

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	28.539	11.758	9.500	-	9.500	8.900	2.163	2.314	3.000	Continuing	Continuing
JA6: Joint Air-To-Ground Missile (JAGM)	-	28.539	11.758	9.500	-	9.500	8.900	2.163	2.314	3.000	Continuing	Continuing
Program MDAP/MAIS Code: 355												
A. Mission Description and Budget Item Justification												
The Joint Air-to-Ground Missile (JAGM) program is an Army-led, Acquisition Category (ACAT) IC Major Defense Acquisition Program (MDAP) with joint interest with the U.S. Marine Corps (USMC) and U.S. Navy. The JAGM is the next generation of aviation-launched, fire and forget missiles to replace the HELLFIRE Laser and Longbow radar missiles. JAGM will be used by joint service aircraft for destruction of high value stationary, moving, and relocatable land and maritime targets from standoff range in day, night, adverse weather, and obscured battlefield conditions.												
B. Program Change Summary (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total				
Previous President's Budget				34.626	11.773	2.966	-	2.966				
Current President's Budget				28.539	11.758	9.500	-	9.500				
Total Adjustments				-6.087	-0.015	6.534	-	6.534				
• Congressional General Reductions				-0.024	-0.015							
• Congressional Directed Reductions				-4.900	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-	-							
• SBIR/STTR Transfer				-1.163	-							
• Adjustments to Budget Years				-	-	6.534	-	6.534				
Change Summary Explanation												
FY 2018 adjustments reflect Congressional Reduction for Federal Funded Research and Development Centers (FFRDC) (\$.024K), limited user test delay (\$4.9M), and a SBIR/STTR transfer (\$1.163M).												
FY 2019 adjustments reflect Congressional Reduction for Federal Funded Research and Development Centers (FFRDC) (\$.015K).												
FY 2020 \$6.534 million funding increase is a result of Captive Air Training Missile (CATM) Development.												

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)				Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
JA6: Joint Air-To-Ground Missile (JAGM)	-	28.539	11.758	9.500	-	9.500	8.900	2.163	2.314	3.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) program is an Army-led, Acquisition Category (ACAT) IC Major Defense Acquisition Program (MDAP) with joint interest with the U.S. Marine Corps (USMC) and U.S. Navy. The JAGM is the next generation of aviation-launched, fire and forget missiles to replace the HELLFIRE Laser and Longbow radar missiles. JAGM will be used by joint service aircraft for destruction of high value stationary, moving, and relocatable land and maritime targets from standoff range in day, night, adverse weather, and obscured battlefield conditions.

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

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Engineering and Manufacturing Development (EMD) Qualification of JAGM and Apache Integration Description: The JAGM Product Office and Other Government Agencies (OGAs) completed developmental testing and qualification of the JAGM system, integration onto Apache AH-64E aircraft, lethality modeling, simulation, and effectiveness evaluation in support of Milestone (MS) C.	6.620	-	-	-	-
Title: Systems Engineering and MS C Preparation Description: The JAGM Product Office and OGAs completed all documentation, conducted evaluations, reviews and analyses to support a FY 2018 MS C decision.	4.060	-	-	-	-
Title: Full Rate Production (FRP) Decision Preparation Description: The JAGM Product Office and OGAs will confirm that JAGM is producible, as well as operable, safe, and logistically supportable. FY 2019 Plans: The JAGM Product Office will conduct government testing and Full Materiel Release (FMR) documentation to support a FRP decision. FY 2020 Base Plans: The JAGM Product Office will complete government testing and FMR documentation to support a FRP decision. FY 2019 to FY 2020 Increase/Decrease Statement:	2.030	0.673	0.526	-	0.526

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019			
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Funding decrease from FY 2019 to FY 2020 due to completion of FMR documentation efforts.						
Title: Post MS C Developmental, Integrated, and Operational Testing Description: The JAGM Product Office and OGAs will demonstrate JAGM Operational Suitability and Effectiveness with AH-64E. FY 2019 Plans: The JAGM Product Office and OGAs will complete Live Fire T&E, verify AH-64 software integration with JAGM through captive carry and JAGM flight tests, regression flight tests, environmental and ground launch tests for Safety Release and Airworthiness Release, and Apache-launched flight tests in preparation for IOT&E, and support other platform integration. Data will also support FRP decision review and FMR. FY 2019 to FY 2020 Increase/Decrease Statement: Funding decrease from FY 2019 to FY 2020 due to the completion of Initial Operational Test and Evaluation (IOT&E).		7.939	7.725	-	-	-
Title: Apache AH-64E and JAGM Software Integration Description: The JAGM Product Office will continue to work JAGM capability on E-model Apaches. FY 2019 Plans: The Apache Project Office, by way of Boeing Company, will complete and provide Pilot-Vehicle interface (PVI) capability that is required for seamless JAGM integration on the Apache platform. FY 2019 to FY 2020 Increase/Decrease Statement: Funding decrease from FY 2019 to FY 2020 due to the completion of Apache AH-64E and JAGM Software Integration.		4.875	2.625	-	-	-
Title: Integration and Threat Management Description: The JAGM Product Office and OGAs will continue objective platform review, analysis, and threat management. The JAGM Product Office and OGAs will perform technical assessments, concept studies, prepare documentation, and perform risk reduction efforts. FY 2019 Plans:		-	0.304	3.629	-	3.629

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army				Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)		Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)		
B. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
The JAGM Product Office will manage and mitigate risk against emerging threats and conduct review and analysis of objective platforms. FY 2020 Base Plans: The JAGM Product Office and OGAs will conduct government software testing as well as review and analysis of objective Army platforms. Software testing includes risk mitigation against emerging threats. The JAGM Product Office and OGAs will perform technical assessments, concept studies, prepare documentation, and perform risk reduction efforts. FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase from FY 2019 to FY 2020 due to risk mitigation against emerging threats and analysis of objective platforms.						
Title: CATM Development Description: The CATM is used for captive flight training and for qualification of aircrews to employ tactical missiles in combat. The JAGM Product Office will develop an inert missile configuration that will meet training needs. FY 2020 Base Plans: The JAGM Product Office and prime contractor will initiate JAGM CATM development. The prime contractor will develop CATM hardware and software. FY 2019 to FY 2020 Increase/Decrease Statement: Funding Increase from FY 2019 to FY 2020 due to initial CATM development.		-	-	2.776	-	2.776
Title: CATM Testing Description: The JAGM Product Office and OGAs will conduct development testing and qualification of the JAGM CATM; achieve air worthiness on threshold platforms. FY 2020 Base Plans: The JAGM Product Office and OGAs will begin Test and Evaluation and develop documentation for Air Worthiness Release. Test and Evaluation will verify AH-64E Software Integration through captive carry and environmental testing. FY 2019 to FY 2020 Increase/Decrease Statement:		-	-	2.569	-	2.569

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019	
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)				Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)			
B. Accomplishments/Planned Programs (\$ in Millions)											
				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total			
Funding increase from FY 2019 to FY 2020 due to initial CATM testing.											
Title: Engineering and Manufacturing Development (EMD) Contract				3.015	-	-	-	-			
Description: The JAGM prime contractor will conduct qualification of the production line and deliver missiles to support Developmental and Limited User Testing (LUT). The prime contractor will support government-led activities to qualify the JAGM on the AH-64 Apache.											
Title: FY 2019 SBIR / STTR Transfer				-	0.431	-	-	-			
Description: FY 2019 SBIR / STTR Transfer											
FY 2019 Plans: FY 2019 SBIR / STTR Transfer											
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2019 SBIR / STTR Transfer											
Accomplishments/Planned Programs Subtotals				28.539	11.758	9.500	-	9.500			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• C70302: Joint Air-to-Ground MSLS (JAGM)	178.432	256.462	0.000	233.353	233.353	213.608	220.900	213.611	208.833	0.000	1,525.199
• 0605450N: Navy JAGM Missile RDT&E	15.473	7.086	0.242	-	0.242	0.269	0.276	0.282	-	Continuing	Continuing
• 0206138M: Navy JAGM Missile Procurement	3.789	30.066	24.379	-	24.379	49.872	50.869	76.886	-	1,302.797	1,538.658
Remarks											
D. Acquisition Strategy											
The JAGM EMD acquisition approach outlined the plan to complete developmental testing to qualify the All Up Round (AUR) and the contractor production line, and to integrate JAGM on the U.S. Army AH-64E Apache. Advance Procurement of long lead items (HELLFIRE Romeo back-ends and Guidance Section subsystems) occurred in FY 2016 - FY 2017. The long lead procurement was needed to facilitate Low Rate Initial Production (LRIP) I which was necessary to achieve Initial											

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)	Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)
Operational Capability (IOC) and LRIP II. MS C was approved on 15 Jun 2018 and Initial Operational Test and Evaluation (IOT&E) is scheduled for the 3rd quarter of FY 2019.		
E. Performance Metrics N/A		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)				Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)					
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
System Eng/ Project Management	C/LH	Various : Performers	78.493	6.034	Nov 2017	0.404	Oct 2018	0.550	Nov 2019	-		0.550	Continuing	Continuing	Continuing
Subtotal			78.493	6.034		0.404		0.550		-		0.550	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Technology Development Prime Contract	C/FFP	TD : Prime Contract	371.319	-		-		-		-		-	0.000	371.319	-
Rocket Motor Insensitive Munition (IM) Qualification	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	39.731	-		-		-		-		-	0.000	39.731	-
Electro-Mechanical Control Actuator System (EMCAS)	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	4.033	-		-		-		-		-	0.000	4.033	-
Integrated Warhead	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	2.982	-		-		-		-		-	0.000	2.982	-
EMD Long Lead Contract (Backends)	SS/FFP	Lockheed Martin : Orlando, FL	8.082	-		-		-		-		-	0.000	8.082	-
Development Engineering	C/LH	Various : Performers	21.648	-		-		-		-		-	0.000	21.648	-
EMD Prime Contract	C/FPIF	Lockheed Martin : Orlando, Florida	67.241	3.015	Jul 2015	-		-		-		-	0.000	70.256	-
Apache Indefinite Delivery/ Indefinite Quantity (IDIQ) Contract	C/CPFF	Boeing Company : Mesa, AZ	11.600	4.875	May 2016	2.625		-		-		-	0.000	19.100	-
JAGM Engineering Services	SS/CPFF	Lockheed Martin : Orlando, FL	-	-		-		3.464	Mar 2020	-		3.464	0.000	3.464	Continuing

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army													Date: March 2019		
Appropriation/Budget Activity 2040 / 5						R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)				Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
FY 2019 SBIR / STTR Transfer	TBD	TBD : TBD	-	-		0.431		-		-		-	0.000	0.431	-
Subtotal			526.636	7.890		3.056		3.464		-		3.464	0.000	541.046	N/A
Remarks (C / FFP) - Competitive/Firm Fixed Price (C / CPFF) - Competitive/Cost-Plus Fixed Fee (C / LH) - Competitive/Labor Hour (SS / FFP) - Sole Source/Firm Fixed Price (C / FPIF) - Competitive/Fixed Price Incentive (Firm Target)															
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Other Gov Agencies	C/LH	Various : Performers	106.862	14.615	Nov 2017	8.298	Nov 2018	5.486	Nov 2019	-		5.486	0.000	135.261	Continuing
Subtotal			106.862	14.615		8.298		5.486		-		5.486	0.000	135.261	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			711.991	28.539		11.758		9.500		-		9.500	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019		
Appropriation/Budget Activity 2040 / 5		R-1 Program Element (Number/Name) PE 0605450A / Joint Air-to-Ground Missile (JAGM)		Project (Number/Name) JA6 / Joint Air-To-Ground Missile (JAGM)	

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMD																												
Army System & Integration Testing																												
Limited User Testing (LUT)																												
MS C Decision																												
IOC																												
IOT&E																												
Full Rate Production (FRP) Decision																												
CATM Development & Testing																												
Software Upgrade Against Emerging Threats																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605450A / <i>Joint Air-to-Ground Missile (JAGM)</i>	Project (Number/Name) JA6 / <i>Joint Air-To-Ground Missile (JAGM)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD	4	2015	3	2018
Army System & Integration Testing	4	2015	3	2018
Limited User Testing (LUT)	2	2018	2	2018
MS C Decision	3	2018	3	2018
IOC	2	2019	2	2019
IOT&E	3	2019	3	2019
Full Rate Production (FRP) Decision	3	2020	3	2020
CATM Development & Testing	1	2020	4	2021
Software Upgrade Against Emerging Threats	1	2019	4	2039