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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force										Date: February 2018		
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 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	122.125	51.499	34.952	37.230	0.000	37.230	28.305	19.452	16.006	14.029	0.000	323.598
674132: AIM-9 Product Improvement	122.125	51.499	34.952	37.230	0.000	37.230	28.305	19.452	16.006	14.029	0.000	323.598
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 442												
Note Funding in FY11 and out 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 AIM-9X is a long-term evolution of the AIM-9, a fielded system, qualifying this as a research category operational systems development. The AIM-9X short range air-to-air missile modification program provides a launch and leave, air combat munition that uses passive Infra-Red (IR) energy for acquisition and tracking of enemy aircraft and complements the Advanced Medium Range Air-to-Air Missile (AMRAAM). Air superiority in the short range air-to-air missile arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X employs several components common with the AIM-9M (fuze, rocket motor and warhead). The AIM-9X Block II missile is critical to project power and win decisively in accordance with the Fiscal Year 2015 Defense Planning Guidance. The missile is essential to Pacific Command plans to counter threats employed by advanced Digital Radio Frequency Memory (DRFM) electronic attack, cruise missiles, and Unmanned Aerial Vehicles. This line item continues Technical Refresh of components and software, as well as incorporates advanced development products and capabilities, to meet threshold requirements of the capabilities production document. Specifically, the program will redesign, develop and integrate components facing obsolescence, implement cost reduction initiatives, enhance insensitive munitions performance, incrementally improve operational flight software to fully utilize capabilities of the missile, and implement improvements in anti-tamper and cyber security technology. The program strategy is to first redesign the control actuation system (CAS) battery, along with the AIM-9X Block II Plus (AIM-9X-3) and incorporate it into the Lot 17 (FY 2017) production missile. Next, the program will complete missile software improvements (software version 9.4) and release it into Lot 19 (FY 2019) and prior missiles. The software will provide improved infrared counter-countermeasures, partial and degraded cueing, improved lock on after launch capability, improved small target acquisition, and surface attack capability. Finally, the program will insert a redesigned dome, inertial measurement unit, and processor in Lot 20 (FY2020) production missiles. The AIM-9X Block I concluded in FY 2011 and all funding/quantity data in the documents are associated with Block II activities.												

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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								
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total		
Previous President's Budget		52.898	34.952	24.711	0.000	24.711		
Current President's Budget		51.499	34.952	37.230	0.000	37.230		
Total Adjustments		-1.399	0.000	12.519	0.000	12.519		
• 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		0.150	0.000					
• SBIR/STTR Transfer		-1.549	0.000					
• Other Adjustments		0.000	0.000	12.519	0.000	12.519		
Change Summary Explanation								
FY 2017 change due to SBIR and \$150K reprogramming for FTS.								
FY 2019 increase of \$12.519M for AIM-9 SIP III Upgrade.								
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: AIM- 9X Product Development				51.003	31.940	32.830	-	32.830
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, and implement cost reduction initiatives, and to comply with the Insensitive Munitions (IM) requirements as established by Joint Requirements Oversight Council memo dated 11 February 2009.								

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>FY 2018 Plans: Complete v9.317 software release to resolve F-22 aircraft 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 utilize full capability of the missile. Continue to develop missile hardware design improvements necessary to enhance IM performance.</p> <p>FY 2019 Base Plans: Continue Engineering Manufacturing Development required to redesign, integrate, test and qualify components due to obsolescence and implement cost reduction initiatives. Continue to develop v9.4 Block II software improvements to utilize full capability of the missile. Incorporate anti-tamper and cyber security technology improvements. Continue to develop missile hardware design improvements necessary to enhance IM performance. Complete Critical Design Review necessary to incorporate IMU, dome and processor redesigns into Lot 20 production.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: The decrease in Primary Hardware & Software Development between FY 2018 and FY2019 reflects curtailing the development activities associated with the obsolescence redesign of missile components and v9.4 software upgrade.</p>						
<p>Title: AIM- 9X, Test and Evaluation</p> <p>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 the next tech refresh version of software improvements to the missile, Operation Flight Software version 9.4.</p> <p>FY 2018 Plans: Continue Developmental Testing and Integrated Testing (DT/IT-D1) planning of Operational Flight Software version 9.4 including improvements associated with further integrating threshold aircraft to utilize full capability of the Block II missile.</p> <p>FY 2019 Base Plans:</p>		0.496	3.012	4.400	-	4.400

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C. Accomplishments/Planned Programs (\$ in Millions)						FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Continue Developmental Testing and Integrated Testing (DT/IT-D1) of Operational Flight Software version 9.4 including improvements associated with further integrating threshold aircraft to utilize full capability of the Block II missile. FY 2018 to FY 2019 Increase/Decrease Statement: Increase in Operational Test and Evaluation between FY 2018 and FY2019 reflects DT/IT-D1 efforts to incorporate software v9.4 into the missile in accordance with the test and evaluation master plan (TEMP) revision after Block II.											
Accomplishments/Planned Programs Subtotals						51.499	34.952	37.230	-	37.230	
D. 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
• MPAF 02 Line Item M09HAI: Sidewinder (AIM-9X)	127.438	125.350	121.253	-	121.253	122.108	164.987	108.441	118.413	33.290	921.280
• MPAF 04 Line Item 000999: Replen Spares, USAF	11.015	11.222	11.248	-	11.248	11.454	11.644	20.976	15.634	Continuing	Continuing
• MPAF 04 Line Item 000999 (2)...: Inital Spares, USAF	7.684	5.720	4.255	-	4.255	4.290	1.864	1.902	1.936	0.000	27.651
• RDTE 07 PE 0207161N: Tactical AIM Missile	54.678	42.884	40.121	-	40.121	20.053	7.571	0.424	0.446	Continuing	Continuing
• WPN Line Item 2209: Sidewinder	70.912	79.692	77.927	0.381	78.308	81.170	88.680	90.444	92.286	409.142	990.634
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, and will award the option for FRP-4 in May 2018. The program plans to award FRP-5 in February 2019.											
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 2019 Air Force												Date: February 2018			
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>					
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
RMS Software/OFP Upgrade	SS/CPFF	RMS : Tucson, AZ	83.933	46.483	Jan 2017	27.801	Mar 2018	26.727	Mar 2019	-		26.727	58.448	243.392	312.877
Flight Termination System	MIPR	NAWC WD : China Lake, CA	0.000	0.150		0.000		0.000		-		0.000	8.494	8.644	-
Munitions Improvement Study (USG)	MIPR	NAWC WD : China Lake, CA	6.125	3.218	Nov 2016	3.302	Nov 2017	3.260	Nov 2018	-		3.260	3.319	19.224	-
Systems Engineering (USG)	MIPR	NAWC WD : China Lake, CA	2.293	0.330	Nov 2016	0.321	Nov 2017	0.343	Nov 2018	-		0.343	0.707	3.994	-
Aircraft Integration	SS/CPFF	Boeing : St. Louis, MO	-	0.612	Dec 2016	0.500	Dec 2017	0.500	Dec 2018	-		0.500	0.500	2.112	2.112
Subtotal			92.351	50.793		31.924		30.830		-		30.830	71.468	277.366	N/A
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
DT&E/OT&E	PO	Eglin AFB : Eglin, FL	22.636	0.496	Mar 2017	2.558	Mar 2018	5.683	Mar 2019	-		5.683	4.961	36.334	-
IT/OT Support F-15	SS/CPAF	RMS : Tuscon, AZ	-	0.000		0.194	Jan 2018	0.457	Jan 2019	-		0.457	0.343	0.994	0.994
Subtotal			22.636	0.496		2.752		6.140		-		6.140	5.304	37.328	N/A
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
PMA	Various	Eglin AFB : Eglin, MD	7.138	0.210	Mar 2017	0.276	Mar 2018	0.260	Mar 2019	-		0.260	1.020	8.904	8.904
Subtotal			7.138	0.210		0.276		0.260		-		0.260	1.020	8.904	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			122.125	51.499		34.952		37.230		-		37.230	77.792	323.598	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force							Date: February 2018			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0207161F / Tactical AIM Missiles		Project (Number/Name) 674132 / AIM-9 Product Improvement				
	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract	
Remarks										

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force

Date: February 2018

Appropriation/Budget Activity

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R-1 Program Element (Number/Name)

PE 0207161F / Tactical AIM Missiles

Project (Number/Name)

674132 / AIM-9 Product Improvement

	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
AIM-9X Production Milestones																												
Contract Award: Lot 17 (FRP 3)																												
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)																												
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																												
Engineering Manufacturing Development Contract																												
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Air Force Initial Operational Capability																												
Operational Flight Software Release v9.316																												
Operational Flight Software Release v9.317																												
AIM-9X Block II Tech Refresh (SIP III): Hardware																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force

Date: February 2018

Appropriation/Budget Activity

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R-1 Program Element (Number/Name)

PE 0207161F / Tactical AIM Missiles

Project (Number/Name)

674132 / AIM-9 Product Improvement

	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
System Improvement Program III Engineering Manufacturing Development Contract																												
Lot 17 Hardware (CAS Battery & Block 2+)																												
Lot 17 Hardware Cut In: Engineering Change Proposal																												
Lot 20 Hardware (IMU, Dome & Processor)																												
Lot 20 Hardware Preliminary Design Review																												
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 2019 Air Force			Date: February 2018
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AIM-9X Production Milestones				
Contract Award: Lot 17 (FRP 3)	2	2017	2	2017
Contract Award: Lot 18 (FRP 4)	3	2018	3	2018
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
Production Deliveries: Lot 15 (FRP 1)	2	2017	1	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	4	2023
AIM-9X Block II System Improvement Program (SIP) II				
Engineering Manufacturing Development Contract	1	2017	4	2017
AIM-9X Block II: Hardware & Software (v9.3) Improvements: Air Force Initial Operational Capability	1	2017	1	2017
Operational Flight Software Release v9.316	2	2017	2	2017
Operational Flight Software Release v9.317	3	2018	3	2018
AIM-9X Block II Tech Refresh (SIP III): Hardware				
System Improvement Program III Engineering Manufacturing Development Contract	1	2017	4	2020

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

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Appropriation/Budget Activity

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R-1 Program Element (Number/Name)

PE 0207161F / Tactical AIM Missiles

Project (Number/Name)

674132 / AIM-9 Product Improvement

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Lot 17 Hardware (CAS Battery & Block 2+)	1	2017	4	2017
Lot 17 Hardware Cut In: Engineering Change Proposal	1	2018	1	2018
Lot 20 Hardware (IMU, Dome & Processor)	1	2017	2	2020
Lot 20 Hardware Preliminary Design Review	1	2018	1	2018
Lot 20 Hardware Critical Design Review	1	2019	1	2019
Lot 20 Hardware Cut In: Engineering Change Proposal	2	2020	2	2020
AIM-9X Block II Tech Refresh (SIP III): Software				
Software v9.4 Improvements: Development Testing (DT-D1)	1	2017	4	2017
Software v9.4 Improvements: Development Test / Integrated Testing (DT/IT-D1)	4	2017	1	2020
Software v9.4 Improvements: Operational Test Readiness Review (OTRR)	1	2020	1	2020
Software v9.4 Improvements: Operational Testing (OT-D1)	1	2020	4	2020
Software v9.4 Improvements: Software v9.4 Release	2	2021	2	2021
Software v10.4 Rehost: Development Testing (DT-D2)	4	2017	4	2021
Software v10.4 Rehost: Software v10.4 Release	3	2022	3	2022
AIM-9X Block II Tech Refresh (SIP IV)				
Hardware and Software Obsolescence	1	2020	4	2023