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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)											
2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development	PE 0203744A / Aircraft Modifications/Product Improvement Programs											
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	-	32.397	39.358	17.706	-	17.706	6.686	4.271	0.220	0.163	0.000	100.801
EB6: MQ-1C Gray Eagle MODS	-	32.397	39.358	17.706	-	17.706	6.686	4.271	0.220	0.163	0.000	100.801

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides the Army with an extended range, multi-purpose (ERMP) unmanned aircraft system (UAS); capable of executing reconnaissance, security, attack, and intelligence collection missions in the range of military operations (ROMO). Sensors/payloads include an Electro-Optical/Infrared/Laser Designator (EO/IR/LD), Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI), Signals Intelligence (SIGINT), and Hellfire missiles; providing a near all-weather mission capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for Global Positioning System (GPS) Denied, an electronic warfare capability, and Ground Based Sense And Avoid (GBSAA) Block II.

The Fiscal Year (FY) 2019 Aircraft Modification/Product Improvement funding of \$17.706 million will support the development required to integrate Alternate Munition, and GPS Denied for the MQ-1C Gray Eagle product. GBSAA RDTE will provide development, integration and testing for Block II. Block II decreases operational and sustainment costs, operator workload, hardware/software costs, increases system safety, and provides full materiel release for Soldier operation.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	35.793	39.358	18.488	-	18.488
Current President's Budget	32.397	39.358	17.706	-	17.706
Total Adjustments	-3.396	0.000	-0.782	-	-0.782
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-2.100	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.280	-			
• Adjustments to Budget Years	-	-	-0.782	-	-0.782
• FFRDC Transfer	-0.016	-	-	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army										Date: February 2018		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs				Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS			
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
EB6: MQ-1C Gray Eagle MODS	-	32.397	39.358	17.706	-	17.706	6.686	4.271	0.220	0.163	0.000	100.801
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides the Army with an extended range, multi-purpose (ERMP) unmanned aircraft system (UAS); capable of executing reconnaissance, security, attack, and intelligence collection missions in the range of military operations (ROMO). Sensors/payloads include an Electro-Optical/Infrared/Laser Designator (EO/IR/LD), Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI), Signals Intelligence (SIGINT), and HELLFIRE missiles; providing a near all-weather mission capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for the implementation Global Positioning System (GPS) Denied which is an electronic warfare capability and Ground Based Sense And Avoid (GBSAA) Block II.

The Fiscal Year (FY) 2019 Aircraft Modification/Product Improvement funding of \$17.706 million will support the development required to integrate Alternate Munition and GPS Denied. GBSAA RDTE will provide development, integration and testing for Block II. Moving the GBSAA display into the UGCS provides the aircraft operator real-time information for evasive maneuvers. Block II decreases operational and sustainment costs, operator workload, hardware/software costs, increases system safety, and provides full materiel release for Soldier operation.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Global Positioning System (GPS) Denied	2.741	4.313	6.447	-	6.447
Description: GPS Denied					
FY 2018 Plans: Funding supports continued development of an electronic warfare capability that provides the system the ability to continue operations during periods of GPS outage as well as the ability to identify GPS jammer position location. The funding will enable the MQ-1C Gray Eagle to implement all levels of electro-optical countermeasures that will be compatible with other tactical UAS's.					
FY 2019 Base Plans: Funding continues development of an electronic warfare capability that provides the system the ability to continue operations during periods of GPS outage as well as the ability to identify GPS jammer position location.					

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Appropriation/Budget Activity 2040 / 7		R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs		Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
The funding will enable the MQ-1C Gray Eagle to implement all levels of electro-optical countermeasures that will be compatible with other tactical UAS?s.						
FY 2018 to FY 2019 Increase/Decrease Statement: Development is transition from concept refinement and requirement definition to design and prototype development.						
Title: Universal Ground Control Station (UGCS) Improvement Description: UGCS Improvement FY 2018 Plans: Funding will be used to continue the implementation, training, and documentation updates to correct FOT&E findings and maintain the Net Ready KPP for the MQ-1C Gray Eagle UGCS. FY 2018 to FY 2019 Increase/Decrease Statement: Budget Estimate Submission captured under PE: 0607143A		7.825	9.235	-	-	-
Title: Alternate Munition Integration Description: Alternate Munition Integration FY 2018 Plans: Development of software changes, training, and documentation, ground/flight tests, environmental testing, Electromagnetic Environmental Effects (E3) testing, production prove-out tests, and live-fire tests. This capability will provide reduced collateral damage during weapons engagement, increase munitions inventory without affecting flight endurance, reducing enemy engagement costs and potentially reduce advanced audible and visual signatures. FY 2018 to FY 2019 Increase/Decrease Statement: JAGM integration is anticipated to be completed in FY18.		8.577	9.180	-	-	-
Title: Ground Base Sense and Avoid (GBSAA) Block II Description: GBSAA Block II FY 2018 Plans:		12.851	8.330	6.699	-	6.699

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B. Accomplishments/Planned Programs (\$ in Millions)							FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding supports the development and Integration for Block II to provide GBSAA display moved to Ground Control Station (GCS). Maneuver Recommendation to Aircraft Operator (AO).											
FY 2019 Base Plans: Funding supports the development and Integration for Block II to provide GBSAA display moved to Ground Control Station (GCS). Maneuver Recommendation to Aircraft Operator (AO).											
FY 2018 to FY 2019 Increase/Decrease Statement: Program is entering system test phase.											
Title: Ground Base Sense and Avoid (GBSAA) Test Block II							0.403	-	-	-	-
Description: Ground Base Sense and Avoid (GBSAA) Test Block II											
Title: Survivability							-	8.300	4.560	-	4.560
FY 2018 Plans: Funding for Electronic Attack (EA) survivability requirements for the MQ-1C Gray Eagle will be used to assess vulnerabilities of the current datalink. The Joint System Integration Lab (JSIL) will be funded to research and provide a Datalink Vulnerabilities Improvement Assessment. The prime contractor will be funded to provide survivability solutions for both software and hardware features.											
FY 2019 Base Plans: Funding for Electronic Attack (EA) survivability requirements for the MQ-1C Gray Eagle will be used to develop prototype solutions against known threat vulnerabilities. The Joint System Integration Lab (JSIL) will be funded to research and provide a Datalink Vulnerabilities Improvement Assessment. The prime contractor will be funded to provide survivability solutions for both software and hardware features.											
FY 2018 to FY 2019 Increase/Decrease Statement: Program anticipated to be completed in FY19.											
Accomplishments/Planned Programs Subtotals							32.397	39.358	17.706	-	17.706
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
• A00005: MQ-1 Unmanned Aircraft Vehicle (UAV)	249.838	30.206	0.000	-	0.000	-	-	-	-	0.000	280.044

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Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs				Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS			
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
• AA6601: MQ-1C Gray Eagle Mods2	-	74.291	98.640	32.000	130.640	34.030	15.970	-	2.263	Continuing	Continuing
• 0305219A: MQ-1C Gray Eagle - Army UAV (MIP)	13.470	9.574	0.000	-	0.000	-	-	-	-	0.000	23.044
Remarks											
D. Acquisition Strategy											
An Extended Range Multi-Purpose (ERMP) Operational Requirement Document (ORD) was approved by the Joint Requirement Oversight Council (JROC) 6 Apr 2005. Milestone B occurred on 20 Apr 2005, and the System Development and Demonstration contract was awarded 8 Aug 2005, as a result of a competitive solicitation which included a vendor system capabilities demonstration. A Capabilities Production Document (CPD) was approved 14 Mar 2009. MQ-1C Gray Eagle completed FOTE 12 Jun 2015.											
The RDTE funded elements for GPS Denied, UGCS Improvements and Alternate Munition Integration addressed in this submission are planned for award on the Gray Eagle Engineering Services contract as a Sub-Engineering Services Memorandum (SESM) task order, and as Military Interdepartmental Purchase Requisitions (MIPRs) to various other Government Agencies. The purpose of the SESMs is to mature the respective designs to a level that Engineering Change Requests (ECR) are submitted to the Government via the Configuration Control Board (CCB). Following successful completion of the SESM and CCB approval, a contract modification to retrofit and/or cut-in the respective engineering change will be awarded on the appropriate Performance Based Logistics (PBL) or Production contract. The RDTE funded element for GBSAA Block II addressed in this submission are planned for award on various contracts and MIPR actions to other government agencies.											
E. Performance Metrics											
N/A											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army												Date: February 2018			
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs				Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS					
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
Global Positioning System (GPS) Denied	SS/CPFF	General Atomics/ ASI : San Diego, CA	-	2.741	Jan 2017	4.313	Jan 2018	6.447	Jan 2019	-		6.447	Continuing	Continuing	-
Universal Ground Control Station (UGCS) Improvements	SS/CPFF	General Atomics/ ASI : San Diego, CA	-	7.825	Jan 2017	9.235	Jan 2018	-		-		-	Continuing	Continuing	-
Alternate Munition Integration	MIPR	Various : Various	-	8.577	Jan 2017	9.180	Jan 2018	-		-		-	Continuing	Continuing	-
Ground Base Sense and Avoid Block II	SS/CPFF	Various : Various	-	10.688	Oct 2016	8.330	Oct 2017	6.699	Oct 2018	-		6.699	Continuing	Continuing	-
Survivability	SS/CPIF	GA-ASI : Poway, CA	-	-		6.880	Jan 2018	3.110	Jan 2019	-		3.110	Continuing	Continuing	-
Subtotal			-	29.831		37.938		16.256		-		16.256	Continuing	Continuing	N/A
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
Engineering Support - MQ-1	MIPR	Various : Various	-	-		1.420	Jan 2018	1.450	Jan 2019	-		1.450	0.000	2.870	-
Engineering Support - GBSAA	MIPR	Various : Various	-	2.163	Mar 2017	-		-		-		-	0.000	2.163	-
Subtotal			-	2.163		1.420		1.450		-		1.450	0.000	5.033	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 Testing and Software Testing Block II - GBSAA	MIPR	Various : Various	-	0.403	Mar 2017	-		-		-		-	0.000	0.403	-
Subtotal			-	0.403		-		-		-		-	0.000	0.403	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army											Date: February 2018				
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			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			-	32.397		39.358		17.706		-		17.706	Continuing	Continuing	N/A

Remarks

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

Date: February 2018

Appropriation/Budget Activity
2040 / 7

R-1 Program Element (Number/Name)
PE 0203744A / Aircraft Modifications/
Product Improvement Programs

Project (Number/Name)
EB6 / MQ-1C Gray Eagle MODS

Event Name	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	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
Engineering and Manufacturing Development - GBSAA																												
Alternate Munition Integration																												
Universal Ground Control Station Improvements																												
Global Positioning System Denied																												
Engineering and Software Development - GBSAA																												
Training Development and Software/System Testing - MQ-1 Gray Eagle																												
Critical Design Review - GBSAA																												
Training Development and Software/System Testing- GBSAA																												
Materiel Release - GBSAA																												
Survivability																												
First Unit Equipped - GBSAA																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0203744A / Aircraft Modifications/ Product Improvement Programs	Project (Number/Name) EB6 / MQ-1C Gray Eagle MODS	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Manufacturing Development - GBSAA	4	2017	2	2018
Alternate Munition Integration	2	2017	4	2018
Universal Ground Control Station Improvements	2	2017	4	2018
Global Positioning System Denied	2	2017	1	2024
Engineering and Software Development - GBSAA	1	2018	1	2019
Training Development and Software/System Testing - MQ-1 Gray Eagle	3	2017	4	2019
Critical Design Review - GBSAA	3	2018	3	2018
Training Development and Software/System Testing- GBSAA	4	2018	4	2019
Materiel Release - GBSAA	4	2018	4	2019
Survivability	2	2018	2	2021
First Unit Equipped - GBSAA	1	2020	1	2020