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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207161F I Tactical AIM Missiles							
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	158.324	36.303	37.230	10.314	0.000	10.314	19.452	26.801	21.226	14.281	32.031	355.962
674132: AIM-9 Product Improvement	158.324	36.303	37.230	10.314	0.000	10.314	19.452	26.801	21.226	14.281	32.031	355.962
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 442

Note

Funding in FY11 and beyond is for the Block II program only. The AIM-9X Block I program costs for FY11 and prior are \$233.583M.

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 basic fighter maneuvering (dogfighting) 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 Navy's Navigation 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 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.

The USN & USAF require additional quantities beyond the approved APB (Change 1: 31 Aug 2015); an update is in staffing for approval.

The AIM-9X Block I concluded in FY 2011 and all funding/quantity data in the documents are associated with Block II activities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AIM-9X weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F

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As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.						
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.						
B. Program Change Summary (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		34.952	37.230	28.305	0.000	28.305
Current President's Budget		36.303	37.230	10.314	0.000	10.314
Total Adjustments		1.351	0.000	-17.991	0.000	-17.991
• 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		2.441	0.000			
• SBIR/STTR Transfer		-1.090	0.000			
• Other Adjustments		0.000	0.000	-17.991	0.000	-17.991
Change Summary Explanation						
FY 2018 increase of \$2.411M due to Below Threshold Reprogramming to support AIM-9X Flight Termination Development.						
FY 2018 reduction of \$1.09M for SBIR.						
FY 2020 reduction of \$17.991M for higher Air Force priorities.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: AIM- 9X Product Development				34.469	30.687	7.254
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 Block II component obsolescence to ensure missile producibility and increase reliability beyond Lot 20. Incorporate anti-tamper and cyber security technology improvements, implement cost reduction initiatives, and comply with						

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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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
the Insensitive Munitions (IM) requirements as established by Joint Requirements Oversight Council memo dated 11 February 2009. FY 2019 Plans: Complete v9.317 software release to resolve aircraft employment deficiencies discovered during Block II integration testing. Continue Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Incorporate anti-tamper and cyber security technology improvements. Continue to develop v9.4 Block II software improvements to pace the threat and fully utilize the capabilities of the missile. Continue to develop missile hardware design improvements necessary to enhance IM performance. FY 2020 Plans: Complete Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Complete development of v9.4 Block II software improvements to pace the threat and fully utilize the capabilities of the missile. Incorporate anti-tamper and cyber security technology improvements. Continue to develop missile hardware design improvements necessary to enhance IM performance. FY 2019 to FY 2020 Increase/Decrease Statement: Decrease in FY20 reflects the completion of the development activities associated with the obsolescence redesign of missile components and v9.4 software improvements.				
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 threshold US Air Force aircraft platforms (F-15). Developmental and Operational testing of Operation Flight Software v9.4. FY 2019 Plans: Continue Developmental Testing and Integrated Testing (DT/IT-D1) of Operational Flight Software v9.4 including improvements associated with further integrating Air Force threshold aircraft to utilize full capabilities of the Block II missile. FY 2020 Plans: Complete Developmental Testing and Integrated Testing (DT/IT-D1) of Operational Flight Software v9.4 including improvements associated with further integrating the Air Force threshold aircraft to utilize the full capabilities of the Block II missile. FY 2019 to FY 2020 Increase/Decrease Statement: Decrease in FY20 reflects planned completion of Developmental and Integrated Testing of v9.4 improvements into the missile.		1.834	6.543	3.060
Accomplishments/Planned Programs Subtotals		36.303	37.230	10.314

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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0207161F I Tactical AIM Missiles							
D. 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	
• MPAF 02 Line Item M09HAI: Sidewinder (AIM-9X)	124.650	121.253	160.408	-	160.408	164.987	117.621	121.983	120.545	1,630.840	2,562.287	
• MPAF 04 Line Item 000999: Replen Spares, USAF	11.222	11.248	11.454	-	11.454	11.644	11.796	12.064	15.914	Continuing	Continuing	
• MPAF 04 Line Item 000999 (2)....: Inital Spares, USAF	5.720	4.255	0.490	-	0.490	1.864	13.702	13.736	1.971	24.180	65.918	
• RDTE 07 PE 0207161N: Tactical AIM Missile	34.063	40.121	19.488	-	19.488	6.946	0.345	0.348	0.349	Continuing	Continuing	
• WPN Line Item 2209: Sidewinder	76.915	121.481	119.456	-	119.456	127.446	114.784	99.749	101.745	312.695	1,074.271	
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 followed by contract award for FRP-1 in September 2015. The Air Force achieved IOC in September 2016. The program awarded the FRP-3 contract in March 2017 awarded FRP-4 in December 2018. The program plans to award FRP-5 in February 2019. The program plans to award FRP-6 in February 2020.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force													Date: February 2019		
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0207161F / Tactical AIM Missiles				Project (Number/Name) 674132 / AIM-9 Product Improvement					
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
RMS Software/OFP Upgrade	SS/CPFF	RMS : Tucson, AZ	115.116	28.654	May 2018	24.727	Feb 2019	-		-		-	88.945	257.442	312.877
Flight Termination System	MIPR	NAWC WD : China Lake, CA	0.150	2.400	Jul 2018	2.000	Jul 2019	3.000	Jan 2020	-		3.000	4.244	11.794	-
Munitions Improvement Study (USG)	MIPR	NAWC WD : China Lake, CA	9.343	2.600	Apr 2018	3.260	Apr 2019	3.433	Apr 2020	-		3.433	0.000	18.636	-
Systems Engineering (USG)	MIPR	NAWC WD : China Lake, CA	2.623	0.665	Jul 2018	0.200	May 2019	0.321	Jul 2020	-		0.321	0.357	4.166	-
Aircraft Integration	SS/CPFF	Boeing : St. Louis, MO	0.612	0.150	Apr 2018	0.500	Apr 2019	0.500	Feb 2020	-		0.500	0.000	1.762	2.112
Subtotal			127.844	34.469		30.687		7.254		-		7.254	93.546	293.800	N/A
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
DT&E/OT&E	PO	Eglin AFB : Eglin, FL	23.132	1.300	Feb 2018	5.733	Feb 2019	2.500	Feb 2020	-		2.500	1.493	34.158	-
IT/OT Support F-15	SS/CPAF	RMS : Tuscon, AZ	0.000	0.135	May 2018	0.457	Mar 2019	0.300	Mar 2020	-		0.300	0.000	0.892	0.994
Subtotal			23.132	1.435		6.190		2.800		-		2.800	1.493	35.050	N/A
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
PMA	Various	Eglin AFB : Eglin, FL	7.348	0.399	Mar 2018	0.353	Jan 2019	0.260	Jan 2020	-		0.260	0.760	9.120	8.904
Subtotal			7.348	0.399		0.353		0.260		-		0.260	0.760	9.120	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			158.324	36.303		37.230		10.314		-		10.314	95.799	337.970	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force							Date: February 2019			
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>				
	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force

Date: February 2019

Appropriation/Budget Activity

3600 / 7

R-1 Program Element (Number/Name)

PE 0207161F / Tactical AIM Missiles

Project (Number/Name)

674132 / AIM-9 Product Improvement

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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 Production Milestones																												
Contract Award: Lot 18 (FRP 4)																												
Contract Award: Lot 19 (FRP 5)																												
Contract Award: Lot 20 (FRP 6)																												
Contract Award: Lot 21 (FRP 7)																												
Contract Award: Lot 22 (FRP 8)																												
Contract Award: Lot 23 (FRP 9)																												
Contract Award: Lot 24 (FRP 10)																												
Production Deliveries: Lot 15 (FRP 1)																												
Production Deliveries: Lot 16 (FRP 2)																												
Production Deliveries: Lot 17 (FRP 3)																												
Production Deliveries: Lot 18 (FRP 4)																												
Production Deliveries: Lot 19 (FRP 5)																												
Production Deliveries : Lot 20 (FRP 6)																												
Production Deliveries: Lot 21 (FRP 7)																												
AIM-9X Block II System Improvement Program (SIP) II																												
Operational Flight Software Release v9.317																												
AIM-9X Block II Tech Refresh (SIP III): Hardware																												
Controlled Actuation System (CAS) Battery Design																												
Program III Engineering Manufacturing Development Contract																												
Lot 20 Hardware (IMU, Dome & Processor)																												
Lot 20 Hardware Preliminary Design Review																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force																Date: February 2019												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
3600 / 7										PE 0207161F / Tactical AIM Missiles								674132 / AIM-9 Product Improvement										
	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Lot 20 Hardware Critical Design Review																												
Lot 20 Hardware Cut In: Engineering Change Proposal																												
AIM-9X Block II Tech Refresh (SIP III): Software																												
Software v9.4 Improvements: Development Testing (DT-D1)																												
Software v9.4 Improvements: Development Test / Integrated Testing (DT/IT-D1)																												
Software v9.4 Improvements: Operational Test Readiness Review (OTRR)																												
Software v9.4 Improvements: Operational Testing (OT-D1)																												
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																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force			Date: February 2019
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>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>AIM-9X Production Milestones</i>				
Contract Award: Lot 18 (FRP 4)	1	2019	1	2019
Contract Award: Lot 19 (FRP 5)	2	2019	2	2019
Contract Award: Lot 20 (FRP 6)	2	2020	2	2020
Contract Award: Lot 21 (FRP 7)	2	2021	2	2021
Contract Award: Lot 22 (FRP 8)	2	2022	2	2022
Contract Award: Lot 23 (FRP 9)	2	2023	2	2023
Contract Award: Lot 24 (FRP 10)	2	2024	2	2024
Production Deliveries: Lot 15 (FRP 1)	1	2018	2	2018
Production Deliveries: Lot 16 (FRP 2)	3	2018	2	2019
Production Deliveries: Lot 17 (FRP 3)	3	2019	2	2020
Production Deliveries: Lot 18 (FRP 4)	3	2020	2	2021
Production Deliveries: Lot 19 (FRP 5)	3	2021	2	2022
Production Deliveries : Lot 20 (FRP 6)	3	2022	2	2023
Production Deliveries: Lot 21 (FRP 7)	3	2023	2	2024
<i>AIM-9X Block II System Improvement Program (SIP) II</i>				
Operational Flight Software Release v9.317	2	2019	2	2019
<i>AIM-9X Block II Tech Refresh (SIP III): Hardware</i>				
Controlled Actuation System (CAS) Battery Design	2	2019	2	2019
Program III Engineering Manufacturing Development Contract	1	2018	1	2019
Lot 20 Hardware (IMU, Dome & Processor)	2	2019	4	2021
Lot 20 Hardware Preliminary Design Review	3	2018	3	2018
Lot 20 Hardware Critical Design Review	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force	Date: February 2019
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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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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Lot 20 Hardware Cut In: Engineering Change Proposal	2	2021	2	2021
<i>AIM-9X Block II Tech Refresh (SIP III): Software</i>				
Software v9.4 Improvements: Development Testing (DT-D1)	2	2019	2	2020
Software v9.4 Improvements: Development Test / Integrated Testing (DT/IT-D1)	2	2019	2	2020
Software v9.4 Improvements: Operational Test Readiness Review (OTRR)	3	2020	3	2020
Software v9.4 Improvements: Operational Testing (OT-D1)	2	2020	1	2021
Software v9.4 Improvements: Software v9.4 Release	3	2021	3	2021
Software v10.4 Rehost: Development Testing (DT-D2)	1	2021	2	2022
Software v10.4 Rehost: Software v10.4 Release	3	2022	3	2022
<i>AIM-9X Block II Tech Refresh (SIP IV)</i>				
Hardware and Software Obsolescence	1	2021	4	2024