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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605450M / <i>Joint Air-to-ground Missile (JAGM)</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	19.878	12.683	0.356	0.371	-	0.371	0.382	0.390	0.400	0.407	0.000	34.867
2211: <i>Joint Air-to-Ground Missile</i>	19.878	12.683	0.356	0.371	-	0.371	0.382	0.390	0.400	0.407	0.000	34.867

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. Funding includes support of platform integration activities of the AH-1Z, the Department of Navy threshold platform for the JAGM integration. 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. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	12.713	0.356	0.000	-	0.000
Current President's Budget	12.683	0.356	0.371	-	0.371
Total Adjustments	-0.030	0.000	0.371	-	0.371
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.030	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	0.371	-	0.371

Change Summary Explanation

Acquisition Milestones:

NAVY IOC moved from 4QFY21 to 2QtrFY22

Changes in Milestone dates were needed in order to address technical issues with the AH-1Z platform software.

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 / 5					R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)				Project (Number/Name) 2211 / Joint Air-to-Ground Missile			
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
2211: Joint Air-to-Ground Missile	19.878	12.683	0.356	0.371	-	0.371	0.382	0.390	0.400	0.407	0.000	34.867
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: P355												

Note
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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)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: JAGM Engineering and Manufacturing Development (EMD) Phase	12.683	0.356	0.371	0.000	0.371
Articles:	-	-	-	-	-
FY 2022 Plans: FY 2022 funding will cover continued software correction of deficiencies and associated airworthiness engineering / logistics support and any required test validation including integration testing, operation testing and cyber testing.					
FY 2023 Base Plans: FY2023 funding will cover continued software correction of deficiencies and associated airworthiness engineering/logistics support and any required test validation including integration testing, operation testing and cyber testing.					
FY 2023 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Increase of \$0.015M from FY2022 to FY2023 is due to inflation.					
Accomplishments/Planned Programs Subtotals	12.683	0.356	0.371	0.000	0.371

C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Complete</u>	<u>Total Cost</u>
• RDT&E ARMY, 0605450A: JAGM	7.566	2.142	2.292	-	2.292	2.971	2.979	0.000	0.000	Continuing	Continuing
• MPA, ARMY, C70302: JAGM	196.548	152.177	216.030	-	216.030	160.198	165.424	200.762	184.198	2,960.052	5,004.390
• WPN/2248: Joint Air Ground Missile (JAGM)	43.647	46.702	78.395	-	78.395	80.270	82.184	84.361	85.152	1,066.716	1,693.429

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 which achieved an Initial Operational Capability (IOC) in March 2022.

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile
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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			
Systems Engineering	WR	NAWCWD : China Lake, CA	1.175	1.126	Nov 2020	0.040	Nov 2021	0.042	Nov 2022	-		0.042	0.120	2.503	-
Systems Engineering	WR	NAWCAD : Patuxent River, MD	1.228	0.703	Nov 2020	0.065	Nov 2021	0.067	Nov 2022	-		0.067	0.130	2.193	-
Aircraft Integration (AH-1Z)	WR	NAWCAD : Patuxent River, MD	1.383	0.883	Feb 2021	0.000		0.000		-		0.000	0.000	2.266	-
Aircraft Integration (AH-1Z)	Various	NAWCWD : China Lake, CA	0.000	0.531	Feb 2021	0.000		0.000		-		0.000	0.000	0.531	-
Integration & Test	Various	JAMS : Huntsville, AL	0.271	0.870	Feb 2021	0.000		0.000		-		0.000	0.000	1.141	-
Contractor Integration & Test	C/FFP	Lockheed Martin : Orlando, FL	1.399	0.375	Jan 2021	0.251	Mar 2022	0.000		-		0.000	0.000	2.025	2.025
Contractor Integration & Test	Various	Various : Various	0.000	0.000		0.000		0.157	Mar 2023	-		0.157	1.273	1.430	-
Subtotal			5.456	4.488		0.356		0.266		-		0.266	1.523	12.089	N/A

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

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			
Integrated Logistics Support	WR	NAWCWD : China Lake, CA	0.392	0.250	Nov 2020	0.000		0.030	Nov 2022	-		0.030	0.000	0.672	-
Integrated Logistics Support	WR	NAWCAD : Patuxent River, MD	0.076	0.120	Nov 2020	0.000		0.030	Nov 2022	-		0.030	0.000	0.226	-
Prior year Support cost no	Various	Various : Various	4.070	0.000	Oct 2020	0.000		0.000		-		0.000	0.000	4.070	-
Subtotal			4.538	0.370		0.000		0.060		-		0.060	0.000	4.968	N/A

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile
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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			
Test & Evaluation	Various	NAWCAD : Patuxent River, MD	0.941	2.978	Nov 2020	0.000		0.000		-		0.000	0.000	3.919	-
Test & Evaluation	Various	NAWCWD : China Lake, CA	0.000	0.465	Nov 2020	0.000		0.000		-		0.000	0.000	0.465	-
Test & Evaluation	Various	USMC : MCAS Yuma, AZ	6.418	2.665	Nov 2020	0.000		0.000		-		0.000	0.000	9.083	-
Test & Evaluation	Various	Various : Various	0.761	0.553	Nov 2020	0.000		0.030	Nov 2022	-		0.030	0.000	1.344	-
Subtotal			8.120	6.661		0.000		0.030		-		0.030	0.000	14.811	N/A

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			
Contr Eng Supt - ETS (NONFFRDC)	Various	Various : Various	1.307	0.696	Feb 2021	0.000		0.000		-		0.000	0.000	2.003	-
Management Services	Various	NAWCAD : Patuxent River, MD	0.319	0.389	Nov 2020	0.000		0.015	Nov 2022	-		0.015	0.000	0.723	-
Travel	Various	NAWCAD : Patuxent River, MD	0.138	0.079	Nov 2020	0.000		0.000		-		0.000	0.000	0.217	-
Subtotal			1.764	1.164		0.000		0.015		-		0.015	0.000	2.943	N/A

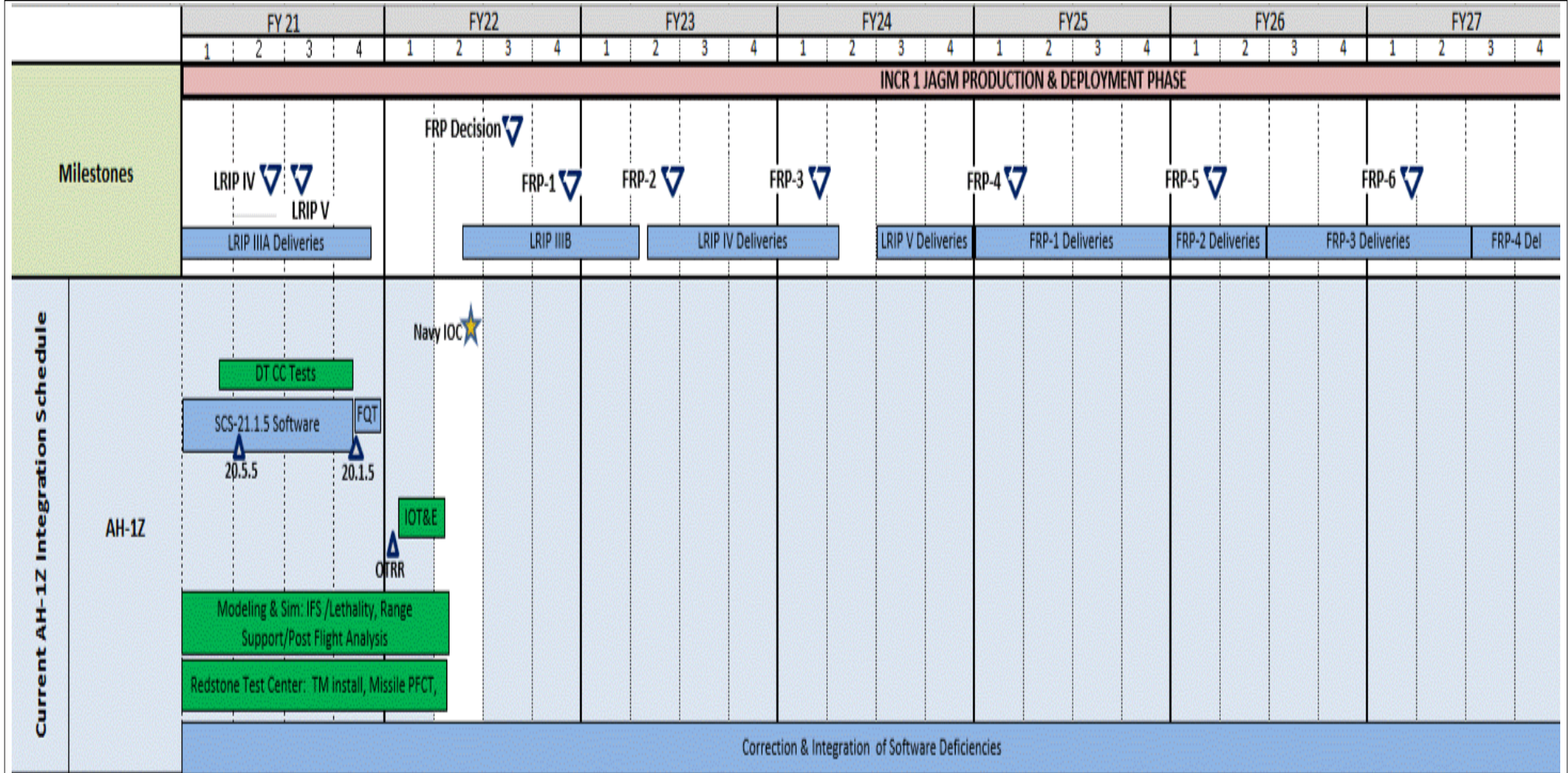
	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.878	12.683	0.356	0.371	-	0.371	1.523	34.811	N/A

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JAGM				
IOC	2	2022	2	2022
FRP Decision	3	2022	3	2022
Test and Evaluation: AH-1Z Integration: AH-1Z Integration	1	2021	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: Software Development AH-1Z Software 21.1.5	1	2021	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: Software Development AH-1Z Software 20.5.5	2	2021	2	2021
Test and Evaluation: Software Development Testing/Integration Testing: Software Development AH-1Z Software 20.1.5	4	2021	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: DT CC Tests	1	2021	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: Operational Test Readiness Review	1	2021	1	2021
Test and Evaluation: Software Development Testing/Integration Testing: Software Correction of Deficiencies	1	2021	4	2027
Test and Evaluation: Software Development Testing/Integration Testing: FQT	4	2021	4	2021
Test and Evaluation: Software Development Testing/Integration Testing: Modeling & Simulation	1	2021	2	2022
Test and Evaluation: Operational Testing: IOT&E	1	2022	2	2022
Test and Evaluation: Software Integration Lab Testing: Test & Evaluation DT/IT/OT 21.1.5	4	2021	2	2022
Production Milestones: Contract Awards: LRIP 4 (WPN)	2	2021	2	2021
Production Milestones: Contract Awards: LRIP 5 (WPN)	3	2021	3	2021
Production Milestones: Contract Awards: FRP Decision (WPN)	3	2022	3	2022

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0605450M / Joint Air-to-ground Missile (JAGM)	Project (Number/Name) 2211 / Joint Air-to-Ground Missile
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Production Milestones: Contract Awards: FRP 1 (WPN)	4	2022	4	2022
Production Milestones: Contract Awards: FRP 2 (WPN)	2	2023	2	2023
Production Milestones: Contract Awards: FRP 3 (WPN)	1	2024	1	2024
Production Milestones: Contract Awards: FRP 4(WPN)	1	2025	1	2025
Production Milestones: Contract Awards: FRP 5 (WPN)	1	2026	1	2026
Production Milestones: Contract Awards: FRP 6 (WPN)	1	2027	1	2027
Production Milestones: Deliveries: LRIP 3A (WPN)	1	2021	4	2021
Production Milestones: Deliveries: LRIP 3B (WPN)	2	2022	2	2023
Production Milestones: Deliveries: LRIP 4 (WPN)	2	2023	2	2024
Production Milestones: Deliveries: LRIP 5 (WPN)	3	2024	4	2024
Production Milestones: Deliveries: FRP 1 (WPN)	1	2025	4	2025
Production Milestones: Deliveries: FRP 2 (WPN)	1	2026	2	2026
Production Milestones: Deliveries: FRP 3 (WPN)	3	2026	3	2027
Production Milestones: Deliveries: FRP 4 (WPN)	3	2027	4	2027