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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2019 Navy	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / Harm Improvement
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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	778.962	32.889	87.989	120.762	-	120.762	116.451	79.958	60.215	61.506	Continuing	Continuing
1780: HARM Improvement	50.377	1.347	6.408	6.256	-	6.256	7.130	7.159	7.180	7.340	Continuing	Continuing
2185: AARGM	719.373	2.437	15.249	15.266	-	15.266	11.708	11.250	4.820	4.931	Continuing	Continuing
2189: AARGM ER	9.212	29.105	66.332	99.240	-	99.240	97.613	61.549	48.215	49.235	Continuing	Continuing

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 368

**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. Specific initial efforts include lower cost seeker component development and seeker aided fuzing to enhance warhead performance in low angle impacts and against certain ship targets.

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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>
Previous President's Budget	48.635	87.989	115.055	-	115.055
Current President's Budget	32.889	87.989	120.762	-	120.762
Total Adjustments	-15.746	0.000	5.707	-	5.707
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-4.500	0.000			
• SBIR/STTR Transfer	-1.046	0.000			
• Rate/Misc Adjustments	0.000	0.000	5.707	-	5.707
• Congressional Directed Reductions	-10.200	-	-	-	-
Adjustments					

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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement	
<p><b><u>Change Summary Explanation</u></b></p> <p>The FY 2019 funding request was reduced by \$0.650 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.</p> <p>FY 2019 decrease of \$1.143M due to change in inflation rates.</p> <p>FY 2019 increase of \$7.5M supports the Advanced Anti-Radiation Guided Missile Derivative Program (ADP) development.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 1780 / HARM Improvement			
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
1780: HARM Improvement	50.377	1.347	6.408	6.256	-	6.256	7.130	7.159	7.180	7.340	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 and the Advanced Anti-Radiation Guide Missile (AARGM) program. The HARM program has undergone several Engineering Change Plans since ceasing production in 1983. Currently, the inventory consists of AGM-88B/C missiles with Block 5/A software which provides increased capability tracking emitters, improved targeting against a larger set of air defense related systems and improved seeker. 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 advance anti-radiation homing seeker. This provides the capability to counter shutdown of emitters. Additional capability for AARGM consists of Global Positioning System capability, MMW terminal guidance, netted targeting real time feed via Integrated Broadcast System (IBS), Weapon Impact Assessment (WIA), GPS point-to-point weapon engagement and impact avoidance zone/missile impact zones.

ARM Improvement efforts require periodic updates to the user data base based on changing threat parameters, enhanced air defense engagement tactics and emerging systems. These funds provide the opportunity to conduct ground and flight testing against foreign systems, called Foreign Material Assessment (FMA). 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 and non-traditional target exploitation, analysis and subsequent integration and response to ensure the AGM-88 ARM weapon systems remains relevant in the planned operational environment.

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

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> ARM Foreign Material Assessment (FMA)	1.347	6.408	6.256	0.000	6.256
<b>Articles:</b>	-	-	-	-	-
<b>FY 2018 Plans:</b> FMA activities will expand to include the AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) in addition to the AGM-88B/C High-speed Anti-Radiation Missile (HARM). Increased funding will allow for FMA lab, ground, and flight test and evaluation activities to expand across the entire AGM-88 family of missiles to evaluate new and modern threat systems in order to update HARM and AARGM with capability to counter these threats. The funding also supports enhancement/upgrade to existing lab facilities to support the analysis of FMA results. The FMA team will continue to conduct FMA testing (both ground-based and captive flight testing), data analysis, and systems engineering to maximize AARGM and HARM effectiveness against threat air defense systems in FY 2018. The expanded capabilities of the AARGM from the legacy HARM will take advantage of the additional					

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018			
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement	Project (Number/Name) 1780 / HARM Improvement			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
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. FMA assessments will remain focused on new threat systems as they become available for evaluation as well as theater/country-specific systems of interest. Priorities coordinated through the Fleet ARM Steering Committee. Expect continued testing and evaluation on advanced Surface-to-Air weapons and related IADS, jammers, and ARM countermeasures, and non-traditional ARM targets. Fleet engagement will continue as a key element of testing, engineering, and analytical efforts, which includes funding for threat assessment, operational updates, and integration efforts. Additional test priorities include characterizing complex systems in the field, so that FMA assessments can directly populate missile threat data libraries with updated attributes to enhance track quality for HARM and AARGM. Assess special projects developmental improvements against foreign material.						
FY 2019 Base Plans: The FMA team will continue to conduct FMA testing (both ground-based and captive flight testing), data analysis, and systems engineering to maximize AARGM and HARM effectiveness against threat air defense systems in FY 2019. The expanded capabilities of the AARGM 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. FMA assessments will remain focused on new threat systems as they become available for evaluation as well as theater/country-specific systems of interest. Priorities coordinated through the Fleet ARM Steering Committee. Expect continued testing and evaluation on advanced Surface-to-Air weapons and related IADS, jammers, and ARM countermeasures, and non-traditional ARM targets. Fleet engagement will continue as a key element of testing, engineering, and analytical efforts, which includes funding for threat assessment, operational updates, and integration efforts. Additional test priorities include characterizing complex systems in the field, so that FMA assessments can directly populate missile threat data libraries with updated attributes to enhance track quality for HARM and AARGM. Assess special projects developmental improvements against foreign material.						
FY 2019 OCO Plans: N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decrease due to general program reductions.						
Accomplishments/Planned Programs Subtotals		1.347	6.408	6.256	0.000	6.256
C. Other Program Funding Summary (\$ in Millions)						
N/A						

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 1780 / <i>HARM Improvement</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b>		
<b><u>Remarks</u></b>		
<b><u>D. Acquisition Strategy</u></b> 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.		
<b><u>E. Performance Metrics</u></b> Continue FMA testing and engineering analysis against new and evolving foreign threats.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 1780 / HARM Improvement					
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
Systems Engineering	WR	NAWCWD : China Lake, CA	6.035	0.841	Nov 2016	1.752	Nov 2017	1.668	Nov 2018	-		1.668	Continuing	Continuing	Continuing
Systems Engineering	Various	Various : Various	0.000	0.000		0.300	Dec 2017	0.300	Dec 2018	-		0.300	0.000	0.600	-
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			30.767	0.841		2.052		1.968		-		1.968	Continuing	Continuing	N/A
Remarks FY 2019 funding supports manpower required for data collection and analysis resulting from field testing.															
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
Developmental Test & Eval	WR	NAWCWD : China Lake, CA	0.500	0.504	Nov 2016	4.164	Nov 2017	4.093	Nov 2018	-		4.093	Continuing	Continuing	Continuing
Operational Test & Eval	WR	NAWCWD : China Lake, CA	18.701	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			19.201	0.504		4.164		4.093		-		4.093	Continuing	Continuing	N/A
Remarks FY 2019 funding supports field testing and Advanced Anti-Radiation Guided Missile lab capability investments to compliment already existing High Speed Anti-Radiation Missile lab capabilities.															
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
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.182	Nov 2017	0.185	Nov 2018	-		0.185	Continuing	Continuing	Continuing
Travel	WR	Various : Various	0.409	0.002	Jan 2017	0.010	Jan 2018	0.010	Jan 2019	-		0.010	Continuing	Continuing	Continuing
Subtotal			0.409	0.002		0.192		0.195		-		0.195	Continuing	Continuing	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2019 Navy</b>												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 1319 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>				<b>Project (Number/Name)</b> 1780 / <i>HARM Improvement</i>					
<b>Management Services (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Remarks</b> Contract Type for Travel is Travel Order (TO).															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			50.377	1.347		6.408		6.256		-		6.256	Continuing	Continuing	N/A
<b>Remarks</b>															

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**Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy**

**Date:** February 2018

**Appropriation/Budget Activity**  
1319 / 7

**R-1 Program Element (Number/Name)**  
PE 0205601N / *Harm Improvement*

**Project (Number/Name)**  
1780 / *HARM Improvement*

HARM IMPROVEMENT	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
<b>Acquisition Milestones</b>																												
ARM Steering Committee		ARM SC ▲				ARM SC ▲				ARM SC ▲				ARM SC ▲				ARM SC ▲				ARM SC ▲				ARM SC ▲		
Air Defense Unit System Report	Air Defense Unit System Report																											
<b>Systems Development</b>																												
Flight Testing																												
Ground Testing																												
Lab Development																												
<b>Production Milestones</b>																												
<b>Deliveries</b>																												
Tactics Manual				▲				▲				▲				▲				▲				▲				▲
User Data File				▲				▲				▲				▲				▲				▲				▲

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2019 Navy</b>			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 1780 / <i>HARM Improvement</i>	

**Schedule Details**

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
<b><i>HARM IMPROVEMENT</i></b>				
Acquisition Milestones: ARM Steering Committee: FY17 ARM Steering Committee	2	2017	2	2017
Acquisition Milestones: ARM Steering Committee: FY18 ARM Steering Committee	2	2018	2	2018
Acquisition Milestones: ARM Steering Committee: FY19 ARM Steering Committee	2	2019	2	2019
Acquisition Milestones: ARM Steering Committee: FY20 ARM Steering Committee	2	2020	2	2020
Acquisition Milestones: ARM Steering Committee: FY21 ARM Steering Committee	2	2021	2	2021
Acquisition Milestones: ARM Steering Committee: FY22 ARM Steering Committee	2	2022	2	2022
Acquisition Milestones: ARM Steering Committee: FY23ARM Steering Committee	2	2023	2	2023
Acquisition Milestones: Air Defense Unit System Report: Air Defense Unit System Report	1	2017	4	2023
Systems Development: Flight Testing: Flight Testing FY17 QTR 4	4	2017	4	2017
Systems Development: Flight Testing: Flight Testing FY18 QTR 3-4	3	2018	4	2018
Systems Development: Flight Testing: Flight Testing FY19 QTR 3-4	3	2019	4	2019
Systems Development: Flight Testing: Flight Testing FY20 QTR 2-4	2	2020	4	2020
Systems Development: Flight Testing: Flight Testing FY21 QTR 2-4	2	2021	4	2021
Systems Development: Flight Testing: Flight Testing FY22 QTR 2-4	2	2022	4	2022
Systems Development: Flight Testing: Flight Testing FY23 QTR 2-4	2	2023	4	2023
Systems Development: Ground Testing: Ground Testing FY17 QTR 4	4	2017	4	2017
Systems Development: Ground Testing: Ground Testing FY18 QTR 3-4	3	2018	4	2018
Systems Development: Ground Testing: Ground Testing FY19 QTR 3-4	3	2019	4	2019
Systems Development: Ground Testing: Ground Testing FY20 QTR 2-4	2	2020	4	2020
Systems Development: Ground Testing: Ground Testing FY21 QTR 2-4	2	2021	4	2021
Systems Development: Ground Testing: Ground Testing FY22 QTR 2-4	2	2022	4	2022

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy	<b>Date:</b> February 2018
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<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 1780 / <i>HARM Improvement</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: Ground Testing: Ground Testing FY23 QTR 2-4	2	2023	4	2023
Systems Development: Lab Development: Lab Development	2	2018	4	2019
Deliveries: Tactics Manual: Tactics Manual FY17	4	2017	4	2017
Deliveries: Tactics Manual: Tactics Manual FY18	4	2018	4	2018
Deliveries: Tactics Manual: Tactics Manual FY19	4	2019	4	2019
Deliveries: Tactics Manual: Tactics Manual FY20	4	2020	4	2020
Deliveries: Tactics Manual: Tactics Manual FY21	4	2021	4	2021
Deliveries: Tactics Manual: Tactics Manual FY22	4	2022	4	2022
Deliveries: Tactics Manual: Tactics Manual FY23	4	2023	4	2023
Deliveries: User Data File: User Data File FY17	4	2017	4	2017
Deliveries: User Data File: User Data File FY18	4	2018	4	2018
Deliveries: User Data File: User Data File FY19	4	2019	4	2019
Deliveries: User Data File: User Data File FY20	4	2020	4	2020
Deliveries: User Data File: User Data File FY21	4	2021	4	2021
Deliveries: User Data File: User Data File FY22	4	2022	4	2022
Deliveries: User Data File: User Data File FY23	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 2185 / AARGM			
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
2185: AARGM	719.373	2.437	15.249	15.266	-	15.266	11.708	11.250	4.820	4.931	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: 368												
A. Mission Description and Budget Item Justification												
<p>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&amp;D) in FY 2003. The AARGM SD&amp;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, counter shutdown, expanded threat coverage, enhanced ARH, netted targeting real-time feed via Integrated Broadcast System (IBS) prior to missile launch, 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.</p>												
<p>The AARGM program includes 40 SD&amp;D test articles with the follow on of 2,435 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&amp;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 program remains in production through FY 2023.</p>												
<p>The AARGM Block 1 Upgrade program began in FY 2012 and consists of a software only upgrade to deferred Key Performance Parameter 3 and to correct IOT&amp;E deficiencies in the AGM-88E All-Up-Round as well as the Common Munitions Built-in Test (BIT) Reprogramming Equipment (CMBRE).</p>												
<p>Follow-on Operational Test and Evaluation/Integrated Test (FOT&amp;E/IT) of the Block 1 Upgrade completed with Fleet Release approval in July 2017 and completion in January 2018.</p>												
<p>In FY 2019 - FY 2023, the AARGM program plans to develop and demonstrate the capability to engage and destroy non-traditional and Overseas Contingency Operations targets. These developments continue Future Naval Capability Science and Technology investments by the Office of Naval Research initiated in FY 2006. Over this same timeframe, the AARGM program will develop or enhance navigational capability in denied environments.</p>												
<p>FY 2019 funding supports AARGM's advanced development and system capability upgrades. Additional funding will support the implementation of M Code, AARGM Derivative Program and upgrades to the radio frequency data processing to meet emerging requirements.</p>												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy				Date: February 2018		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement		Project (Number/Name) 2185 / AARGM		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<b>Title:</b> Threat Data Library / System Updates		0.410	2.230	1.200	0.000	1.200
<b>Articles:</b>		-	-	-	-	-
<b>FY 2018 Plans:</b> AGM-88E continues effort to upgrade systems such as the Electronic Intelligence files and Millimeter Wave signatures to identify, track and engage new and/or improved threat radars. Continue test and assessment of threat systems that impact already fielded weapons and to develop threat data for new target sets. Plans also include development or enhancement of navigational capability, integration of modernized Anti-Radiation Homing processor, and human system interface improvements to mission planning.						
<b>FY 2019 Base Plans:</b> AGM-88E continues effort 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 development or enhancement of navigational capability, integration of modernized Anti-Radiation Homing processor, and human system interface improvements to mission planning.						
<b>FY 2019 OCO Plans:</b> N/A						
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> FY 2019 reduction in AARGM Threat Data Library / System Updates.						
<b>Title:</b> Follow-on Operational Test and Evaluation (FOT&E) and Correction of Deficiencies		1.077	0.475	0.484	0.000	0.484
<b>Articles:</b>		-	-	-	-	-
<b>FY 2018 Plans:</b> Continue to upgrade the system with test results to include developmental activity assessing software and hardware anomalies. Includes verification and validation for correction of deficiencies from Block 0 and Block 1 testing.						
<b>FY 2019 Base Plans:</b> Continue to upgrade the system with test results to include developmental activity assessing software and hardware anomalies. Testing for those efforts in System Updates includes navigational T&E, processor performance evaluations, and includes verification and validation for correction of deficiencies from Block 0 and Block 1 testing.						
<b>FY 2019 OCO Plans:</b>						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increase due to continued execution of AARGM FOT&E and Correction of Deficiencies plans.						
Title: Advanced Development		0.950	12.544	13.582	0.000	13.582
Articles:		-	-	-	-	-
FY 2018 Plans: Enhance navigational capability to comply with requirement to implement M Code to comply with U.S. Statute. Funding added in PB18 specifically addresses the effort to upgrade radio frequency data processing to meet emerging requirements. Funding supports the transition of receiver technology upgrades in coordination with the Office of Naval Research (ONR). This project was initiated in FY 2016 which upgrades the AARGM capability for detection of high priority, non-traditional targets. The Technology Transition Agreement (TTA) requires the program to fund the integration of the design which consists of software development and hardware integration. Funding supports testing, configuration control board review, test plan reviews, requirements analysis and weapons integration analysis. Funding also supports upgrading AGM-88E capability against non-traditional and OCO targets. This includes weapon system developmental activities, range and laboratory support and analysis.						
FY 2019 Base Plans: Enhance navigational capability to comply with requirement to implement M Code to comply with U.S. Statute. Award the M Code Integration & Test contract. Funding supports upgrade of the radio frequency data processing to meet emerging requirements. Funding supports the transition of receiver technology upgrades in coordination with the Office of Naval Research (ONR) project ALPO. Funding supports testing, configuration control board review, test plan reviews, requirements analysis and weapons integration analysis. Funding supports upgrading AGM-88E capability against non-traditional and OCO targets. This includes weapon system developmental activities, range and laboratory support and analysis. In FY 2019, the AARGM program plans to develop and demonstrate the capability to engage and destroy non-traditional and Overseas Contingency Operations targets.						
FY 2019 OCO Plans: N/A						
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increase to fund the AARGM Derivative Program and M Code requirements.						
Accomplishments/Planned Programs Subtotals		2.437	15.249	15.266	0.000	15.266

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>	Project (Number/Name) 2185 / AARGM	

## C. 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
• WPN 2327: <i>HARM Mods</i>	180.052	183.368	187.985	-	187.985	183.880	187.962	175.427	178.998	0.000	1,927.931

## Remarks

FY 2021 - FY 2023 Total Cost funding listed does not include the Advanced Anti-Radiation Guided Missile Extended Range funding.

## 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 Advanced Technology Development and Quick Bolt Advanced Concept Technology Demonstration demonstrated possible future system enhancements. AARGM Block 1 fulfills the rest of the operational requirements. Block 1 Fleet Release approval 4Q FY2017. ONR Future Naval Capability AARGM Derivative Program (ADP) Program to transition in FY2019. Expand target set capability and add M-code in FY2018 - FY2023.

## E. Performance Metrics

Block 1 Fleet Release complete 2Q FY2018. ADP Transition FY2019. M-Code capable FY2021. ADP and Complex Emitter Capable FY2022.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy** **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 2185 / <i>AARGM</i>
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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
Primary Hardware Development	SS/CPFF	Orbital ATK : Northridge, CA	0.000	0.000		9.500	Dec 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : China Lake, CA	82.320	1.152	Nov 2016	2.055	Nov 2017	1.016	Nov 2018	-		1.016	Continuing	Continuing	Continuing
M Code	SS/IDIQ	Orbital ATK : Northridge, CA	0.000	0.000		1.000	Mar 2018	3.200	Jan 2019	-		3.200	Continuing	Continuing	Continuing
Software Development	SS/IDIQ	Orbital ATK : Northridge, CA	0.000	0.000		1.026	Mar 2018	9.473	Dec 2018	-		9.473	Continuing	Continuing	Continuing
Mission Planning	WR	Various : Various	0.733	0.100	Mar 2017	0.100	Mar 2018	0.100	Mar 2019	-		0.100	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	-
<b>Subtotal</b>			627.332	1.252		13.681		13.789		-		13.789	Continuing	Continuing	N/A

**Remarks**

FY 2019 M Code funding required to support implementation of M Code. FY 2019 Software Development funding planned to support Radio Frequency (RF) Processor firmware, RF Processor software, A2 Card firmware, the transition of the ONR Future Naval Capability Project Alpo into the program of record AARGM Derivative Program (ADP) and Missile Software (Block 1A) development efforts.

Support (\$ 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
Prior year Support no longer funded in the FYDP	Various	Various : Various	7.147	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
<b>Subtotal</b>			7.147	0.000		0.000		0.000		-		0.000	Continuing	Continuing	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
Development Test & Evaluation	WR	NAWCWD : China Lake, CA	26.433	0.000		0.528	Nov 2017	0.429	Nov 2018	-		0.429	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 2185 / AARGM					
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
Development Test & Evaluation	SS/IDIQ	Orbital ATK : Northridge, CA	5.739	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Development Test & Evaluation	WR	JITC : Fort Huachuca, AZ	0.000	0.006	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT))	WR	NAWCWD : China Lake, CA	12.714	0.058	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Operational and Integrated Test & Evaluation (IT&OT))	WR	COMOPTEVFOR : Norfolk, VA	11.670	0.045	Nov 2016	0.000		0.000		-		0.000	0.000	11.715	-
Operational and Integrated Test & Evaluation (IT&OT))	SS/IDIQ	Orbital ATK : Northridge, CA	1.342	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Prior year T&E no longer funded in the FYDP	Various	Various : Various	7.469	0.000		0.000		0.000		-		0.000	0.000	7.469	-
Subtotal			65.367	0.109		0.528		0.429		-		0.429	Continuing	Continuing	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
Program Management Support	Various	Various : Various	4.840	0.296	Feb 2017	0.250	Feb 2018	0.250	Feb 2019	-		0.250	Continuing	Continuing	Continuing
Travel	WR	NAVAIR HQ : Patuxent River, MD	1.738	0.040	Feb 2017	0.015	Feb 2018	0.015	Feb 2019	-		0.015	Continuing	Continuing	Continuing
Government Engineering Support	WR	NAWC AD : Patuxent River, MD	2.199	0.440	Nov 2016	0.575	Nov 2017	0.583	Nov 2018	-		0.583	Continuing	Continuing	Continuing
Program Management Support	Various	NRO : Washington, D.C.	0.500	0.300	Nov 2016	0.200	Nov 2017	0.200	Nov 2018	-		0.200	Continuing	Continuing	Continuing
Prior year Mgmt no longer funded in the FYDP	Various	Various : Various	10.250	0.000		0.000		0.000		-		0.000	0.000	10.250	-
Subtotal			19.527	1.076		1.040		1.048		-		1.048	Continuing	Continuing	N/A
Remarks															
Contract Type for Travel is TO															



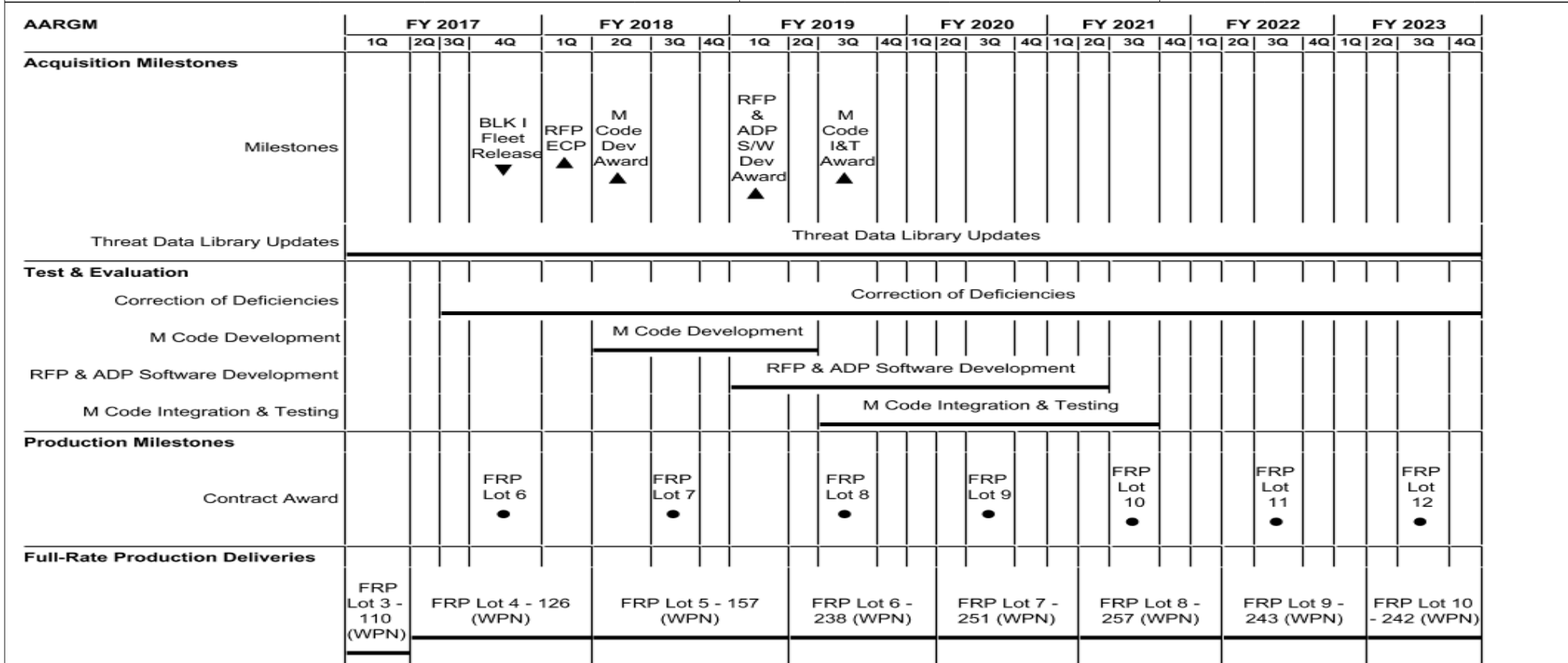
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### Remarks

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**Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy** **Date:** February 2018

<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 2185 / AARGM
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2019PB - 0205601N - 2185

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 2185 / <i>AARGM</i>	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AARGM</b>				
Acquisition Milestones: Milestones: BLOCK 1 Fleet Release	4	2017	4	2017
Acquisition Milestones: Milestones: Radio Frequency Processor Upgrade	1	2018	1	2018
Acquisition Milestones: Milestones: M Code Dev Award	2	2018	2	2018
Acquisition Milestones: Milestones: RFP & ADP S/W Dev Award	1	2019	1	2019
Acquisition Milestones: Milestones: M Code I&T Award	3	2019	3	2019
Acquisition Milestones: Threat Data Library Updates: Threat Data Library Updates	1	2017	4	2023
Test & Evaluation: Correction of Deficiencies: Correction of Deficiencies	3	2017	4	2023
Test & Evaluation: M Code Development: M Code Development	2	2018	2	2019
Test & Evaluation: RFP & ADP Software Development: RFP & ADP Software Development	1	2019	2	2021
Test & Evaluation: M Code Integration & Testing: M Code Integration & Testing	3	2019	3	2021
Production Milestones: Contract Award: Full-Rate Production Lot 6	4	2017	4	2017
Production Milestones: Contract Award: Full-Rate Production Lot 7	3	2018	3	2018
Production Milestones: Contract Award: Full-Rate Production Lot 8	3	2019	3	2019
Production Milestones: Contract Award: Full-Rate Production Lot 9	3	2020	3	2020
Production Milestones: Contract Award: Full-Rate Production Lot 10	3	2021	3	2021
Production Milestones: Contract Award: Full-Rate Production Lot 11	3	2022	3	2022
Production Milestones: Contract Award: Full-Rate Production Lot 12	3	2023	3	2023
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 3 (WPN)	1	2017	1	2017
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 4 (WPN)	2	2017	1	2018
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 5 (WPN)	2	2018	1	2019
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 6 (WPN)	2	2019	1	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement		Project (Number/Name) 2185 / AARGM	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 7 (WPN)		2	2020	1	2021
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 8 (WPN)		2	2021	1	2022
Full-Rate Production Deliveries: Full-Rate Production Delieveries - Lot 9 (WPN)		2	2022	1	2023
Full-Rate Production Deliveries: Full-Rate Production Deliveries - Lot 10 (WPN)		2	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205601N / <i>Harm Improvement</i>				Project (Number/Name) 2189 / <i>AARGM ER</i>			
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
2189: <i>AARGM ER</i>	9.212	29.105	66.332	99.240	-	99.240	97.613	61.549	48.215	49.235	Continuing	Continuing
Quantity of RDT&E Articles		-	-	15	-	15	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The Air-to-Ground (AGM)-88E Extended Range (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, and associated software updates for the AARGM-ER to ensure these capabilities perform in accordance with established requirements. FY 2019 activities include the Engineering & Manufacturing Development (EMD) phase and procurement of test articles. AARGM-ER retains the same guidance, sensor, and warhead capabilities of the AARGM.

The AARGM-ER program is part of the Navy's Integrated Fire Control (IFC) approach to address advanced threat capabilities in the Anti-Access/Area-Denial (A2AD) environment. IFC 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. IFC 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.

AARGM-ER is a capability based acquisition program and has been structured to meet the CNO's urgency mandate to deliver warfighting capability as soon as possible.

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

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
<b>Title:</b> AARGM ER Development	29.105	66.332	99.240	0.000	99.240
<b>Articles:</b>	-	-	15	-	15
<b>FY 2018 Plans:</b> Completion of the Front End Design Analysis and Rocket Motor Risk Initiative. Award of the Missile Section Integration contract. Execute Knowledge Point 2. Continue range safety analysis for telemetry section Flight Termination System development.					
<b>FY 2019 Base Plans:</b> FY 2019 activities include completion of the Missile Section Integration contract and contract award for the Engineering & Manufacturing Development phase to include procurement of test articles. Continue range safety analysis for telemetry section Flight Termination System development. Funding supports upgrading capability					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Navy				<b>Date:</b> February 2018							
<b>Appropriation/Budget Activity</b> 1319 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>		<b>Project (Number/Name)</b> 2189 / <i>AARGM ER</i>							
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>											
		<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>					
to process and target non-traditional and advanced signals. This includes weapon system developmental activities, range and laboratory support and analysis.											
<b><i>FY 2019 OCO Plans:</i></b> N/A											
<b><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i></b> FY2019 increase due to execution and completion of the Missile Section Integration contract and award of the Engineering and Manufacturing Development contract to include development of fifteen AARGM-ER test articles.											
<b>Accomplishments/Planned Programs Subtotals</b>		29.105	66.332	99.240	0.000	99.240					
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b><u>Line Item</u></b>	<b><u>FY 2017</u></b>	<b><u>FY 2018</u></b>	<b><u>FY 2019 Base</u></b>	<b><u>FY 2019 OCO</u></b>	<b><u>FY 2019 Total</u></b>	<b><u>FY 2020</u></b>	<b><u>FY 2021</u></b>	<b><u>FY 2022</u></b>	<b><u>FY 2023</u></b>	<b><u>Cost To Complete</u></b>	<b><u>Total Cost</u></b>
• WPN 2327: <i>HARM Mods</i>	0.000	0.000	0.000	-	0.000	0.000	30.000	30.662	31.275	116.508	208.445
<b>Remarks</b> FY 2021 and Total Cost funding listed does not include the AARGM Block 1 funding.											
<b>D. Acquisition Strategy</b> The AARGM Extended Range Program will provide hardware and software modifications to improve AARGM's operational capabilities, including extended range, survivability, and effectiveness against complex, new, emerging threats. The program's threshold requirement for Initial Operational Capability is FY 2023.											
<b>E. Performance Metrics</b> AARGM-ER activities to support a Knowledge Point 2 in FY 2018.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 2189 / AARGM ER					
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
Rocket Motor Risk Initiative	WR	NAWCWD : China Lake, CA	0.000	0.447	Jan 2017	0.500	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Rocket Motor Risk Initiative	WR	NSWC : Indian Head, MD	0.000	0.500	Dec 2016	0.500	Dec 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Front End Design Analysis	SS/CPFF	Orbital ATK : Northridge, CA	2.991	10.104	Feb 2017	2.044	Oct 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Missile Section Integration	SS/CPFF	Orbital ATK : Northridge, CA	0.000	6.578	Nov 2017	51.079	Jan 2018	2.030	Oct 2018	-		2.030	Continuing	Continuing	Continuing
Engineering & Manufacturing Development	TBD	Orbital ATK : Northridge, CA	0.000	0.000		0.000		56.442	Dec 2018	-		56.442	Continuing	Continuing	Continuing
Aircraft Integration	Various	Various : Various	0.680	0.204	Mar 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD : China Lake, CA	2.652	5.425	Nov 2016	5.907	Nov 2017	6.146	Nov 2018	-		6.146	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.461	1.005	Nov 2016	1.322	Nov 2017	1.348	Nov 2018	-		1.348	Continuing	Continuing	Continuing
Telemetry Section	WR	NAWCWD : China Lake, CA	0.100	0.100	Dec 2016	0.204	Nov 2017	3.384	Nov 2018	-		3.384	Continuing	Continuing	Continuing
Subtotal			6.884	24.363		61.556		69.350		-		69.350	Continuing	Continuing	N/A
Remarks															
FY 2019 activities include execution of the Development & Integration phase.															
Support (\$ 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
Studies & Analysis	Various	Various : Various	0.859	2.747	Apr 2017	2.100	Nov 2017	0.500	Mar 2019	-		0.500	Continuing	Continuing	Continuing
Subtotal			0.859	2.747		2.100		0.500		-		0.500	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement				Project (Number/Name) 2189 / AARGM ER					
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
Developmental Test & Evaluation	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.500	Nov 2017	1.550	Nov 2018	-		1.550	Continuing	Continuing	Continuing
ER Test Assets	TBD	Orbital ATK : Northridge, CA	0.000	0.000		0.000		25.500	Dec 2018	-		25.500	Continuing	Continuing	Continuing
T&E Support	WR	COTF : Norfolk, VA	0.000	0.050	Jul 2017	0.100	Jan 2018	0.200	Nov 2018	-		0.200	0.000	0.350	-
Operational and Integrated T&E	WR	Various : Various	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			0.000	0.050		0.600		27.250		-		27.250	Continuing	Continuing	N/A
Remarks FY 2019 activities include the procurement of test assets as part of the Development & Integration contract.															
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
Program Management Support	Various	Various : Various	0.747	0.916	Nov 2016	0.996	Nov 2017	1.020	Nov 2018	-		1.020	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD : Patuxent River, MD	0.711	0.986	Nov 2016	1.005	Nov 2017	1.025	Nov 2018	-		1.025	Continuing	Continuing	Continuing
Government Engineering & Information Technology Support	WR	NSWC : Dahlgren, VA	0.003	0.034	Oct 2016	0.035	Oct 2017	0.035	Oct 2018	-		0.035	Continuing	Continuing	Continuing
Travel	WR	NAVAIR HQ : Patuxent River, MD	0.008	0.009	Nov 2016	0.040	Nov 2017	0.060	Nov 2018	-		0.060	Continuing	Continuing	Continuing
Subtotal			1.469	1.945		2.076		2.140		-		2.140	Continuing	Continuing	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			9.212	29.105		66.332		99.240		-		99.240	Continuing	Continuing	N/A
Remarks															



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PE 0205601N: *Harm Improvement*  
Navy

R-1 Line #230

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**Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy**

**Date:** February 2018

**Appropriation/Budget Activity**

1319 / 7

**R-1 Program Element (Number/Name)**

PE 0205601N / Harm Improvement

Project (Number/Name)

2189 / AARGM ER

DT Test Articles Qty  
15

Lot 1 WPN  
Qty 16

Lot 2  
WPN  
Qty 16

2019PB - 0205601N - 2189

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Navy			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0205601N / <i>Harm Improvement</i>	<b>Project (Number/Name)</b> 2189 / <i>AARGM ER</i>	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AARGM ER</b>				
Acquisition Milestones: Milestones: Knowledge Point 1	4	2017	4	2017
Acquisition Milestones: Milestones: Knowledge Point 2	4	2018	4	2018
Acquisition Milestones: Milestones: Knowledge Point 5	1	2021	1	2021
Acquisition Milestones: Milestones: IOC	4	2023	4	2023
Requirements Development: Requirements and Aircraft Integration Analyses: Requirements and Aircraft Integration Analyses	1	2017	2	2017
Systems Development: Front End Design Analysis: Front End Design Analysis	1	2017	2	2018
Systems Development: Rocket Motor Risk Initiative: Rocket Motor Risk Initiative	1	2017	2	2018
Systems Development: Missile Section Integration: Missile Section Integration	1	2018	2	2019
Systems Development: Engineering & Manufacturing Development: Engineering & Manufacturing Development	1	2019	2	2021
Test & Evaluation: Technical Evaluation: Developmental Test & Evaluation	1	2020	4	2022
Test & Evaluation: Operational Evaluation: Early Operational Assessment	4	2020	4	2020
Test & Evaluation: Operational Evaluation: Operational Test & Evaluation	3	2022	2	2023
Research & Development Milestones: Contract Awards: Front End Design Analysis	1	2017	1	2017
Research & Development Milestones: Contract Awards: Missile Section Integration	1	2018	1	2018
Research & Development Milestones: Contract Awards: Engineering & Manufacturing Development	1	2019	1	2019
Research & Development Milestones: Contract Awards: DT Test Articles RDTEN Qty 15	1	2019	1	2019
Production Milestones: Contract Awards: Lot 1 WPN Qty 16	1	2021	1	2021
Production Milestones: Contract Awards: Lot 2 WPN Qty 16	1	2022	1	2022
Production Milestones: Contract Awards: Lot 3 WPN Qty 16	1	2023	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018	
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205601N / Harm Improvement		Project (Number/Name) 2189 / AARGM ER	
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Deliveries: DT Test Articles Qty 15	3	2020	2	2021
Deliveries: Lot 1 WPN Qty 16	3	2022	2	2023
Deliveries: Lot 2 WPN Qty 16	3	2023	4	2023