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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
2040: Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)	PE 0605450A / Joint Air-to-Ground Missile (JAGM)											
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395
JA6: Joint Air-To-Ground Missile (JAGM)	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395

A. Mission Description and Budget Item Justification

The Joint Air-to-Ground Missile (JAGM) program is an Army led, Acquisition Category (ACAT) 1C 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.

FY2018 Base dollars in the amount of \$34.626 million support the completion of the Engineering and Manufacturing Development phase, to include: Apache integration; system developmental testing; and a Limited User Test. Funding also supports post-Milestone C developmental, integrated, and operational testing working toward an FY2019 Initial Operational Test and Evaluation.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	83.054	42.972	8.526	-	8.526
Current President's Budget	79.897	42.972	34.626	-	34.626
Total Adjustments	-3.157	0.000	26.100	-	26.100
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.157	-			
• Adjustments to Budget Years	0.000	0.000	26.100	-	26.100

Change Summary Explanation

Since PB17, the JAGM EMD schedule has changed due to hardware delays caused by low production yield and other manufacturing related issues, along with a delay in awarding the Apache integration effort on the Boeing IDIQ contract. The program now includes a Limited User Test (LUT) (replacing the previously scheduled Initial Operational Test and Evaluation (IOT&E)) in second quarter FY 2018. The LUT will inform the Milestone C decision, scheduled in third quarter FY 2018. The IOT&E is now scheduled for second quarter FY 2019, in lieu of the previously scheduled Follow-on Test and Evaluation. These changes have no impact on the current EMD plan to complete all 48 missile flight tests prior to February 2018, in support of Milestone C.

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<p>The FY 2018 \$26.100 million funding increase is to address the above schedule changes.</p>		

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
JA6: Joint Air-To-Ground Missile (JAGM)	-	79.897	42.972	34.626	-	34.626	11.900	3.000	2.000	0.000	0.000	174.395
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) 1C 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.

FY2018 Base dollars in the amount of \$34.626 million support the completion of the Engineering and Manufacturing Development phase, to include: Apache integration; system developmental testing; and a Limited User Test. Funding also supports post-Milestone C developmental, integrated, and operational testing working toward an FY2019 Initial Operational Test and Evaluation.

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

	FY 2016	FY 2017	FY 2018
Title: Engineering and Manufacturing Development (EMD) Contract	26.340	10.581	-
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.			
FY 2016 Accomplishments: The JAGM prime contractor established subcontracts, procured hardware and initiated production of the JAGM missile on a pilot production line. Prime contractor supported government-led System Critical Design Review (CDR), initial Production Readiness Review (iPRR), System Test Readiness Review (TRR) and Production Qualification Testing (PQT) and integration on AH-64 Apache.			
FY 2017 Plans: The JAGM prime contractor develops, integrates and delivers tactical AURs for integrated test and evaluation on the Apache platform and supports Initial Operational Test and Evaluation (IOT&E). The prime contractor will also deliver hardware for safety tests and Explosive Ordnance Disposal (EOD) classroom system trainers.			
Title: System Critical Design Review (CDR)	5.522	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Description: System CDR occurs in the EMD phase. Assess the JAGM system final design as captured in product specifications. Ensures that each item in the product baseline has been captured in the detailed design documentation.</p> <p>FY 2016 Accomplishments: See next page</p> <p>The JAGM Product Office, with Independent Review Team oversight, successfully completed System CDR by verifying prime contractor design compliance to all performance requirements, including environmental conditions, missile and platform interfaces, reliability, and cyber security.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) Qualification of JAGM and Apache Integration</p> <p>Description: The Government will conduct developmental testing and qualification of the JAGM system, including integration onto Apache AH-64 aircraft.</p> <p>FY 2016 Accomplishments: The JAGM Product Office and Other Government Agencies (OGAs) conducted warhead tests for lethality characterization and Live Fire Test and Evaluation (T&E) requirements; seeker performance through captive flight tests including countermeasures and hardware in the loop; completed missile flight tests from both ground launched and Army MQ-1C Unmanned Aerial Vehicle (UAV) launched resulting in 7 out of 7 successful missile test shots, Safety of Flight, platform integration laboratory testing for airworthiness and interface verification, and supported other platform integration. The data will support the Full Materiel Release process.</p> <p>FY 2017 Plans: The JAGM Product Office and OGAs will continue developmental T&E, Integrated T&E and Operational T&E to include warhead tests for Live Fire T&E requirements; Initial Operational Test and Evaluation (IOT&E); Aircraft and missile regression flight tests to demonstrate compatibility is maintained with legacy systems; and a Logistics Demonstration. The data will support System Evaluation, Milestone C and Full Materiel Release.</p> <p>FY 2018 Plans: The JAGM Product Office and OGAs will continue Developmental and Operational T&E using EMD hardware delivered from the prime contractor. The data will support System Evaluation, Milestone C, and Full Materiel Release.</p>		35.859	21.529	7.730
<p>Title: Systems Engineering and Milestone (MS) C Preparation</p> <p>Description: The JAGM Product Office will complete all documentation, conduct evaluations, reviews and analyses to support a FY 2017 MS C decision and exercise EMD Contract LRIP options.</p>		12.176	10.862	6.370

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
FY 2016 Accomplishments: The JAGM Product Office developed documents, conducted reviews, and performed analyses to support a MS C decision and contract options, and conducted systems engineering to support other platform integration.			
FY 2017 Plans: The JAGM Product Office takes delivery of missile and system trainers while conducting government testing and systems engineering (Lethality, Safety, Qualification, Airworthiness, Logistics Demonstration, IOT&E and Full Materiel Release). JAGM Product Office will continue to coordinate and staff all acquisition documents in support of a MS C decision, per DoD 5000.02 and AR 70-1 guidance.			
FY 2018 Plans: The program continues document development, government testing and systems engineering in support of a MS C decision.			
Title: Full Rate Production (FRP) Decision Preparation Description: The JAGM Product Office will confirm that JAGM is operable, safe to operate and logistically supportable.		-	2.500
FY 2018 Plans: The JAGM Product will develop all FRP documentation, conduct review and perform analyses, and government testing to support a FRP decision.			
Title: Post Milestone C Developmental, Integrated, and Operational Testing Description: The JAGM Product Office will demonstrate JAGM Operational Suitability and Effectiveness with AH-64.		-	10.526
FY 2018 Plans: The JAGM Product Office and Other Government Agencies will complete Live Fire T&E, verify AH-64 software integration with JAGM Pilot Vehicle Interface (PVI) 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.			
Title: Apache AH-64 and JAGM Software Integration Description: Provides full JAGM capability on E-model Apaches.		-	7.500
FY 2018 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions)												
Develop and provide Pilot-Vehicle interface (PVI) capability that is required for seamless JAGM integration on the Apache platform.										FY 2016	FY 2017	FY 2018
Accomplishments/Planned Programs Subtotals										79.897	42.972	34.626
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost	
• BLIN 005 (C70302A): <i>Joint Air-To-Ground Missile (JAGM) Procurement</i>	27.738	101.851	178.432	-	178.432	253.118	211.806	292.770	186.931	3,438.200	4,690.846	
• 0605450N: Navy <i>JAGM Missile RDT&E</i>	25.640	17.880	14.791	-	14.791	6.969	0.124	0.150	0.153	0.000	65.707	
• 0206138M: Navy JAGM <i>Missile Procurement</i>	-	26.200	26.126	-	26.126	24.267	24.262	49.713	50.708	1,303.300	1,504.576	
Remarks												
<p>On Exhibit R-2A, Section B, under the two planned activities 1) Engineering and Manufacturing Development (EMD) Contract and Engineering and 2) Manufacturing Development (EMD) Qualification of JAGM and Apache Integration, the program office initially planned to conduct an Initial Operational Test & Evaluation (IOT&E) with FY 2017 RDT&E funding. As a result of hardware delays, the program office will now execute a Limited User Test (LUT) in 2018. The delay in contract award between Boeing and the Apache Project Office prevented the completion of a platform software update required to support IOT&E, which would provide the Pilot-Vehicle Interface (PVI) capability required for seamless JAGM integration with the Apache platform. The approved Milestone B Test & Evaluation Master Plan (TEMP) specified that the program manager, in agreement with the Army Test and Evaluation Command (ATEC), could transition the IOT&E to a LUT, if required; and convert the planned and funded Follow-On Test and Evaluation (FOT&E) event in FY 2019 to an IOT&E to support Full Materiel Release (FMR) and Full Rate Production (FRP) decisions. These changes have no impact on the missile design, production timelines, Initial Operating Capability (IOC) date, Low Rate Initial Production (LRIP), or any key program event. The same quantity of missiles will be available for each event with no schedule impact to milestones. Additionally, these funds will support integration with other platforms, as required.</p> <p>On 17 March 2017, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) delegated Milestone Decision Authority (MDA) to the Secretary of the Army. Accordingly, the Acquisition Category (ACAT) designation for JAGM is now ACAT 1C.</p>												
D. Acquisition Strategy												
The JAGM EMD acquisition approach outlines 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-64 Apache. Advance Procurement of long lead items (HELLFIRE Romeo back ends and Guidance Section subsystems) occurs												

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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)
in FY 2016 - FY 2017. This long lead procurement is needed to facilitate Low Rate Initial Production (LRIP) I and II, which is necessary to achieve Initial Operational Capability (IOC).		
E. Performance Metrics N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army												Date: May 2017			
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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	51.455	12.176	Oct 2015	10.862	Oct 2016	12.230	Oct 2017	-		12.230	0.000	86.723	0.000
Subtotal			51.455	12.176		10.862		12.230		-		12.230	0.000	86.723	0.000
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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	0.000
Rocket Motor Insensitive Munition (IM) Qualification	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	32.434	7.297	Jun 2016	-		-		-		-	0.000	39.731	0.000
Electro-Mechanical Control Actuator System (EMCAS)	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	4.033	-		-		-		-		-	0.000	4.033	0.000
Integrated Warhead	C/CPFF	Defense Ordnance Technology Consortium (DOTC) : Picatinny Arsenal, NJ	2.982	-		-		-		-		-	0.000	2.982	0.000
EMD Long Lead Contract (Backends)	SS/FFP	Lockheed Martin : Orlando, FL	8.082	-		-		-		-		-	0.000	8.082	0.000
Development Engineering	C/LH	Various : Performers	21.648	-		-		-		-		-	0.000	21.648	0.000
EMD Prime Contract	C/FPIF	Lockheed Martin : Orlando, Florida	45.317	19.043	Apr 2016	10.581	Sep 2017	-		-		-	0.000	74.941	0.000
Apache Indefinite Delivery/ Indefinite Quantity (IDIQ) Contract	C/CPFF	Boeing Company : Mesa, AZ	1.100	6.800	Mar 2016	-		7.500	Apr 2018	-		7.500	0.000	15.400	0.000
Subtotal			486.915	33.140		10.581		7.500		-		7.500	0.000	538.136	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army													Date: May 2017		
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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
Remarks As a result of hardware delays, the JAGM Milestone C incurred a delay from 4QFY 2017 to 3QFY 2018. Given the FPI(F) contract type, Lockheed Martin will be responsible for all overrun contract costs associated with the EMD Prime Contract. As a result of negotiations, the period of performance was extended from 31 July 2017 to 31 July 2018. (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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 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	46.278	34.581	Nov 2016	21.529	Nov 2017	14.896	Nov 2018	-		14.896	0.000	117.284	0.000
Subtotal			46.278	34.581		21.529		14.896		-		14.896	0.000	117.284	0.000
			Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			584.648	79.897		42.972		34.626		-		34.626	0.000	742.143	-
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army																Date: May 2017																
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 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
	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				
(1) CDR - All Up Round	▲1																															
EMD																																
Army System & Integration Testing																																
(2) Limited User Testing (LUT)									▲2																							
(3) MS C Decision									▲3																							
(4) Initial Operational Test & Evaluation (IOT&E)													▲4																			
(5) Full Rate Production (FRP) Decision																	▲5															
Software Upgrade Against Emerging Threats																																

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army			Date: May 2017
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
CDR - All Up Round	2	2016	2	2016
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
Initial Operational Test & Evaluation (IOT&E)	2	2019	2	2019
Full Rate Production (FRP) Decision	4	2019	4	2019
Software Upgrade Against Emerging Threats	1	2020	4	2039