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

Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM
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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	250.448	33.289	40.253	32.564	-	32.564	-	-	-	-	-	-
0981: AMRAAM	250.448	33.289	40.253	32.564	-	32.564	-	-	-	-	-	-

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 185

A. Mission Description and Budget Item Justification

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. This program supports the integration of the Advanced Medium Range Air-to-Air Missile (AMRAAM) into Navy aircraft with analysis of Navy unique applications, aircraft missile integration tasks, product improvement efforts including missile software upgrade development and procurement of hardware to support Navy test and evaluation tasks. 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. Funding in FY 2022 through FY 2026 supports System Improvement Program (SIP) and Navy unique Test & Evaluation (T&E) for software fielding. AMRAAM is a joint Air Force/Navy, Acquisition Category 1C program with Air Force as lead service.

This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

Cost to Complete: FY2027 - FY2031

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	34.191	44.323	33.258	-	33.258
Current President's Budget	33.289	40.253	32.564	-	32.564
Total Adjustments	-0.902	-4.070	-0.694	-	-0.694
• Congressional General Reductions	-	-0.616			
• Congressional Directed Reductions	-	-3.454			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.902	0.000			
• Rate/Misc Adjustments	0.000	0.000	-0.694	-	-0.694

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<p><u>Change Summary Explanation</u></p> <p>Financial: The PB22 funding request is decreased by \$0.7 million due to rate adjustments and economic assumptions.</p> <p>Technical: FY 2022 includes funding for improved missile performance at longer range, increased survivability, improved lethality via SIP and Counter Emerging Threat efforts through software development, simulation & test efforts and 5th generation aerial target emulation efforts. Zone Acquisition Process aircraft interface improvements are incorporated into SIP efforts to ensure new capabilities are available upon software fielding.</p> <p>Schedule: SIP 3 FCA shifted from 3QFY20 to 3QFY21 and SIP 3 Fielding shifted from 4QFY21 to 2QFY22 due to the complexity of test driving an increase in test missions to achieve test objectives. Integrated test is now complete.</p> <p>AIM-120D3 SIP 3F Minimum Viable Product decision shifted 1Q21 to 3Q21 and Fielding shifted from 1QFY23 to 3QFY23 to align with F3R schedule.</p> <p>Form, Fit, Function, Refresh (F3R) TRR shifted from 3Q20 to 4Q21. The F3R program experienced hardware integration issues resulting in a 13-month schedule slip.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0207163N / AMRAAM				Project (Number/Name) 0981 / AMRAAM			
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
0981: AMRAAM	250.448	33.289	40.253	32.564	-	32.564	-	-	-	-	-	-
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 185

A. Mission Description and Budget Item Justification

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. This program supports the integration of AMRAAM into Navy aircraft with analysis of Navy unique applications, aircraft missile integration tasks, product improvement efforts including missile software upgrade development and procurement of hardware to support Navy test and evaluation tasks. Funding in FY 2022 through FY 2026 supports System Improvement Program (SIP) and Navy unique Test & Evaluation (T&E) for software fielding.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Test and Evaluation	13.310	14.431	11.846	0.000	11.846
Articles:	-	-	-	-	-
Description: Test and Evaluation and associated government support required to ensure AIM-120 missile integration with US Naval aircraft platforms (F/A-18 C/D/E/F/G, AV-8B and F-35), hardware-in-the loop facility operations and 5th generation aerial target emulation.					
FY 2021 Plans: Continue to develop and procure test resources required to meet test requirements and provide support personnel to continue AIM-120 DT and OT events. Increase evaluation efforts to address 5th generation aerial target emulation.					
FY 2022 Base Plans: Continue to develop and procure test resources required to meet test requirements and provide support personnel to complete AIM-120 DT and OT events. Continue efforts to address 5th generation aerial target emulation.					
FY 2022 OCO Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy **Date:** May 2021

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY2022 funding request decreased from FY2021 due to planned completion of SIP 3 in FY2021, and decrease in FY2022 DT requirements for ongoing efforts.					
<p>Title: System Improvement Program (SIP) Efforts</p> <p align="right">Articles:</p> <p>Description: Continuation of 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 Profile updates on a recurring basis. SIP-3F will host AIM-120D SIP-3 software on AIM-120D3 hardware. SIP-4 will utilize Form, Fit, Function Refresh (F3R) hardware to maximize missile performance. AIM-120D SIP 3 Tape 2 will address newly matured capabilities, emerging threats, and OT deficiencies. AIM-120C3-C7 CET software will maintain inventory viability by addressing emerging electronic attack threats.</p> <p>FY 2021 Plans: Continue SIP-3 OT and deliver the tactical AIM-120D software to the field. Continue SIP-3F software builds and begin flight test. Continue SIP-4 RR software efforts for the AIM-120D3 (F3R) configuration. Continue the AIM-120 Candidate Selection Process (CSP) to analyze warfighter's priority deficiencies and enhancements. Continue CET software development to address emerging threats.</p> <p>FY 2022 Base Plans: Field SIP-3 and CET tactical software. Continue SIP-3F software development and begin flight test. Continue AIM-120 CSP to analyze warfighter's priority deficiencies and enhancements. Begin SIP 4 development to exploit F3R hardware to maximize missile performance. Begin SIP 3 Tape 2 to address newly matured capabilities, emerging threats and deficiencies.</p> <p>FY 2022 OCO Plans: N/A</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: FY2022 funding request decreased from FY2021 due to software development phasing. SIP-3, SIP-3F, and CET are in test phases and SIP-3 Tape 2 is a 4Q start.</p>	19.979	25.822	20.718	0.000	20.718
	-	-	-	-	-
Accomplishments/Planned Programs Subtotals	33.289	40.253	32.564	0.000	32.564

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy	Date: May 2021
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C. 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
• WPN/ 2206: AMRAAM	211.827	204.251	0.000	-	0.000	-	-	-	-	-	-
• MPAF/3479: AMRAAM	311.730	453.223	274.708	-	274.708	-	-	-	-	-	-
• RDTE,AF/673777: AMRAAM	55.384	51.799	50.797	-	50.797	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

AMRAAM production procurements will continue across the FYDP with periodic pre-planned technical design refreshes and value engineering change proposals.

AMRAAM's Acquisition Program Baseline was updated on 28 Oct 2015.

AMRAAM's Acquisition Strategy Report was updated 16 May 2018.

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 efforts.

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0207163N / AMRAAM	Project (Number/Name) 0981 / AMRAAM
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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			
Primary Hdw Development (EGLIN)	SS/CPAF	RAYTHEON COMPANY : Tucson AZ	109.576	16.317	Jan 2020	21.287	Jan 2021	17.279	Jan 2022	-		17.279	-	-	-
Award Fees (EGLIN)	SS/CPAF	RAYTHEON COMPANY : Tucson AZ	17.841	2.880	Jan 2020	3.756	Jan 2021	3.049	Jan 2022	-		3.049	-	-	-
Primary Hdw Development (NAWCAD)	WR	NAWCAD : Patuxent River MD	4.582	0.277	Nov 2019	0.314	Nov 2020	0.319	Nov 2021	-		0.319	-	-	-
Prior Years Dev Cost no longer funded in the FYDP	Various	Various : Various	32.477	0.000		0.000		0.000		-		0.000	-	-	-
Subtotal			164.476	19.474		25.357		20.647		-		20.647	-	-	N/A

Support (\$ 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			
Prior Years Support costs no longer funded in the FYDP	Various	Various : Various	23.795	0.000		0.000		0.000		-		0.000	-	-	-
Subtotal			23.795	0.000		0.000		0.000		-		0.000	-	-	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			
Dev Test & Eval (NAWCWD)	WR	NAWCWD : China Lake CA	50.971	12.297	Nov 2019	13.399	Nov 2020	10.795	Nov 2021	-		10.795	-	-	-
Oper Test & Eval	WR	COMOPTEVFOR : Norfolk, VA	2.819	1.013	Mar 2020	1.032	Mar 2021	1.052	Mar 2022	-		1.052	-	-	-
Subtotal			53.790	13.310		14.431		11.847		-		11.847	-	-	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy

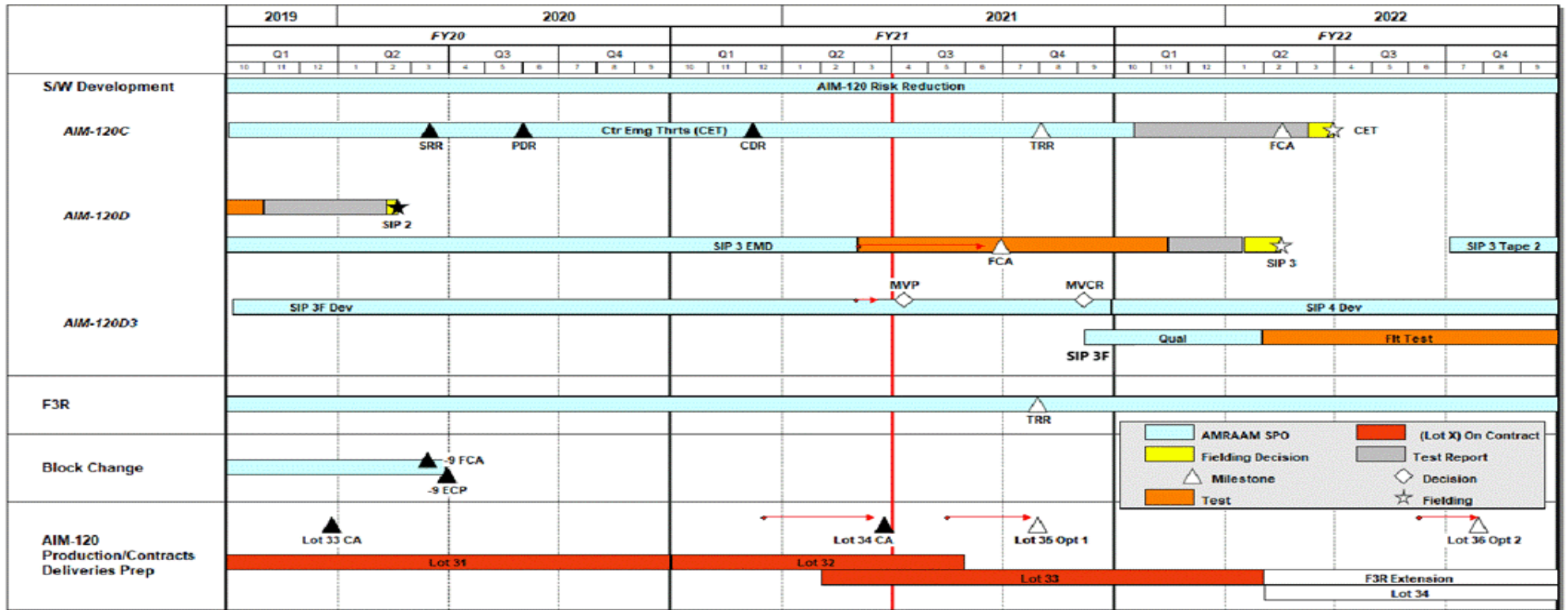
Date: May 2021

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0207163N / AMRAAM

Project (Number/Name)
0981 / AMRAAM

AMRAAM Program Schedule



Agile Terminology IAW DODI 5000.02: MVP = Minimum Viable Product
MVCR = Minimum Viable Capability Release

Baseline: 1 Oct 2020
Approved: 1 Apr 2021

This R-4 Schedule Profile reflects the joint (USAF lead service) briefing schedule, which is updated quarterly. As such, the production deliveries on this R-4 Schedule Profile are not as current as the production deliveries reflected on the following R-4A Schedule Details. The production deliveries on the R-4A Schedule Details are current and match the WPN P-21 Budget Exhibit. The USAF R-4 and R-4A do not reflect production deliveries.

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

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AMRAAM				
Acquisition Milestones: Milestones: SIP 2 AIM-120D Fielding	2	2020	2	2020
Acquisition Milestones: Milestones: SIP 3 AIM-120D FCA	3	2021	3	2021
Acquisition Milestones: Milestones: SIP 3 AIM-120D Fielding	2	2022	2	2022
Acquisition Milestones: Milestones: CET FCA	2	2022	2	2022
Acquisition Milestones: Milestones: CET Fielding	2	2022	2	2022
Systems Development: Software Development: SIP-2 Development	1	2020	2	2020
Systems Development: Software Development: SIP-3 Development	1	2020	2	2022
Systems Development: Software Development: SIP-3F Development	1	2020	4	2022
Systems Development: Software Development: CET Development	1	2020	2	2022
Systems Development: Software Development: SIP-4 Development	1	2022	4	2022
Systems Development: Software Development: SIP 3 Tape 2 Development	4	2022	4	2022
Test and Evaluation: SIP 3	1	2020	2	2022
Test and Evaluation: SIP 3F	4	2021	4	2022
Test and Evaluation: CET	1	2022	2	2022
Test and Evaluation: 5th Generation Target Emulation	1	2020	3	2022
Production Contract Awards: Production Lot 34 Contract Award	2	2021	2	2021
Production Contract Awards: Production Lot 35 Contract Award	4	2021	4	2021
Production Contract Awards: Production Lot 36 Contract Award	4	2022	4	2022
Production Deliveries: Production Lot 32 AUR	4	2020	3	2021
Production Deliveries: Production Lot 33 AUR	3	2021	4	2022
Production Deliveries: Production Lot 33 CATM	2	2022	2	2022
Production Deliveries: Production Lot 34 CATM	4	2022	4	2022