Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army **Date:** February 2018

Appropriation/Budget Activity

R-1 Program Element (Number/Name)

2040: Research, Development, Test & Evaluation, Army I BA 7: Operational

PE 0607136A I Blackhawk Product Improvement Program

Systems Development

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	-	44.966	34.416	35.240	-	35.240	13.039	11.247	5.232	3.571	Continuing	Continuing
ES3: Blackhawk Product Improvement Program	-	44.966	34.416	35.240	-	35.240	13.039	11.247	5.232	3.571	Continuing	Continuing

Note

UH-60V:

Funds in this program were realigned in Fiscal Year (FY) 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs, Projected 504, for more efficient program management.

MEDEVAC:

Incremental RDT&E funding to support integration of a MEDEVAC capability on UH-60V is planned for FY19-22. In accordance with AR 40-60, Medical Materiel Acquisition Policy, the Army's Aeromedical Evacuation capability is funded by two portfolio managers, PEOAVN and MRMC. PEOAVN is responsible for the integration of MEDEVAC Mission Equipment Package (MEP) on the UH-60V. MRMC is responsible for recurring costs to procure kits and resource the installation of MEP kits on UH-60V MEDEVAC helicopters.

A. Mission Description and Budget Item Justification

UH-60V:

The H-60L Digital Blackhawk, now designated as UH-60V, is designed to update the existing H-60L analog architecture to a digital infrastructure enabling the upgraded aircraft to have a similar Pilot-Vehicle Interface (PVI) to the H-60M. The program will address current capability gaps and meet operational requirements by employing an evolutionary acquisition approach to leverage mature technologies that have been successfully integrated on other military aircraft. The program will reduce obsolescence and increase commonality and interoperability by installing a digital cockpit, bussing and upgrading the communication/identification suite, improving navigation guidance, and integrating Aircraft Survivability Equipment (ASE), digital moving map, and Joint Variable Message Format (JVMF) messaging. Continuing funding will provide hardware and software development, training material development, as well as developmental and operational testing.

MEDEVAC:

Beginning in FY19, RDT&E funding will support the non-recurring engineering and integration of MEDEVAC MEP into the UH-60V Black Hawk. The Surgeon General (TSG) has a requirement for a MEDEVAC capability provided by Black Hawk helicopters that were not initially produced for MEDEVAC, but are designated to support the MEDEVAC mission. In accordance with AR 40-60 Medical Materiel Acquisition Policy, the PEOAVN is responsible for the costs associated with medical MEP integration on Black Hawk helicopters that were not initially produced for MEDEVAC, but require medical MEP modifications/upgrades to support the MEDEVAC mission. MEDEVAC MEP integration on the UH-60V will address obsolescence and reduce the logistics footprint by increasing equipment commonality across the MEDEVAC fleet and will reduce the number of Black Hawk MEDEVAC configurations. Additionally, UH-60V MEDEVAC capabilities will increase when comparing MEDEVAC MEP integration on legacy Black Hawk helicopters. Capability improvements will include simultaneous Rescue Hoist and extended range capability, enabled

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army

Date: February 2018

Appropriation/Budget Activity

R-1 Program Element (Number/Name)

2040: Research, Development, Test & Evaluation, Army I BA 7: Operational Systems Development

PE 0607136A I Blackhawk Product Improvement Program

MEDEVAC Mission Sensor (MMS) use in Arctic conditions, UH-60V Multi-Function Display (MFD) integrated MMS video, and Multi-Function Controller Unit (MFCU) integration of MMS functions.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	46.765	34.416	17.085	-	17.085
Current President's Budget	44.966	34.416	35.240	-	35.240
Total Adjustments	-1.799	0.000	18.155	-	18.155
 Congressional General Reductions 	-	-			
 Congressional Directed Reductions 	-	-			
 Congressional Rescissions 	-	-			
 Congressional Adds 	-	-			
 Congressional Directed Transfers 	-	-			
 Reprogrammings 	-	-			
 SBIR/STTR Transfer 	-1.799	-			
 Adjustments to Budget Years 	-	-	18.155	-	18.155

Change Summary Explanation

FY2019 Funding added for MEDEVAC MEP RDT&E.

Exhibit R-2A, RDT&E Project J	ustification	: PB 2019 A	Army						Date: February 2018			
Appropriation/Budget Activity 2040 / 7		, , , , ,						lumber/Name) khawk Product Improvement				
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
ES3: Blackhawk Product Improvement Program	-	44.966	34.416	35.240	-	35.240	13.039	11.247	5.232	3.571	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

UH-60V:

Funds in this program were realigned in Fiscal Year (FY) 2015 from Program Element 0203744A Aircraft Modifications/Product Improvement Programs, Projected 504, for more efficient program management.

MEDEVAC:

Incremental RDT&E funding to support integration of a MEDEVAC capability on UH-60V is planned for FY19-22. In accordance with AR 40-60, Medical Materiel Acquisition Policy, the Army's Aeromedical Evacuation capability is funded by two portfolio managers, PEOAVN and MRMC. PEOAVN is responsible for the integration of MEDEVAC Mission Equipment Package (MEP) on the UH-60V. MRMC is responsible for recurring costs to procure kits and resource the installation of MEP kits on UH-60V MEDEVAC helicopters.

A. Mission Description and Budget Item Justification

UH-60V:

The H-60L Digital Blackhawk, now designated as UH-60V, is designed to update the existing H-60L analog architecture to a digital infrastructure enabling the upgraded aircraft to have a similar Pilot-Vehicle Interface (PVI) to the H-60M. The program will address current capability gaps and meet operational requirements by employing an evolutionary acquisition approach to leverage mature technologies that have been successfully integrated on other military aircraft. The program will reduce obsolescence and increase commonality and interoperability by installing a digital cockpit, bussing and upgrading the communication/identification suite, improving navigation guidance, and integrating Aircraft Survivability Equipment (ASE), digital moving map, and Joint Variable Message Format (JVMF) messaging. Continuing funding will provide hardware and software development, training material development, as well as developmental and operational testing.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: Febr	uary 2018		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/ PE 0607136A / Blackhawk Produc Improvement Program			umber/Nan khawk Prod	duct Improvement		
MEDEVAC Mission Sensor (MMS) use in Arctic conditions, UH-60V M integration of MMS functions.	ulti-Function Display (MFD) integrated MM	S video, an	d Multi-Fund	ction Contro	oller Unit (M	FCU)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Title: Product Development		32.536	24.007	8.486	-	8.486	
Description: The UH-60V program provides an integrated digital map, common functionality and commonality of training with UH-60M. Produce related to Hardware and Software development, Prototype Manufacturiand Production Engineering and Planning for the UH60V program. Examing development, work instruction development, prototype builds, Design Review (CDR), Software Engineering Directorate (SED) Simula Software Development (aircraft and off aircraft), trainers, and training in	ct Development includes all activities ing (3 units), Training Equipment, Data, amples of specific activities include Preliminary Design Review (PDR)/Critical ation Integration Laboratory (SIL) design,						
FY 2018 Plans: Delivery of software Build 2 and associated technical data package (TEUser Test (LUT). Complete installation of UH-60V kit on EDM 3 and be Manuals (TMs).							
FY 2019 Base Plans: Continued 60V EMD efforts including hardware development, Flight Te support of 60V development.	st Software Build 2, and PIF labor in						
FY 2018 to FY 2019 Increase/Decrease Statement: Software development nearing completion.							
Title: Support		3.104	2.681	3.348	-	3.348	
Description: Support Costs include Systems Engineering/Program Maperformed at the Prototype Integration Facility (PIF). This includes Arn for propulsion, structures, aeromechanics, mission equipment, as well a	ny Engineering Directorate (AED) support						
FY 2018 Plans: Continue SEPM activities in support of UH-60V.							
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PE 0607136A: *Blackhawk Product Improvement Program* Army

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: Febr	uary 2018	
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/ PE 0607136A / Blackhawk Produ Improvement Program			umber/Nan khawk Prod		ement
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue AED support for propulsion, structures, aeromechanics, Worthiness Release (AWR), as well as PIF program management						
FY 2018 to FY 2019 Increase/Decrease Statement: Increased effort to support Material Fielding and Training Support	Development.					
Title: Test & Evaluation		3.597	3.800	4.475	-	4.475
Description: The Utility Helicopters Project Office (UHPO) is resp activities to include execution of all developmental tests and support Program. The focal point for test management is the UH-60V Test UH-60V Test and Evaluation (T&E) Working-level Integrated Produintegration and coordination of test and data requirements among acquisition of the UH-60V effort. T&E activities include, AFTD Bas and Evaluation (IOTE), Cybersecurity and Interoperability tests.	ort of operational tests for the UH-60V Lead Engineer who is the chair for the uct Team. The UH-60 T&E team ensures all agencies involved in the test and					
FY 2018 Plans: Complete flight testing on software Build 2 and review flight test re efforts for continuous improvement of system level testing to includ LUT.						
FY 2019 Base Plans: ATEC Initial Operational Testing and Evaluation (IOT&E).						
FY 2018 to FY 2019 Increase/Decrease Statement: Initial Operational Testing and Evaluation (IOT&E).						
Title: Management Services		5.729	3.928	1.794	-	1.794
Description: Management Services includes all activities related to the cost of Government and Contractor personnel supporting the U						
FY 2018 Plans: Continue core and contractor (SEPM) activities in support of UH-6	0V.					
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PE 0607136A: Blackhawk Product Improvement Program

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army				Date: Febr	uary 2018		
2040 / 7 PE	1 Program Element (Number/N E 0607136A <i>I Blackhawk Produc</i> provement Program			t (Number/Name) Blackhawk Product Improvement m			
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	
Continue core and contractor (SEPM) activities in support of UH-60V.							
FY 2018 to FY 2019 Increase/Decrease Statement: Management activities transitioning to production.							
Title: MEDEVAC MEP Integration Product Development		-	-	13.947	-	13.947	
Description: MEDEVAC MEP Integration Product Development.							
FY 2019 Base Plans: Develop Contract with PIF Contractor to perform Hardware (HW) design and Softw H-60V MEDEVAC MEP Integration effort.	vare (SW) Design activities for						
FY 2018 to FY 2019 Increase/Decrease Statement: MEDEVAC MEP effort begins in FY19.							
Title: MEDEVAC MEP Integration Support		-	-	0.592	-	0.592	
Description: Support the HW and SW Design Activities with Airworthiness and Te	chnical data division support.						
FY 2019 Base Plans: Support the HW and SW Design Activities with Airworthiness and Technical data of	livision support.						
FY 2018 to FY 2019 Increase/Decrease Statement: MEDEVAC MEP effort begins in FY19.							
Title: MEDEVAC MEP Management Services		-	-	2.598	-	2.598	
Description: Management Services includes all activities related to Government/of the cost of Government and Contractor personnel supporting the H-60V MEDEVA							
FY 2019 Base Plans: Provide Management Services with Government / Contractor System Engineering (SEPM) to include the cost of the Government and contractor personnel supportin Integration Program.							
FY 2018 to FY 2019 Increase/Decrease Statement: MEDEVAC MEP effort begins in FY19.							
Accomplishments/	Planned Programs Subtotals	44.966	34.416	35.240	-	35.24	

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PE 0607136A: *Blackhawk Product Improvement Program* Army

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 7	PE 0607136A I Blackhawk Product	ES3 I Blackhawk Product Improvement
	Improvement Program	Program
	·	

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

	•	•	FY 2019	FY 2019	FY 2019					Cost To	
<u>Line Item</u>	FY 2017	FY 2018	Base	OCO	<u>Total</u>	FY 2020	FY 2021	FY 2022	FY 2023	Complete	Total Cost
• A05009: UH-60 BLACK HAWK A AND L MODELS	46.173	76.516	146.138	-	146.138	173.690	166.969	171.634	174.656	0.000	955.776
MN1000: Combat Support Medical	75.524	69.033	57.752	17.527	75.279	30.496	35.727	37.072	33.513	0.000	356.644

Remarks

A05009 UH-60 Blackhawk A and L Models provides procurement funding for conversions to UH-60V starting in FY2018.

MN1000, MEDEVAC Mission Equipment Package provides procurement funding for MEDEVAC MEP capability on UH-60 helicopters. Starting in FY22, MN1000 will resource procurement of MEDEVAC MEP kits and installations at a rate of 15 aircraft per year through FY34 when the AAO of 200 UH-60V MEDEVAC is reached.

D. Acquisition Strategy

The UH-60V program plans to leverage the Prototype Integration Facility (PIF), a Government Owned Government Operated (GOGO) facility, to design, integrate and build three production representative aircraft. The GOGO facility uses a cost plus contract vehicle and conducted full and open competition for the selection of the avionics solution provider.

The MEDEVAC MEP program plans to utilize the U. S. Army Aviation and Missile Research Development and Engineering Center (AMRDEC) Prototype Integration Facility (PIF) to design and integrate MEDEVAC capability into the UH-60V. By leveraging the same Government Owned/Government Operated (GOGO) facility utilized by the UH-60V program, efficient design, software development, integration, and testing will occur by eliminating redundant tasks and employing experienced government resources already in possession of pertinent UH-60V technical data required to support the MEDEVAC MEP non-recurring engineering (NRE) effort. Prototype, validation, and verification of technical publications, as well as airworthiness testing will be accomplished following completion of the UH-60V IOT&E, at which time up to two UH-60V EDM aircraft will be allocated to the MEDEVAC MEP program. Following completion of MEDEVAC MEP NRE, technical products will feed production and fielding contracts, which will be resourced by MEDCOM. Procurement funding is programmed on MN1000 Combat Support Medical, G13010 MEDEVAC MEP.

E. Performance Metrics

N/A

^{*} Figures shown above reflect the full MN1000 - OPA3/MN1000/Combat Support Medical funding line. UH-60V MEDEVAC MEP MN1000 requirements are \$5.630 in FY22 and \$6.040 in FY23.

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Exhibit R-3, RDT&E	Project C	ost Analysis: PB 2	2019 Army	/								Date:	February	2018	
Appropriation/Budg 2040 / 7	et Activity	1				PE 060	o gram Ele 7136A / E ement Pro	Blackhawl		ame)		(Numbei lackhawk n		<i>Improvem</i>	ent
Management Servic	es (\$ in M	illions)		FY 2	2017	FY :	2018	FY 2 Ba	2019 ise		2019 CO	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	Total Cost	Target Value of Contract
UH-60V - Organic	MIPR	Various : Redstone Arsenal, AL	7.121	3.231	Oct 2016	1.657	Oct 2017	1.117	Oct 2018	-		1.117	Continuing	Continuing	-
UH-60V - Contractor	C/LH	Various : Redstone Arsenal, AL	4.985	2.498	Oct 2016	2.271	Oct 2017	0.677	Oct 2018	-		0.677	Continuing	Continuing	-
MEDEVAC MEP Integration - Organic	MIPR	Various : Redstone Arsenal	-	-		-		1.015	Oct 2018	-		1.015	Continuing	Continuing	-
MEDEVAC MEP Integration - Contractor	C/LH	Various : Redstone Arsenal, AL	-	-		-		1.583	Oct 2018	-		1.583	Continuing	Continuing	-
		Subtotal	12.106	5.729		3.928		4.392		-		4.392	Continuing	Continuing	N/A
Product Developme	nt (\$ in M	illions)		FY 2	2017	FY 2	2018	FY 2 Ba	2019 ise		2019 CO	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	Total Cost	Target Value of Contract
UH-60V Development Engineering	C/CPFF	AMRDEC PIF : Redstone Arsenal, AL	92.055		Oct 2016	24.007		8.486	Oct 2018	-			•	Continuing	
MEDEVAC MEP Product Development and Integration	C/CPFF	AMRDEC PIF : Redstone Arsenal AL	-	-		-		13.947	Oct 2018	-		13.947	Continuing	Continuing	-
		Subtotal	92.055	32.536		24.007		22.433		-		22.433	Continuing	Continuing	N/A
Support (\$ in Million	ns)			FY 2	2017	FY:	2018	FY 2	2019 ise		2019 CO	FY 2019 Total			
	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To	Total Cost	Target Value of Contract
Cost Category Item		-	+									0.040			_
Cost Category Item UH-60V	MIPR	Various : Redstone Arsenal, AL	6.236	3.104	Oct 2016	2.681	Oct 2017	3.348	Oct 2018	-		3.348	Continuing	Continuing	
			6.236	3.104	Oct 2016	2.681	Oct 2017		Oct 2018 Oct 2018					Continuing	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (N	umber/Name)
2040 / 7	PE 0607136A I Blackhawk Product	ES3 I Blac	khawk Product Improveme

PE 0607136A I Blackhawk Product Improvement Program

ES3 I Blackhawk Product Improvement

Program

Test and Evaluation	Test and Evaluation (\$ in Millions)			FY 2	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	Total Cost	Target Value of Contract
UH-60V	MIPR	Redstone Test Center : Redstone Arsenal, AL	2.020	3.597	Oct 2016	3.800	Oct 2017	4.475	Oct 2018	-		4.475	Continuing	Continuing	-
		Subtotal	2.020	3.597		3.800		4.475		-		4.475	Continuing	Continuing	N/A

Remarks

Government Support

					=>/		=>:		5)/ 00/10			Target
	Prior Years	FY 2017	FY 2	2018		2019 Ise		2019 CO	FY 2019 Total	Cost To Complete	Total Cost	Value of Contract
Project Cost Totals	112.417	44.966	34.416		35.240		-		35.240	Continuing	Continuing	N/A

Remarks

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 0607136A I Blackhawk Product
Improvement Program

Project (Number/Name)

ES3 I Blackhawk Product Improvement

Program

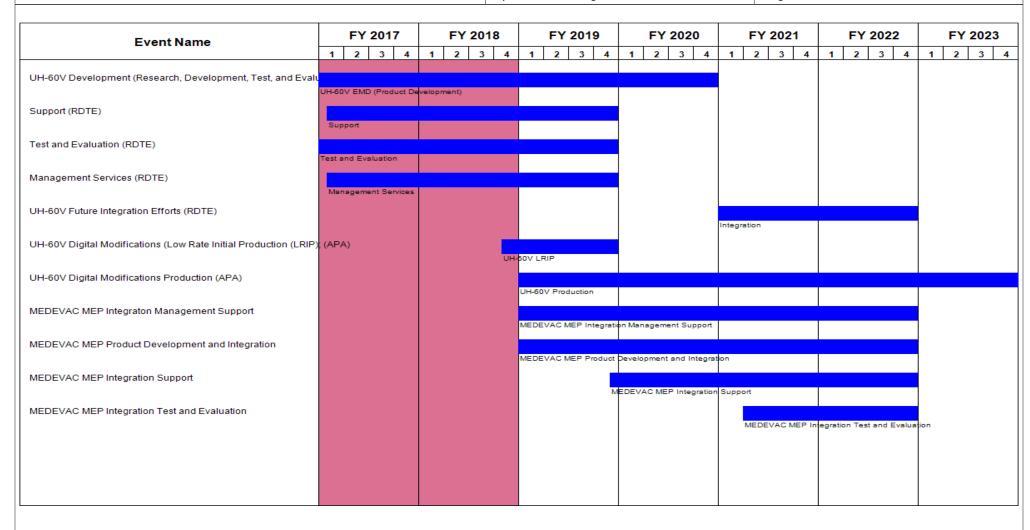


Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607136A I Blackhawk Product Improvement Program	-,	umber/Name) khawk Product Improvement

Schedule Details

	Start		End	
Events	Quarter	Year	Quarter	Year
UH-60V Development (Research, Development, Test, and Evaluation (RDTE)	4	2014	4	2020
Support (RDTE)	1	2014	4	2019
Test and Evaluation (RDTE)	4	2015	4	2019
Management Services (RDTE)	1	2014	4	2019
UH-60V Future Integration Efforts (RDTE)	1	2021	4	2022
UH-60V Digital Modifications (Low Rate Initial Production (LRIP); (APA)	4	2018	4	2019
UH-60V Digital Modifications Production (APA)	1	2019	1	2024
MEDEVAC MEP Integraton Management Support	1	2019	4	2022
MEDEVAC MEP Product Development and Integration	1	2019	4	2022
MEDEVAC MEP Integration Support	4	2019	4	2022
MEDEVAC MEP Integration Test and Evaluation	2	2021	4	2022