.	0.850	1.718	1.400
Accomplishments/Planned Programs Subtotals	10.012	19.382	32.974

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2020	FY 2021	FY 2022	FY 2022	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
			Base	OCO	Total						
• MPAF 02 Line Item M09HAI: <i>Sidewinder (AIM-9X)</i>	155.289	164.769	107.587	-	107.587	-	-	-	-	-	-

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF 04 Line Item 000999: <i>Replen Spares, USAF</i>	5.818	5.906	5.937	-	5.937	-	-	-	-	-	-
• MPAF 04 Line Item 000999 <i>(2)...: Inital Spares, USAF</i>	0.234	1.861	2.659	-	2.659	-	-	-	-	-	-
• RDTE 07 PE 0207161N: <i>Tactical AIM Missile</i>	19.136	5.859	23.956	-	23.956	-	-	-	-	-	-
• WPN Line Item 2209: <i>Sidewinder</i>	149.239	113,651.000	86.366	-	86.366	-	-	-	-	-	-

Remarks

E. Acquisition Strategy

Milestone C decision for LRIP was held June 24, 2011. The program received USN Initial Operational Capability (IOC) in March 2015 and Full Rate Production (FRP) Approval in August 2015. The Air Force achieved IOC in September 2016. In February 2019, the Acquisition Program Baseline for the Navy and USAF was revised to increase total missile procurements and extend missile procurements through 2035. The program awarded FRP-6 in March 2020.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207161F / <i>Tactical AIM Missiles</i>	Project (Number/Name) 674132 / <i>AIM-9 Product Improvement</i>
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Software/OFP Upgrade/Hdw Development	SS/CPFF	RMS : Tucson, AZ	165.855	5.064	May 2020	14.589	Oct 2020	26.336	Oct 2021	-		26.336	-	-	309.622
Flight Termination System	MIPR	NAWC WD : China Lake, CA	3.059	0.975	Feb 2020	0.000	Feb 2021	2.000	Feb 2022	-		2.000	-	-	4.767
Munitions Improvement Study (USG)	MIPR	NAWC WD : China Lake, CA	12.443	0.000	Apr 2020	0.000	Apr 2021	0.000	Apr 2022	-		0.000	-	-	-
Systems Engineering (USG)	MIPR	NAWC WD : China Lake, CA	4.119	1.985	Feb 2020	2.000	Feb 2021	2.000	Feb 2022	-		2.000	-	-	-
Aircraft Integration	SS/CPFF	Boeing : St. Louis, MO	0.888	0.150	May 2020	0.195	May 2021	0.195	May 2022	-		0.195	-	-	2.624
Subtotal			186.364	8.174		16.784		30.531		-		30.531	-	-	N/A

Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
DT&E/OT&E	PO	Eglin AFB : Eglin, FL	27.761	0.862	Jan 2020	1.542	Jan 2021	1.400	Jan 2022	-		1.400	-	-	-
IT/OT Support F-15	SS/CPAF	RMS : Tuscon, AZ	0.513	0.128	May 2020	0.176	May 2021	0.150	May 2022	-		0.150	-	-	4.063
Subtotal			28.274	0.990		1.718		1.550		-		1.550	-	-	N/A

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
PMA	Various	Eglin AFB : Eglin, FL	9.027	0.848	Jan 2020	0.880	Jan 2021	0.893	Jan 2022	-		0.893	-	-	7.285
Subtotal			9.027	0.848		0.880		0.893		-		0.893	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			223.665	10.012	19.382	32.974	-	32.974	-	-	N/A

UNCLASSIFIED

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	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Remarks									

UNCLASSIFIED

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

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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-9X Block II Tech Refresh (SIP III): Software	
Phase II Hardware (IMU, Dome, Processor)	
Phase II Hardware Cut in: Engineering Change Proposal	
Software v9.4 Improvements: Software v9.4 Release	
Software v10.4 Rehost: Development Testing (DT-D2)	
Software v10.4 Rehost: Software v10.4 Release	
AIM-9X Block II Tech Refresh (SIP IV)	
Hardware and Software Obsolescence	

UNCLASSIFIED

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
AIM-9X Block II Tech Refresh (SIP III): Software				
Phase II Hardware (IMU, Dome, Processor)	1	2020	3	2022
Phase II Hardware Cut in: Engineering Change Proposal	3	2022	3	2022
Software v9.4 Improvements: Software v9.4 Release	3	2021	3	2021
Software v10.4 Rehost: Development Testing (DT-D2)	1	2020	1	2023
Software v10.4 Rehost: Software v10.4 Release	3	2023	3	2023
AIM-9X Block II Tech Refresh (SIP IV)				
Hardware and Software Obsolescence	1	2022	4	2026