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

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0205601N / <i>ANTI-RADIATION MISSILE IMPROVEMENT</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	1,128.475	156.551	138.520	90.779	-	90.779	49.137	15.108	14.513	14.562	Continuing	Continuing
1780: <i>ARM Improvement</i>	70.416	5.314	6.238	7.144	-	7.144	7.034	7.206	7.330	7.464	Continuing	Continuing
2185: <i>AARGM</i>	762.732	10.812	3.837	1.021	-	1.021	1.025	1.025	1.023	1.010	Continuing	Continuing
2189: <i>AARGM ER</i>	295.327	126.896	123.445	82.614	-	82.614	41.078	6.877	6.160	6.088	0.000	688.485
9999: <i>Congressional Adds</i>	0.000	13.529	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.529

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 607

A. Mission Description and Budget Item Justification

Research, Development, Test and Evaluation funding for the Joint Service Anti-Radiation Missile (ARM) program, which will include near and far term performance improvements, cost reduction, and studies that establish future development requirements.

JUSTIFICATION FOR BUDGET ACTIVITY: These projects are funded under Operational Systems Development because they include 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.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	161.166	133.520	0.000	-	0.000
Current President's Budget	156.551	138.520	90.779	-	90.779
Total Adjustments	-4.615	5.000	90.779	-	90.779
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.615	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	90.779	-	90.779

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

	FY 2021	FY 2022

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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Congressional Add: <i>Program Increase</i>	13.529	0.000
Congressional Add: <i>Advanced Anti-Radiation Guided Missile (AARGM) and the Extended Range (ER)</i>	0.000	5.000
Congressional Add Subtotals for Project: 9999	13.529	5.000
Congressional Add Totals for all Projects	13.529	5.000

Change Summary Explanation

Project Unit 2189 Schedule Changes since the previous President's Budget submission:

M-Code/GP Redesign was added in to support increased capability and to meet mandated M-Code requirements.

Schedule Changes:

- Knowledge Point 4 Milestone was moved from 3 QTR FY21 to 4 QTR FY21.
- M-Code/GP Redesign was added in. This will begin in 2 QTR FY22 and end in 3 QTR FY24.
- Threat Data Library Updates were added in. This will begin in 1 QTR FY23 and end in 4 QTR FY27.
- Operational Assessment will now end in 4 QTR FY21.
- LRIP-1 contract award was moved from 3 QTR FY21 to 4 QTR FY21.
- LRIP-1 delivery dates were moved from starting in 3 QTR FY23 and ending in 4 QTR FY23 to starting in 4 QTR FY23 and ending in 1 QTR FY24.

Project Unit 9999 Changes: FY 2021 decrease since PB22 is to account for a \$1.471M SBIR reduction. FY 2022 increase is for AARGM & AARGM ER Congressional add.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT				Project (Number/Name) 1780 / ARM Improvement			
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
1780: ARM Improvement	70.416	5.314	6.238	7.144	-	7.144	7.034	7.206	7.330	7.464	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Anti-Radiation Missile (ARM) Improvement is a combination of the Navy-led High Speed Anti-Radiation Missile (HARM) program, the Advanced Anti-Radiation Guide Missile (AARGM) program and the Advanced Anti Radiation Guided Missile Extended Range (AARGM-ER). HARM is a Navy led joint service program with the United States Air Force. AARGM is a program derived from a Small Business Innovative Research (SBIR) program that developed a dual mode guidance section, incorporating a Millimeter Wave (MMW) radar with an advanced anti-radiation homing seeker. This provides the capability to counter shutdown of emitters. Additional capability for AARGM consists of Global Positioning System (GPS) capability, MMW terminal guidance, Weapon Impact Assessment (WIA), GPS point-to-point weapon engagement and impact avoidance zone/missile impact zones. AARGM-ER is a derivative of the AARGM program that utilizes the seeker electronics and repackages them into a new missile shape with a new rocket motor to achieve greater speed, range and survivability.

ARM Improvement efforts require periodic updates to the user database based on changing threat parameters, enhanced air defense engagement tactics and modern complex emerging systems. These funds provide the opportunity to conduct ground and flight testing against foreign systems, to build MMW radar shapes and modern complex emitters and systems, called Foreign Material Assessment(FMA) and to develop alternative Concept of Operations (CONOP)for new capabilities. The result of FMA is an analytical report on findings, updates to fleet tactics manuals, curriculum changes to the Suppression of Enemy Air Defenses / Destruction of Enemy Air Defenses lead Air Combat Training Curriculum course work and weapon school tactics/training and procedure briefs. FMA is focused on air defense weapon system exploitation, analysis and subsequent integration and response to ensure that the AGM-88 ARM weapon systems family remains relevant in the planned operational environment.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: ARM Foreign Material Assessment (FMA)	5.314	6.238	7.144	0.000	7.144
Articles:	-	-	-	-	-
FY 2022 Plans:					
The FMA team will continue to conduct FMA testing (both ground-based and captive flight testing), data analysis, and systems engineering to maximize ARM family of weapons effectiveness against threat air defense systems in FY 2022. The expanded capabilities of the AARGM and AARGM-ER from the legacy HARM will take advantage of the additional lab capabilities to compliment already existing HARM lab capabilities. This will enable digital Anti-Radiation Homing (ARH) seeker and Millimeter Wave (MMW) terminal seeker assessment which are unique capabilities to AARGM and AARGM-ER. FMA assessments will remain focused on new modern complex threat systems as they become available for evaluation as well as theater/country-specific					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 1780 / ARM Improvement

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

N/A

Remarks

D. Acquisition Strategy

ARM system updates are provided through the System Support Activity (SSA) at Naval Air Warfare Center - Weapons Division (NAWCWD), China Lake, CA. ARM fleet priorities are set by the Fleet ARM Steering Committee.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 1780 / ARM Improvement
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Systems Engineering	WR	NAWCWD : China Lake, CA	12.417	2.204	Nov 2020	1.802	Nov 2021	1.933	Nov 2022	-		1.933	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	0.939	0.294	Jul 2021	0.300	Jul 2022	0.420	Jul 2023	-		0.420	Continuing	Continuing	Continuing
Hardware Procurement	C/IDIQ	DTIC : FT Belvoir, VA	2.895	2.300	Jul 2021	2.095	Dec 2021	2.555	Nov 2022	-		2.555	Continuing	Continuing	Continuing
Algorithm Development	C/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	0.000	0.000		0.889	Nov 2021	0.810	Jan 2023	-		0.810	Continuing	Continuing	Continuing
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	24.732	0.000		0.000		0.000		-		0.000	0.000	24.732	-
Subtotal			40.983	4.798		5.086		5.718		-		5.718	Continuing	Continuing	N/A

Remarks
FY2023 funding supports hardware procurement as well as manpower, system engineering, analysis and software development updates resulting from the evaluation of foreign material assessment data. Vendor software updates are required when threat library or user data file updates are unable to provide critical missile improvements. Fleet engagement will continue as a key element of testing, engineering, and analytical efforts, which includes funding for threat assessment, algorithm update recommendations, operational updates, and integration efforts.

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Developmental Test & Eval	WR	NAWCWD : China Lake, CA	9.640	0.100	Nov 2020	0.877	Nov 2021	1.150	Dec 2022	-		1.150	Continuing	Continuing	Continuing
Prior Year Dev T&E no longer funded in FYDP	Various	Various : Various	18.701	0.000		0.000		0.000		-		0.000	0.000	18.701	-
Subtotal			28.341	0.100		0.877		1.150		-		1.150	Continuing	Continuing	N/A

Remarks
FY 2023 funding supports laboratory, ground , and flight testing that leverages previous investments in ARM laboratory capabilities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

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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 Support	WR	NAWCAD : Patuxent River, MD	0.646	0.401	Nov 2020	0.260	Nov 2021	0.260	Nov 2022	-		0.260	Continuing	Continuing	Continuing
Travel	WR	Various : Various	0.446	0.015	Oct 2020	0.015	Oct 2021	0.016	Dec 2022	-		0.016	Continuing	Continuing	Continuing
Subtotal			1.092	0.416		0.275		0.276		-		0.276	Continuing	Continuing	N/A

Remarks
Contract Type for Travel is Travel Order (TO).

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.416	5.314	6.238	7.144	-	7.144	Continuing	Continuing	N/A

Remarks

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 1780 / ARM Improvement
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PU-1780 Funding	FY21									FY22									FY23									FY24									FY25									FY26									FY27																												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Product Development	FY20 HW procurements									FY21 HW procurements									FY22 HW procurements									FY23 HW procurements									FY24 HW procurements									FY25 HW procurements									FY26 HW procurements									FY27 HW procurements																			
	FY22 HW procurements																																																																																		
Developmental Test & Evaluation	FMA Flight Testing									FMA Flight Testing									FMA Flight Testing									FMA Flight Testing									FMA Flight Testing									FMA Flight Testing									FMA Flight Testing																												
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	FMA Lab and Ground Testing									FMA Lab and Ground Testing									FMA Lab and Ground Testing									FMA Lab and Ground Testing									FMA Lab and Ground Testing									FMA Lab and Ground Testing									FMA Lab and Ground Testing																												
Systems Engineering Deliverables	FMA Assessment Reports									FMA Assessment Reports									FMA Assessment Reports									FMA Assessment Reports									FMA Assessment Reports									FMA Assessment Reports									FMA Assessment Reports																												
	Threat Data Library Updates									Threat Data Library Updates									Threat Data Library Updates									Threat Data Library Updates									Threat Data Library Updates									Threat Data Library Updates									Threat Data Library Updates																												

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 1780 / ARM Improvement
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ARM IMPROVEMENT				
Product Development: Shape and Transmitter procurements: Hardware procurements FY21	4	2021	2	2022
Product Development: Shape and Transmitter procurements: Hardware procurements FY22	1	2022	4	2022
Product Development: Shape and Transmitter procurements: Hardware procurements FY23	1	2023	4	2023
Product Development: Shape and Transmitter procurements: Hardware procurements FY24	1	2024	4	2024
Product Development: Shape and Transmitter procurements: Hardware procurements FY25	1	2025	4	2025
Product Development: Shape and Transmitter procurements: Hardware procurements FY26	1	2026	4	2026
Product Development: Shape and Transmitter procurements: Hardware procurements FY27	1	2027	4	2027
Test & Evaluation: FMA Flight Testing: FMA Flight Testing	1	2021	4	2027
Test & Evaluation: FMA Lab & Ground Testing: FMA Lab & Ground Testing	1	2021	4	2027
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2021	4	2021	4	2021
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2022	4	2022	4	2022
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2023	4	2023	4	2023
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2024	4	2024	4	2024

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 1780 / ARM Improvement
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2025	4	2025	4	2025
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2026	4	2026	4	2026
Systems Engineering Deliveries: Threat Data Library Update: Threat Data Library Update FY 2027	4	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT				Project (Number/Name) 2185 / AARGM			
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
2185: AARGM	762.732	10.812	3.837	1.021	-	1.021	1.025	1.025	1.023	1.010	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Advanced Anti-Radiation Guided Missile (AARGM) transitioned a Phase III Small Business Innovation Research (SBIR) program to develop and demonstrate a multi-mode guidance section on a High Speed Anti-Radiation Missile (HARM) airframe to System Development and Demonstration (SD&D) in FY 2003. The AARGM SD&D program was designed to integrate multi-mode guidance (passive Anti-Radiation Homing (ARH)/active Millimeter Wave (MMW) Radar/Global Positioning System (GPS)/Inertial Navigation System) on the HARM Air-to-Ground Missile (AGM)-88. Planned AARGM weapon system capabilities include: active MMW terminal guidance to counter shutdown, expanded threat coverage, enhanced ARH, Weapon Impact Assessment (WIA) transmitted prior to detonation, GPS/point-to-point weapon navigation, enhanced navigational performance in denied environments and weapon employment with impact avoidance zone/missile impact zones.

The AARGM program includes 40 SD&D test articles with follow on production modification kits. Milestone C was achieved 4Q FY 2008, followed by a combined FY 2008/FY 2009 Low Rate Initial Production (LRIP) contract award in 1Q FY 2009. Developmental testing was completed in 2009. Initial Operational Test and Evaluation (IOT&E) was completed in 3Q FY 2012. Full-Rate Production (FRP) decision was received 4 September 2012 with FRP contract award on 10 September 2012, and deliveries began in January 2014.

The AARGM Block 1 Upgrade program began in FY 2012 and consists of a software only upgrade to implement deferred Key Performance Parameter 3 and to correct IOT&E deficiencies in the AGM-88E All-Up-Round as well as the Common Munitions Built-in Test (BIT) Reprogramming Equipment (CMBRE).

Follow-on Operational Test and Evaluation/Integrated Test (FOT&E/IT) of the Block 1 Upgrade completed with Fleet Release approval in July 2017 and fielding complete in January 2018.

In FY 2023 - FY 2027, the AARGM program plans to continue to upgrade Electronic Intelligence (ELINT) files for missile updates and testing against advanced IADS.

FY 2023 funding continues to support AARGM ELINT file upgrades and conduct lab ground and flight tests.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Threat Data Library / System Updates	1.246	0.494	0.417	0.000	0.417
Articles:	-	-	-	-	-
FY 2022 Plans:					

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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2185 / AARGM

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>AGM-88E will continue efforts to upgrade and prioritize Electronic Intelligence files. Continue test and assessment of threat systems that impact already fielded weapons and to develop threat data for new target sets. Plans also include continued testing and evaluation on advanced Surface-to-Air weapons and related Integrated Air Defense Systems (IADS), jammers, ARM countermeasures, and human system interface improvements to mission planning.</p> <p>FY 2023 Base Plans: AGM-88E will continue efforts to upgrade and prioritize Electronic Intelligence files. Continue test and assessment of threat systems that impact already fielded weapons and to develop threat data for new target sets. Plans also include continued testing and evaluation on advanced Surface-to-Air weapons and related Integrated Air Defense Systems (IADS), jammers, ARM countermeasures, and human system interface improvements to mission planning.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 is due to the completion of the AARGM baseline production efforts with the transition to AARGM-ER, which shares common hardware and software. The continued development and testing activities in Project Unit 2189 therefore allow for this decrease in required RDT&E activities through the FYDP.</p>					
<p>Title: Follow-on Test and Evaluation and Correction of Deficiencies</p> <p align="right">Articles:</p>	0.504 -	0.206 -	0.504 -	0.000 -	0.504 -
<p>FY 2022 Plans: Continue to upgrade the system with test results to include developmental activity assessing software and hardware anomalies. Testing includes verification and validation of E2 Hardware algorithms and software.</p> <p>FY 2023 Base Plans: Continue assessing software and hardware anomalies, as well as testing verification and validation of E2 Hardware algorithms and software.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
The increase from FY 2022 to FY 2023 is to account for test and evaluation efforts to support the AARGM Derivative Program (ADP) ECP, as well as the User Data Files (UDF) Captive Carry flights that are required.					
Title: Advanced Development	9.062	3.137	0.100	0.000	0.100
Articles:	-	-	-	-	-
FY 2022 Plans: Funds will continue to support upgrades to radio frequency data processing to meet emerging requirements by updating AARGM missile software to refine detection of advanced threats by updating algorithms and firmware as part of the new E2 configuration.					
FY 2023 Base Plans: Funds will support corrections for ADP software.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 is due to the completion of the AARGM baseline production efforts with the transition to AARGM-ER, which shares common hardware and software. The continued development and testing activities in Project Unit 2189 therefore allow for this decrease in required RDT&E activities through the FYDP.					
Accomplishments/Planned Programs Subtotals	10.812	3.837	1.021	0.000	1.021

C. Other Program Funding Summary (\$ in Millions)										
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete Total Cost</u>
• WPN/2327: AARGM	78.992	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	1,465.003

Remarks

D. Acquisition Strategy
The AARGM program started as a Phase I Small Business Innovative Research (SBIR), Advanced Technology Program, evolved into a Phase III SBIR program, and transitioned into a System Development and Demonstration (SD&D) Acquisition Category 1C program in June 2003. The AARGM SD&D met most U.S. Navy operational requirements. AARGM Block 1 fulfills the rest of the operational requirements. Block 1 Fleet Release was approved in 4Q FY 2017. The AARGM program added GPS M-code in FY 2018 - FY 2021, and will correct any anomalies found in any component of the E2 configuration and M-Code in FY 2022 and out.

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Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT				Project (Number/Name) 2185 / AARGM							
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Primary Hardware Development	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	9.049	0.000		0.000		0.000		-		0.000	0.000	9.049	9.049
Systems Engineering	WR	NAWCWD : China Lake, CA	90.041	0.403	Nov 2020	0.376	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
M Code	SS/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	2.829	0.129	Jul 2021	0.000		0.000		-		0.000	0.000	2.958	2.958
Software Development (Block 1A)	SS/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	10.043	0.000		0.000		0.000		-		0.000	0.000	10.043	10.043
Software Development (Block 1A)	WR	NAWCWD : China Lake, CA	6.000	0.000		0.000		0.000		-		0.000	0.000	6.000	-
Mission Planning	WR	Various : Various	1.033	0.100	Apr 2021	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
ADP Development	SS/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	1.150	3.443	Jul 2021	0.000		0.000		-		0.000	0.000	4.593	4.593
Advanced Threats Development	SS/CPIF	Northrop Grumman Defense Systems : Northridge, CA	0.000	6.000	Apr 2021	0.000		0.000		-		0.000	0.000	6.000	6.000
Software Efforts & Advanced Development	SS/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	0.000	0.000		1.500	Jun 2022	0.000		-		0.000	Continuing	Continuing	Continuing
Software Efforts & Advanced Development	WR	NAWCWD : China Lake, CA	0.000	0.000		0.598	Nov 2021	0.000		-		0.000	Continuing	Continuing	Continuing
Prior year Prod Dev no longer funded in the FYDP	Various	Various : Various	544.279	0.000		0.000		0.000		-		0.000	0.000	544.279	-
Subtotal			664.424	10.075		2.474		0.000		-		0.000	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2185 / AARGM
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Support (\$ 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			
Prior year Support no longer funded in the FYDP	Various	Various : Various	7.147	0.000		0.000		0.000		-		0.000	0.000	7.147	-
Subtotal			7.147	0.000		0.000		0.000		-		0.000	0.000	7.147	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			
Development Test & Evaluation	WR	NAWCWD : China Lake, CA	27.161	0.095	Dec 2020	0.800	Dec 2021	0.604	Dec 2022	-		0.604	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT)	WR	NAWCWD : China Lake, CA	13.663	0.000	Nov 2020	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT)	SS/IDIQ	Northrop Grumman Defense Systems : Northridge, CA	1.348	0.000		0.000		0.000		-		0.000	0.000	1.348	1.348
Test Support and Planning	WR	COTF : Norfolk, VA	0.270	0.000		0.000		0.000		-		0.000	0.000	0.270	-
Prior year T&E no longer funded in the FYDP	Various	Various : Various	24.929	0.000		0.000		0.000		-		0.000	0.000	24.929	-
Subtotal			67.371	0.095		0.800		0.604		-		0.604	Continuing	Continuing	N/A

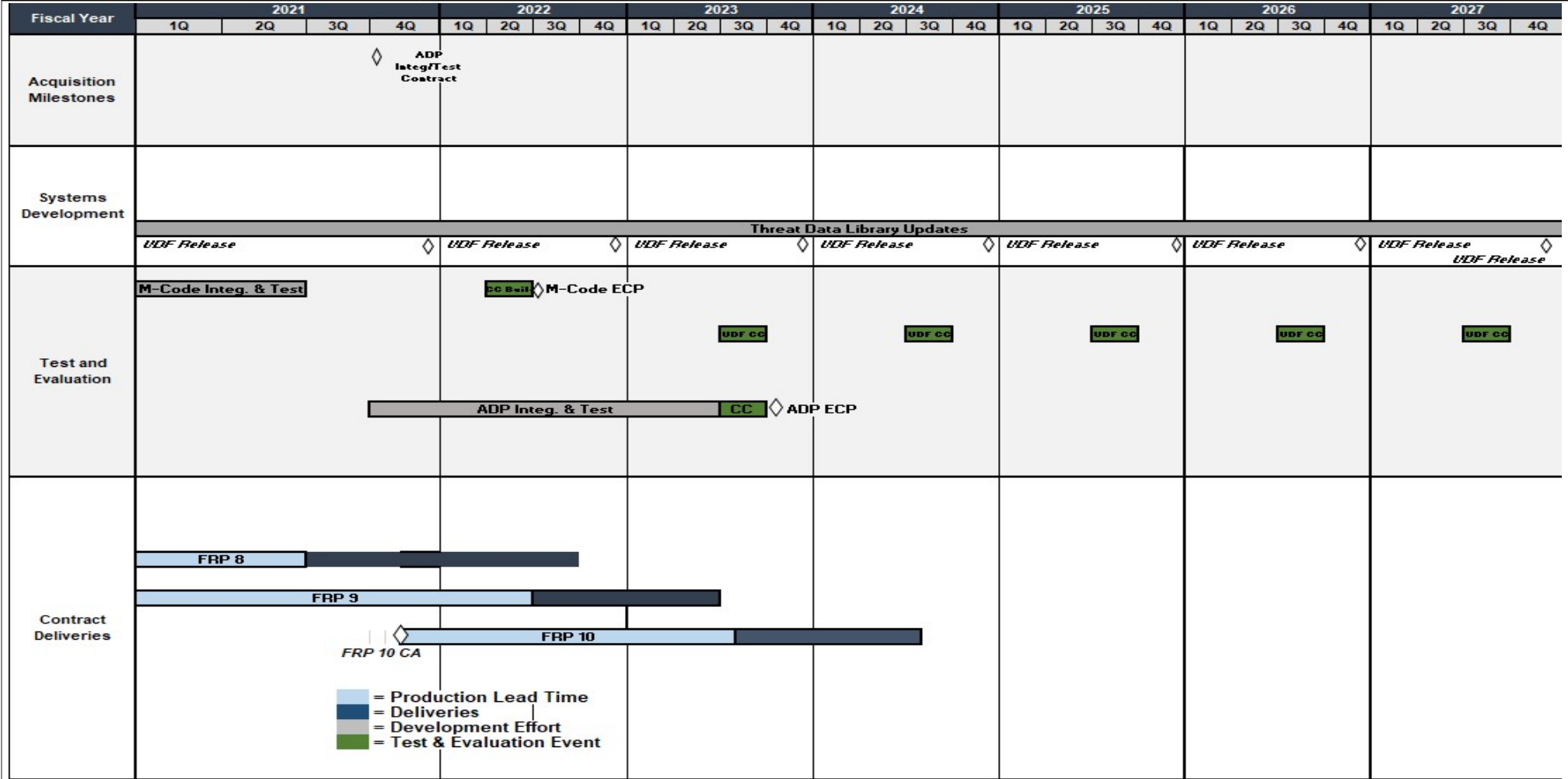
Remarks
FY2023 funding is to support ADP Threat Data Library testing, missile software and firmware efforts.

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 Support	Various	Various : Various	7.285	0.378	Apr 2021	0.299	Feb 2022	0.150	Feb 2023	-		0.150	Continuing	Continuing	Continuing
Travel	WR	NAVAIR HQ : Patuxent River, MD	1.798	0.007	Oct 2020	0.007	Oct 2021	0.010	Oct 2022	-		0.010	Continuing	Continuing	Continuing

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2185 / AARGM
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2185 / AARGM

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AARGM				
M-Code: M-Code Integration & Test	1	2021	2	2021
M-Code: M-Code Captive Carry Flight	1	2022	2	2022
M-Code: M-Code ECP	2	2022	2	2022
Test & Evaluation: ADP Integ & Test	4	2021	2	2023
Test & Evaluation: ADP Captive Carry Flight	3	2023	3	2023
Test & Evaluation: ADP ECP	4	2023	4	2023
Test & Evaluation: Threat Data Captive Flight Test FY23	3	2023	4	2023
Test & Evaluation: Threat Data Captive Flight Test FY24	3	2024	4	2024
Test & Evaluation: Threat Data Captive Flight Test FY25	3	2025	4	2025
Test & Evaluation: Threat Data Captive Flight Test FY26	3	2026	4	2026
Test & Evaluation: Threat Data Captive Flight Test FY27	3	2027	4	2027
Threat Data Library Updates: Threat Data Library Updates	1	2021	4	2027
Threat Data Library Updates: Threat Data File Release FY21	4	2021	4	2021
Threat Data Library Updates: Threat Data File Release FY22	4	2022	4	2022
Threat Data Library Updates: Threat Data File Release FY23	4	2023	4	2023
Threat Data Library Updates: Threat Data File Release FY24	4	2024	4	2024
Threat Data Library Updates: Threat Data File Release FY25	4	2025	4	2025
Threat Data Library Updates: Threat Data File Release FY26	4	2026	4	2026
Threat Data Library Updates: Threat Data File Release FY27	4	2027	4	2027
Production Milestones: Contract Award: Full-Rate Production Lot 10	4	2021	4	2021
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 8 (WPN)	3	2021	3	2022

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2185 / AARGM
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 9 (WPN)	3	2022	2	2023
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 10 (WPN)	3	2023	2	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy										Date: April 2022		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT				Project (Number/Name) 2189 / AARGM ER			
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
2189: AARGM ER	295.327	126.896	123.445	82.614	-	82.614	41.078	6.877	6.160	6.088	0.000	688.485
Quantity of RDT&E Articles	17	-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 607												

A. Mission Description and Budget Item Justification

The Air-to-Ground (AGM)-88G AARGM-ER Upgrade was a new start in FY 2016. The purpose of this effort is to develop hardware and software modifications to improve the Advanced Anti-Radiation Guided Missile (AARGM)'s operational capabilities, including extended range, survivability and effectiveness against complex, new, and emerging threats. This budget line item funds a new rocket motor design, system development and integration, test asset procurement, testing, correction of deficiencies, and associated software updates for the AARGM-ER to ensure these capabilities perform in accordance with established requirements. FY 2023 activities include continuation of the Engineering and Manufacturing Development contract, system-level operational testing of production-representative missiles, and continuing expansion of the F/A-18 employment envelope onto stations 2 and 10. AARGM-ER retains the same guidance and sensor capabilities of the AARGM.

The AARGM-ER program is part of the Navy's approach to address advanced threat capabilities in the Anti-Access/Area-Denial (A2/AD) environment. Solutions enable individual system capabilities to be leveraged across an effects chain, placing the full spectrum of tactical capability in the hands of the warfighter. Solutions that push engagement distances beyond the launch platform's radar horizon and allows the U.S. Navy to operate in, and control, contested battle space in littoral waters and A2/AD environments are increasingly critical as more scenarios require compressed and coordinated fire control timelines.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: AARGM ER Development	126.896	123.445	82.614	0.000	82.614
Articles:	-	-	-	-	-
FY 2022 Plans: FY 2022 activities include continuation of the Engineering and Manufacturing Development contract, system-level developmental testing, and entry into operational testing of production-representative missiles. Manufacturing of missile components and missiles will continue in support of contractor and government test plans. Testing conducted by the contractor and the government will assess component-level and system-level performance, and substantiate readiness for mission effectiveness and suitability.					
FY 2023 Base Plans: FY 2023 activities include continuation of the Engineering and Manufacturing Development contract, system-level					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2189 / AARGM ER

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
operational testing of production-representative missiles, continuing expansion of the F/A-18 employment envelope onto stations 2 and 10, integration of M-code capability and redesign of GPS for Advanced Threats. Manufacturing of missile components and missiles will continue in support of contractor and government test plans. Testing conducted by the government will assess system-level performance and substantiate readiness for Initial Operational Capability (IOC). The IOC will be informed by results from an IOC Supportability Review (IOCSR).					
<i>FY 2023 OCO Plans:</i> N/A					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding decrease in FY 2023 is due to program transition of design and development into system-level operational testing of production-representative missiles.					
Accomplishments/Planned Programs Subtotals	126.896	123.445	82.614	0.000	82.614

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• WPN/2327: AARGM	44.658	109.835	131.275	-	131.275	179.671	269.832	278.237	281.751	1,922.544	3,217.803

Remarks
Additional AARGM-ER funding is also contained in USAF PE 0207328F.

D. Acquisition Strategy
The AARGM-ER Program will provide hardware and software modifications to improve AARGM's operational capabilities, including extended range, survivability, and effectiveness against complex, new, and emerging threats. The program's objective requirement for Initial Operational Capability is FY 2023.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy												Date: April 2022			
Appropriation/Budget Activity 1319 / 7				R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT				Project (Number/Name) 2189 / AARGM ER							
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Rocket Motor Risk Initiative	WR	NAWCWD : China Lake, CA	0.947	0.000		0.000		0.000		-		0.000	0.000	0.947	-
Rocket Motor Risk Initiative	WR	NSWC : Indian Head, MD	1.000	0.000		0.000		0.000		-		0.000	0.000	1.000	-
Front End Design Analysis	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	15.221	0.000		0.000		0.000		-		0.000	0.000	15.221	15.221
Missile Section Integration	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	57.675	0.000		0.000		0.000		-		0.000	0.000	57.675	57.675
Engineering & Manufacturing Development	SS/CIPIF	Northrop Grumman Defense Systems : Northridge, CA	95.500	78.988	Oct 2020	79.503	Nov 2021	23.652	Oct 2022	-		23.652	24.203	301.846	301.846
Aircraft Integration	WR	NAWCWD : China Lake, CA	9.979	7.576	Nov 2020	6.059	Nov 2021	0.155	Nov 2022	-		0.155	0.000	23.769	-
Aircraft Integration	Various	Various : Various	0.632	0.151	Feb 2021	0.276	Nov 2021	1.167	Nov 2022	-		1.167	0.000	2.226	-
Aircraft Integration	SS/CIPIF	Boeing : St. Louis, MO	13.080	2.352	Dec 2020	1.309	Dec 2021	3.304	Dec 2022	-		3.304	3.378	23.423	23.423
Systems Engineering	WR	NAWCWD : China Lake, CA	28.687	11.347	Dec 2020	5.788	Nov 2021	5.330	Nov 2022	-		5.330	5.215	56.367	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	10.979	4.298	Dec 2020	3.026	Nov 2021	2.564	Nov 2022	-		2.564	2.192	23.059	-
Telemetry Section	WR	NAWCWD : China Lake, CA	3.197	2.250	Dec 2020	0.000		0.000		-		0.000	0.000	5.447	-
AUR Containers	WR	NSWC : Indian Head, MD	1.084	0.305	Jan 2021	0.098	Nov 2021	0.017	Nov 2022	-		0.017	0.000	1.504	-
PSE Development	WR	NAWCAD : Lakehurst, NJ	0.230	0.250	May 2021	0.000		0.000		-		0.000	0.000	0.480	-
M-Code/GP Redesign	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	0.000	0.000		1.900	Jan 2022	8.000	Nov 2022	-		8.000	0.000	9.900	-
Subtotal			238.211	107.517		97.959		44.189		-		44.189	34.988	522.864	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2189 / AARGM ER
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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			

Remarks
Continuation of Engineering and Manufacturing Development is to support aircraft integration testing and weapon software development. The EMD funding decrease in FY 2023 is due to program transition into operational testing of production-representative missiles. The decrease in the target value of the contract results from a revision removing items that are captured in the target value of other budget elements.

In FY 2023, Aircraft Integration (NAWCWD) support of the F/A-18 H-18 software build will transition into IOT&E support (Various).

Aircraft Integration (Boeing) will continue with physical and logical aircraft interface development and testing, mainly in support of Aircraft Integration on stations 2 and 10 in FY 2023. Includes realignment of existing Boeing efforts previously accounted for within the Aircraft Integration (NAWCWD) cost category.

M-Code/GP Redesign cost category was added in to support increased capability and to meet mandated M-Code requirements.

Support (\$ 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			
Studies & Analysis	Various	Various : Various	6.371	0.000		0.000		0.000		-		0.000	0.000	6.371	-
Subtotal			6.371	0.000		0.000		0.000		-		0.000	0.000	6.371	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			
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	5.673	11.815	Dec 2020	3.787	Nov 2021	10.838	Nov 2022	-		10.838	19.470	51.583	-
Developmental Test & Evaluation	WR	NAWCWD : China Lake, CA	1.093	4.800	Dec 2020	14.329	Nov 2021	4.618	Nov 2022	-		4.618	0.000	24.840	-
Developmental Test & Evaluation	Various	Various : Various	0.554	0.050	Dec 2020	0.928	Nov 2021	0.000		-		0.000	0.000	1.532	-
Developmental Test & Evaluation	MIPR	NASA Ames Research Center : Moffett Field, CA	1.972	0.000		0.000		0.000		-		0.000	0.000	1.972	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2189 / AARGM ER
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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			
Developmental Test & Evaluation	MIPR	AEDC : Arnold AFB, TN	2.499	0.000		0.000		0.000		-		0.000	0.000	2.499	-
ER Test Assets	SS/CPIF	Northrop Grumman Defense Systems : Northridge, CA	28.968	0.000		0.000		0.000		-		0.000	0.000	28.968	28.968
T&E Support	WR	COTF : Norfolk, VA	0.215	0.170	Aug 2021	0.310	Dec 2021	1.670	Nov 2022	-		1.670	0.000	2.365	-
Operational and Integrated T&E	Various	Various : Various	0.000	0.000		3.275	Jul 2022	19.825	Dec 2022	-		19.825	0.000	23.100	-
Subtotal			40.974	16.835		22.629		36.951		-		36.951	19.470	136.859	N/A

Remarks
 Developmental Test and Evaluation (NAWCAD) will increase due to F/A-18 employment expansion and integration on stations 2 and 10.
 Developmental Test and Evaluation (NAWCWD) will decrease due to completion of aircraft interface flight testing and developmental free flight test events.
 Operational Test and Evaluation will increase in FY 2023 to support IOC in FY 2023.

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 Support	Various	Various : Various	5.716	1.399	Dec 2020	1.420	Nov 2021	0.755	Nov 2022	-		0.755	2.762	12.052	-
Program Management Support	WR	NAWCAD : Patuxent River, MD	3.669	1.054	Dec 2020	1.372	Nov 2021	0.648	Nov 2022	-		0.648	2.771	9.514	-
Government Engineering & Information Technology Support	WR	NSWC : Dahlgren, VA	0.213	0.083	Dec 2020	0.015	Oct 2021	0.021	Oct 2022	-		0.021	0.000	0.332	-
Travel	WR	NAVAIR HQ : Patuxent River, MD	0.173	0.008	Oct 2020	0.050	Nov 2021	0.050	Nov 2022	-		0.050	0.212	0.493	-
Subtotal			9.771	2.544		2.857		1.474		-		1.474	5.745	22.391	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

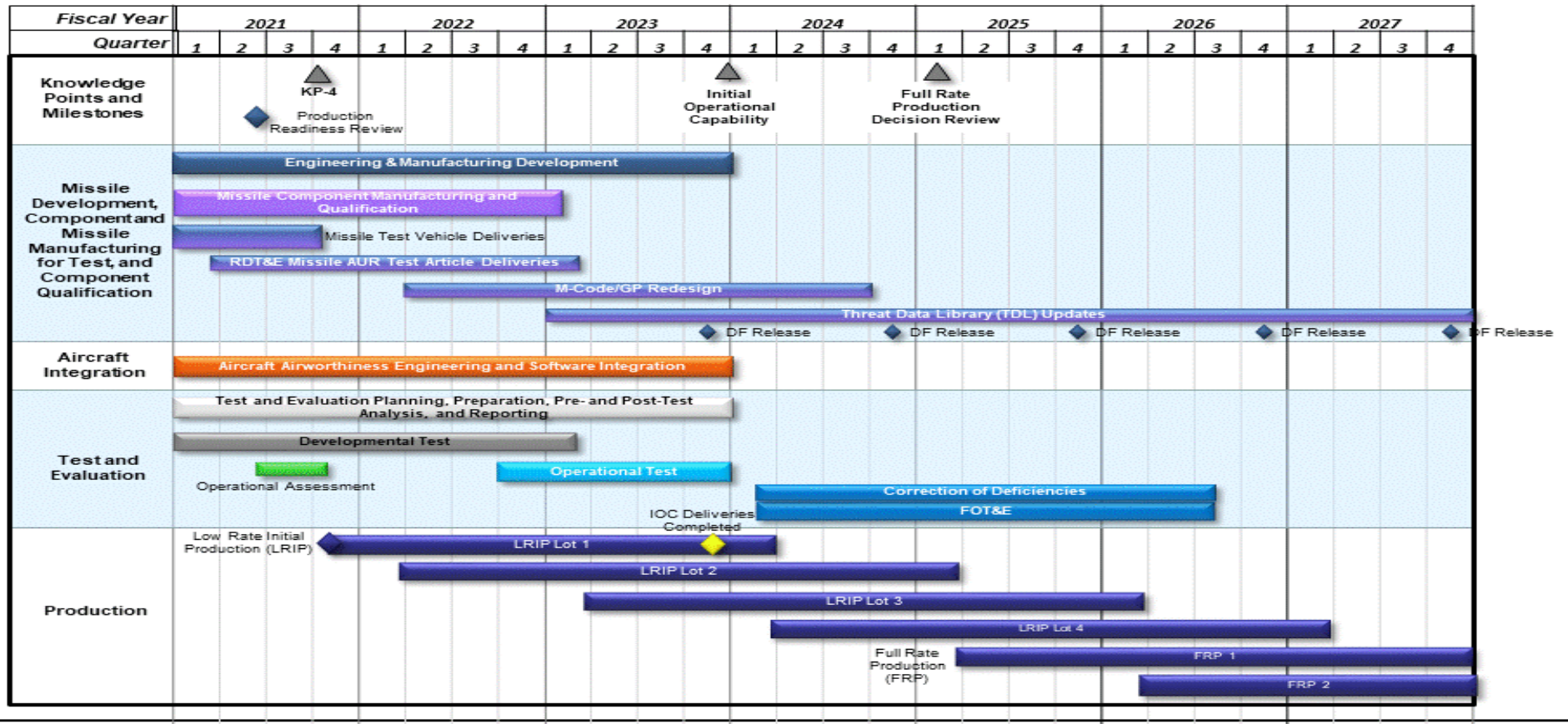
Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0205601N / ANTI-RADIATION MISSILE
IMPROVEMENT

Project (Number/Name)
2189 / AARGM ER



AARGM-ER R-4 Exhibit



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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2189 / AARGM ER

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AARGM ER				
Acquisition Milestones: Milestones: Knowledge Point 4	4	2021	4	2021
Acquisition Milestones: Milestones: IOC	4	2023	4	2023
Acquisition Milestones: Milestones: FRP Decision Review	1	2025	1	2025
Systems Development: Engineering & Manufacturing Development: Engineering & Manufacturing Development	1	2021	4	2023
Systems Development: M-Code/GP Redesign: M-Code/GP Redesign	2	2022	3	2024
Systems Development: Threat Data Library: Threat Data Library (TDL) Updates	1	2023	4	2027
Test & Evaluation: Aircraft Integration: Aircraft Integration	1	2021	4	2023
Test & Evaluation: Technical Evaluation: Developmental Test & Evaluation (DT&E)	1	2021	1	2023
Test & Evaluation: Operational Assessment: Operational Assessment	2	2021	4	2021
Test & Evaluation: Operational Evaluation: Operational Test & Evaluation (OT&E)	4	2022	4	2023
Test & Evaluation: Follow on Test & Evaluation: Follow on Test & Evaluation (FOT&E)	1	2024	3	2026
Production Milestones: Production Readiness Reviews: Production Readiness Review (PRR) 1	2	2021	2	2021
Production Milestones: Contract Awards: LRIP 1 WPN	4	2021	4	2021
Production Milestones: Contract Awards: LRIP 2 WPN	1	2022	1	2022
Production Milestones: Contract Awards: LRIP 3 WPN	1	2023	1	2023
Production Milestones: Contract Awards: LRIP 4 WPN	1	2024	1	2024
Production Milestones: Contract Awards: FRP 1 WPN	1	2025	1	2025
Production Milestones: Contract Awards: FRP 2 WPN	1	2026	1	2026
Deliveries: DT Test Articles	1	2021	1	2023
Deliveries: LRIP 1 WPN	4	2023	1	2024

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 2189 / AARGM ER
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Deliveries: LRIP 2 WPN	1	2024	1	2025
Deliveries: LRIP 3 WPN	1	2025	1	2026
Deliveries: LRIP 4 WPN	1	2026	1	2027
Deliveries: FRP 1 WPN	1	2027	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 9999 / Congressional Adds
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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
9999: <i>Congressional Adds</i>	0.000	13.529	5.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.529
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Advanced Anti-Radiation Guided Missile Extended Range (AARGM-ER) integrates hardware and software upgrades to the AARGM missile guidance and control sections, a new rocket motor, and Control Actuation System (CAS) into a new outer mold line able to be launched from tactical aircraft. AARGM-ER's capabilities will add extended range, increased survivability, and improve effectiveness against complex, new, and emerging threats.

The FY21 program increase supports the initial development efforts for an AARGM-ER surface-launched demonstration. This project unit funds design, system development & integration, and associated software updates to modify AARGM-ER to enable compatibility with a surface-launched system. FY21 design efforts will fund updates and improvements to open system interfaces, guidance and control systems, power systems, and the associated communications hardware and software.

The FY22 program increase funds research and study activities to determine whether the AARGM weapon system family can be integrated on other long endurance platforms, such as the Navy's P-8.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2021	FY 2022
<i>Congressional Add:</i> Program Increase	13.529	0.000
<i>FY 2021 Accomplishments:</i> N/A		
<i>FY 2022 Plans:</i> In FY2022, a new Guidance Processor (GP) Circuit Card Assembly (CCA) will be designed, developed and qualified as a form, fit, function replacement within the Control Section of the AGM-88G configuration to enable compatibility with a surface-launched system. The program will demonstrate surface-launched capability of an AARGM-ER.		
<i>Congressional Add:</i> Advanced Anti-Radiation Guided Missile (AARGM) and the Extended Range (ER)	0.000	5.000
<i>FY 2021 Accomplishments:</i> N/A		
<i>FY 2022 Plans:</i> Fund research and study activities to determine whether the AARGM can be equipped on other long endurance platforms.		
Congressional Adds Subtotals	13.529	5.000

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>ANTI-RADIATION MISSILE IMPROVEMENT</i>	Project (Number/Name) 9999 / <i>Congressional Adds</i>

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

Remarks

D. Acquisition Strategy

This demonstration effort will leverage the AARGM-ER Program of Record to develop initial hardware and software modifications that could provide for a surface-launched variant.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 9999 / Congressional Adds
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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			
Control Design Analysis	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	0.000	7.458	Mar 2022	0.000		0.000		-		0.000	0.000	7.458	7.458
Surface Launch Demonstration	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	0.000	4.941	Mar 2022	0.000		0.000		-		0.000	0.000	4.941	4.941
Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	0.775	Oct 2021	0.500	Aug 2022	0.000		-		0.000	0.000	1.275	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.105	Oct 2021	0.500	Aug 2022	0.000		-		0.000	0.000	0.605	-
AARGM/AARGMER Integration Efforts	SS/CPFF	Northrop Grumman Defense Systems : Northridge, CA	0.000	0.000		4.000	Dec 2022	0.000		-		0.000	0.000	4.000	-
Subtotal			0.000	13.279		5.000		0.000		-		0.000	0.000	18.279	N/A

Remarks
 FY 2021 Control Design Analysis decrease and Surface Launch Demonstration increase is due to a \$1.471M SBIR reduction and a reflection of actual negotiated contract values.

 FY 2022 funding for research and study activities to determine whether the AARGM weapon system family can be integrated on long endurance platforms, such as the Navy's P-8.

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 Support	WR	NAWCAD : Patuxent River, MD	0.000	0.250	Oct 2021	0.000		0.000		-		0.000	0.000	0.250	-
Subtotal			0.000	0.250		0.000		0.000		-		0.000	0.000	0.250	N/A

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

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 9999 / Congressional Adds
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Congressional Adds	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Systems Development																																
Control Design Analysis																																
Surface Launch Demonstration																																
AARGM and AARGM ER FY22 Add																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / ANTI-RADIATION MISSILE IMPROVEMENT	Project (Number/Name) 9999 / Congressional Adds

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Congressional Adds				
Systems Development: Control Design Analysis: Control Design Analysis	2	2022	2	2023
Systems Development: Surface Launch Demonstration: Surface Launch Demonstration	2	2022	2	2023
AARGM and AARGM ER FY22 Add: Integration on long endurance platforms	4	2022	4	2023