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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2021 Navy **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / <i>Joint Air-to-ground Missile (JAGM)</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	0.000	16.031	18.393	12.713	-	12.713	0.359	0.367	0.378	0.385	0.000	48.626
2211: <i>Joint Air-to-Ground Missile</i>	0.000	6.571	18.393	12.713	-	12.713	0.359	0.367	0.378	0.385	0.000	39.166
9999: <i>Congressional Adds</i>	0.000	9.460	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.460

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** P355

**Note**  
 Prior to FY 2019, funding for Joint Air-to-Ground Missile (JAGM) was aligned to PE 0605450N.

**A. Mission Description and Budget Item Justification**  
 The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that will utilize dual-mode seeker technology providing advanced line-of-sight and beyond-line-of-sight capabilities, including precision point and fire-and-forget seeker targeting and increased lethality against soft, hardened, moving, stationary, land, maritime threats. JAGM will additionally provide robust capability in adverse weather, day or night and in obscured/countermeasure environments. The JAGM Increment 1 system will replace aviation-launched; tube-launched, optically-tracked, wire-guided (TOW), and Helicopter Launched Fire-&-Forget Missile (HELLFIRE) Systems. JAGM is an Army-led joint program that addresses rotary wing, fixed wing, and unmanned aerial vehicle requirements. The Department of Navy threshold platform is the AH-1Z. The JAGM system includes missile, trainers, containers, support equipment and software modifications to the M-299 launcher.

The JAGM 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 allow the United States Navy to operate in, and control, contested battle space in littoral waters and A2/AD environments are increasingly critical as more and more scenarios require compressed and coordinated fire control timelines.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under system development and demonstration because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	16.559	18.393	12.713	-	12.713
Current President's Budget	16.031	18.393	12.713	-	12.713
Total Adjustments	-0.528	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.528	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

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

**Project:** 9999: *Congressional Adds*

Congressional Add: *Marine Corps Joint Air-to-Ground Missile for Fixed Wing Aircraft*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2019</b>	<b>FY 2020</b>
	9.460	0.000
Congressional Add Subtotals for Project: 9999	9.460	0.000
Congressional Add Totals for all Projects	9.460	0.000

**Change Summary Explanation**

Financial: Not Applicable  
 Technical: Not Applicable  
 Acquisition Milestones: Not Applicable  
 Contract Awards: Not Applicable

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)				<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2211: Joint Air-to-Ground Missile	0.000	6.571	18.393	12.713	-	12.713	0.359	0.367	0.378	0.385	0.000	39.166
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> P355												

**Note**  
Prior to FY 2019, funding for Joint Air-to-Ground Missile (JAGM) was aligned to PE 0605450N.

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

The Joint Air-to-Ground Missile (JAGM) is an air-launched missile system that will utilize dual-mode seeker technology providing advanced line-of-sight and beyond-line-of-sight capabilities, including precision point and fire-and-forget seeker targeting and increased lethality against soft, hardened, moving, stationary, land, maritime threats. JAGM will additionally provide robust capability in adverse weather, day or night and in obscured/countermeasure environments. The JAGM Increment 1 system will replace aviation-launched; tube-launched, optically-tracked, wire-guided (TOW), and Helicopter Launched Fire-&-Forget Missile (HELLFIRE) Systems. Later increments of JAGM will be fixed wing compatible. JAGM is an Army-led joint program that addresses rotary wing, fixed wing and unmanned aerial vehicle requirements. The Department of Navy threshold platform is the AH-1Z. The JAGM system includes missile, trainers, containers, support equipment and software modifications to the M-299 launcher.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> JAGM Engineering and Manufacturing Development (EMD) Phase	6.571	18.393	12.713	0.000	12.713
<b>Articles:</b>	-	-	-	-	-
<b>FY 2020 Plans:</b> FY 2020 plans include the continued execution of JAGM integration on the USMC AH-1Z platform. Efforts include software development and platform integration, continued modeling and simulation, continued software testing, and completion of required training, documentation, support equipment updates, Developmental Testing (DT), and Integration Testing (IT). Additional efforts include Operational Testing (OT) in support of the Full Rate Production Decision (FRPD) and IOC on the AH-1Z.					
<b>FY 2021 Base Plans:</b> FY 2021 plans include updates to the AH-1Z software to integrate additional JAGM functionality on the USMC AH-1Z platform software configuration set 8.2.3 (SCS-8.2.3). Associated efforts include mission planning updates, modeling & simulation efforts in support of SCS-8.2.3 DT/IT testing, platform software development, airworthiness and platform integration activities, required updates to documentation, training, and support					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
equipment and completion of required Developmental and Integrated flight Testing (DT / IT) in support of fleet release of SCS-8.2.3.  <i><b>FY 2021 OCO Plans:</b></i> N/A  <i><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></i> The program decrease by -\$5.680M between FY 2020 and FY 2021 due to the Program transitioning out of development into production upon FRPD and IOC on the AH-1Z.					
<b>Accomplishments/Planned Programs Subtotals</b>	6.571	18.393	12.713	0.000	12.713

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDT&E ARMY, 0605450A: JAGM	12.440	6.585	8.891	-	8.891	2.161	2.312	2.997	3.005	Continuing	Continuing
• MPA, ARMY, C70302: JAGM	256.462	199.295	213.397	-	213.397	165.494	213.375	208.607	206.140	2,960.052	4,736.066
• WPN, Navy, 2248: JAGM	24.109	75.729	49.386	-	49.386	50.371	76.194	77.711	79.264	1,081.371	1,540.299

**Remarks**

**D. Acquisition Strategy**  
The Joint Air-to-Ground Missile (JAGM) system is an ACAT-1C Joint Army/Navy Major Defense Acquisition Program (MDAP) with the Army designated as lead service. Milestone B was achieved in July 2015 with Milestone C achieved June 2018. The Engineering, Manufacturing and Development contract was a full and open competition and was awarded July 2015. The vendor, Lockheed Martin, is responsible for the production of a technically mature and fully producible JAGM Guidance Section (GS) as well as the integration of the GS with the current HELLFIRE-R missile warhead and motor section for Increment 1 capability. The Army is responsible for the development and production of the JAGM missile and integration on the AH-64 Apache. The Navy is responsible for integration of the JAGM on the United States Marine Corps AH-1Z with an Initial Operational Capability (IOC) in FY 2020.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile
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<b>Product Development (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 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>
Systems Engineering	WR	NAWCWD : China Lake, CA	0.000	0.901	Nov 2018	1.127	Nov 2019	1.156	Nov 2020	-		1.156	0.070	3.254	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.459	Nov 2018	0.744	Nov 2019	0.703	Nov 2020	-		0.703	0.050	1.956	-
Aircraft Integration (AH-1Z)	WR	NAWCAD : Patuxent River, MD	0.000	0.372	Nov 2018	1.011	Nov 2019	0.883	Feb 2021	-		0.883	0.300	2.566	-
Aircraft Integration (AH-1Z)	Various	NAWCWD : China Lake, CA	0.000	0.000	Nov 2018	0.793	Nov 2019	0.531	Feb 2021	-		0.531	0.100	1.424	-
Integration & Test	Various	JAMS : Huntsville, AL	0.000	0.271	Jan 2019	3.106	Nov 2019	0.870	Feb 2021	-		0.870	0.000	4.247	-
Contractor Integration & Test	C/FFP	Lockheed Martin : Orlando, FL	0.000	0.000		0.845	Jan 2020	0.375	Jan 2021	-		0.375	0.000	1.220	1.220
Studies and Analysis	WR	NAWCWD : China Lake, CA	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Prior year cost Prod Dev no	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
<b>Subtotal</b>			0.000	2.003		7.626		4.518		-		4.518	0.520	14.667	N/A

**Remarks**  
Contractor Integration & Test - Funding supports execution of Platform Integration and DT/IT Testing

<b>Support (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 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>
Integrated Logistics Support	WR	NAWCWD : China Lake, CA	0.000	0.163	Nov 2018	0.356	Nov 2019	0.250	Nov 2020	-		0.250	0.048	0.817	-
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.000	0.076	Nov 2018	0.455	Nov 2019	0.120	Nov 2020	-		0.120	0.053	0.704	-
Prior year Support cost no	Various	Various : Various	0.000	0.000		0.000	Nov 2019	0.000		-		0.000	0.000	0.000	-
<b>Subtotal</b>			0.000	0.239		0.811		0.370		-		0.370	0.101	1.521	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Test & Evaluation	Various	NAWCAD : Patuxent River, MD	0.000	0.341	Jul 2019	5.467	Nov 2019	2.978	Nov 2020	-		2.978	0.224	9.010	-
Test & Evaluation	Various	NAWCWD : China Lake, CA	0.000	0.000		0.456	Nov 2019	0.465	Nov 2020	-		0.465	0.230	1.151	-
Test & Evaluation	Various	USMC : MCAS Yuma, AZ	0.000	2.564	Mar 2019	2.613	Nov 2019	2.665	Nov 2020	-		2.665	0.050	7.892	-
Test & Evaluation	Various	Various : Various	0.000	0.132	Jul 2019	0.276	Nov 2019	0.553	Nov 2020	-		0.553	0.000	0.961	-
Prior year T&E cost no	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
<b>Subtotal</b>			0.000	3.037		8.812		6.661		-		6.661	0.504	19.014	N/A

<b>Management Services (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Contr Eng Supt - ETS (NONFFRDC)	Various	Various : Various	0.000	0.936	Feb 2019	0.683	Feb 2020	0.696	Feb 2021	-		0.696	0.034	2.349	-
Management Services	Various	NAWCAD : Patuxent River, MD	0.000	0.296	Nov 2018	0.383	Nov 2019	0.389	Nov 2020	-		0.389	0.062	1.130	-
Travel	Various	NAWCAD : Patuxent River, MD	0.000	0.060	Oct 2018	0.078	Oct 2019	0.079	Nov 2020	-		0.079	0.020	0.237	-
Prior year Mngt Svcs cost no	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
<b>Subtotal</b>			0.000	1.292		1.144		1.164		-		1.164	0.116	3.716	N/A

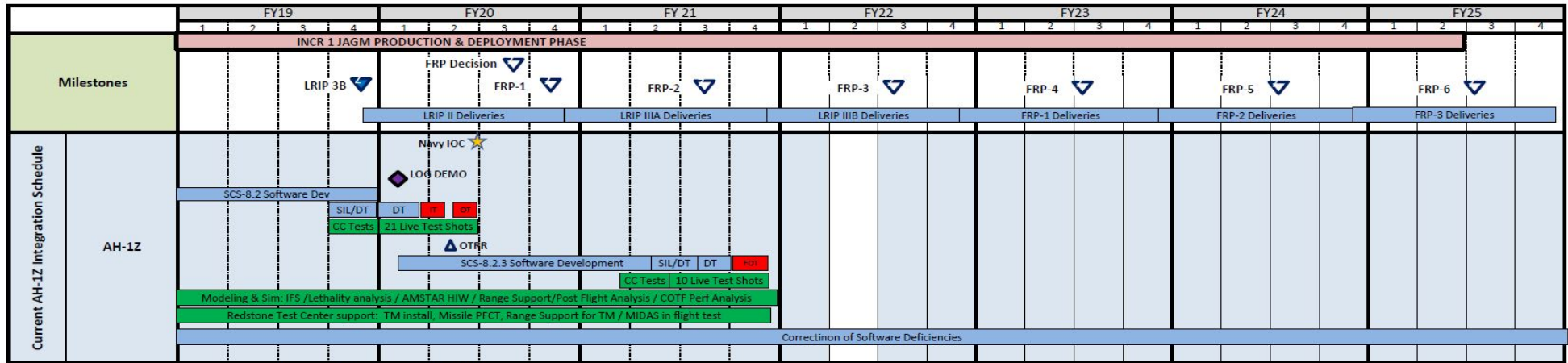
	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		0.000	6.571	18.393	12.713	-	12.713	1.241	38.918	N/A

**Remarks**  
1) Program acquisition milestones (minus unique Initial Operating Capability) and production milestones are joint program milestones for both Army and Navy.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>	<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)
	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile

JAGM R4 Schedule new formate 2021 budget submit\_V2 (003).XLSX JAGM Rotary Wing



CC = Captive Carry Flight Tests  
 IFS= Integrated Flight Simulation. Simulation environment includes scene generator, seeker model, 6 DOF for missile, countermeasure effects, maritime models.  
 AMSTAR HIW = Advanced Multispectral Simulation test and Acceptance Resource Hardware In Loop facility  
 COTF Perf Analysis = 300,000 run set in IFS to access missile performance against USMC targets scenarios not covered in flight test.  
 TM = Telemetry including TM install and range support during flight test  
 PFCT = Performance Functional Characterization Test. Missile check out test before flight test.  
 MIDAS = Modular Interface Data Acquisition System (converts missile TM data stream into useable info)

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile

**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>JAGM</b>				
IOC	2	2020	2	2020
FRP Decision	3	2020	3	2020
Test and Evaluation: AH-1Z Integration: AH-1Z Integration	1	2019	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: DT/IT Software 8.2.2 Development testing	1	2019	2	2020
Test and Evaluation: Software Development Testing/Integration Testing: DT/IT Software Development testing 8.2.3	1	2020	2	2021
Test and Evaluation: Software Development Testing/Integration Testing: Software 8.2.3 Correction of Deficiencies	1	2021	4	2025
Test and Evaluation: Software Development Testing/Integration Testing: Modeling & Simulation	1	2019	4	2021
Test and Evaluation: Operational Testing: OT	2	2020	2	2020
Test and Evaluation: Operational Testing: OT Reporting	2	2020	2	2020
Test and Evaluation: Software Integration Lab Testing: SIL Testing 8.2.2	4	2019	4	2019
Test and Evaluation: Software Integration Lab Testing: SIL Testing 8.2.3	2	2021	3	2021
Production Milestones: Contract Awards: LRIP 3 (WPN)	4	2019	4	2019
Production Milestones: Contract Awards: FRP 1 (WPN)	4	2020	4	2020
Production Milestones: Contract Awards: FRP 2 (WPN)	3	2021	3	2021
Production Milestones: Contract Awards: FRP 3 (WPN)	3	2022	3	2022
Production Milestones: Contract Awards: FRP 4(WPN)	3	2023	3	2023
Production Milestones: Contract Awards: FRP 5 (WPN)	3	2024	3	2024
Production Milestones: Contract Awards: FRP 6 (WPN)	3	2025	3	2025

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**Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 2211 / Joint Air-to-Ground Missile
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Deliveries: LRIP 2 (WPN)	4	2019	4	2020
Production Milestones: Deliveries: LRIP 3 (WPN)	4	2020	4	2021
Production Milestones: Deliveries: FRP 1 (WPN)	4	2022	4	2023
Production Milestones: Deliveries: FRP 2 (WPN)	4	2023	4	2024
Production Milestones: Deliveries: FRP 3 (WPN)	4	2024	4	2025

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**Exhibit R-2A, RDT&E Project Justification:** PB 2021 Navy **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 9999 / Congressional Adds
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	9.460	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.460
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

The Joint Air to Ground Missile Fixed Wing (JAGM-F) is being developed as a modification to the rotary wing JAGM variant, and includes modifications necessary to be compatible with DoN and USAF fixed wing aircraft. The Department of the Navy (DoN) and United States Air Force (USAF) integration and test activities will inform the DoNs acquisition approach for JAGM as a potential successor to the aging MAVERICK program. The JAGM dual-mode seeker capabilities are common with the rotary wing JAGM variant and provide similar capabilities. DoN platforms of interest include AV-8B, F/A-18C/D, F/A-18 E/F/G, and Joint Strike Fighter (JSF).

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

	FY 2019	FY 2020
<b>Congressional Add:</b> Marine Corps Joint Air-to-Ground Missile for Fixed Wing Aircraft	9.460	0.000
<b>FY 2019 Accomplishments:</b> JAGM F activities will include initial design trades and changes and associated integration activities required to utilize the rotary wing JAGM on fixed wing platforms. Efforts will include incorporation of mechanical and electrical design changes to the weapon required to support employment on fixed wing aircraft and launchers, procurement of initial test hardware, preliminary airworthiness analysis and associated activities, and initial testing activities on DoN Aircraft.		
<b>FY 2020 Plans:</b> N/A		
<b>Congressional Adds Subtotals</b>	9.460	0.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 9999 / Congressional Adds
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<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development/Software	C/FPIF	Lockheed Martin : Orlando, Fla	0.000	6.960	Jun 2019	0.000		0.000		-		0.000	0.000	6.960	-
Hardware Development	C/FFP	CoAspire : Fairfax, Va	0.000	0.250	Jun 2019	0.000		0.000		-		0.000	0.000	0.250	-
System Engineering	WR	NAWCWD : China Lake, CA	0.000	0.534	Apr 2019	0.000		0.000		-		0.000	0.000	0.534	-
System Engineering	WR	NAWCAD : Patuxent River, MD	0.000	0.751	Apr 2019	0.000		0.000		-		0.000	0.000	0.751	-
<b>Subtotal</b>			0.000	8.495		0.000		0.000		-		0.000	0.000	8.495	N/A

**Remarks**  
Systems Engineering, Logistics Efforts, Program Management, software development, and fixed wing analysis in support of the Department of the Navy's fixed wing aircraft to include AV-8B, F/A-18 C/D, F/A-18 E/F, and JSF-B/C. Hardware procurements will include Instrumented Measurement Vehicles (IMV) and JAGM-F assets to support airworthiness and early developmental testing. This effort includes modifications of MSL software, Firmware, hardware, instrumentation, support equipment, modeling & simulation software, airworthiness efforts, and platform integration studies and analyst efforts. Platform integration studies will include, but not be limited to, electrical interface, mechanical interface, missile / motor performance, launcher adapters/cables, and options for flight termination system. Launcher options for potential integration include the BRU-32, BRU-36, BRU-55, BRU-61, and BRU-70.

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Testing Support	WR	JAMS : Huntsville, AL	0.000	0.250	Aug 2019	0.000		0.000		-		0.000	0.000	0.250	-
<b>Subtotal</b>			0.000	0.250		0.000		0.000		-		0.000	0.000	0.250	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	NAWCWD : China Lake, CA	0.000	0.270	Aug 2019	0.000		0.000		-		0.000	0.000	0.270	-



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**Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / Joint Air-to-ground Missile (JAGM)	<b>Project (Number/Name)</b> 9999 / Congressional Adds
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JAGM F	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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>System Development</b>																												
Primary Hardware & Software Development			JAGM-F Development																									
<b>Test and Evaluation</b>																												
JAGM-F Integration & Testing			Developmental Testing																									
JAGM-F Demo Testing					Developmental Testing																							
<b>Research &amp; Development</b>																												
			Primary Hardware Development																									

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0605450M / <i>Joint Air-to-ground Missile (JAGM)</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JAGM F</b>				
System Development: Primary Hardware & Software Development: Contract Award	3	2019	4	2020
Test and Evaluation: JAGM-F Integration & Testing: JAGM-F Integration & Testing	2	2019	4	2020
Test and Evaluation: JAGM-F Demo Testing: AV-8B Flight Testing	1	2020	4	2020
Research & Development: Primary Hardware Development	3	2019	3	2019