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**Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army** **Date:** February 2016

<b>Appropriation/Budget Activity</b>					<b>R-1 Program Element (Number/Name)</b>							
2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 7: Operational Systems Development</i>					PE 0607136A / <i>Blackhawk Product Improvement Program</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing
ES3: <i>Blackhawk Product Improvement Program</i>	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing

**Note**

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

**A. Mission Description and Budget Item Justification**

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.

FY 2017 UH-60V funds hardware and software development as well as training material development and developmental testing.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	48.446	66.653	50.153	-	50.153
Current President's Budget	48.406	66.653	46.765	-	46.765
Total Adjustments	-0.040	0.000	-3.388	-	-3.388
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-0.040	-	-3.388	-	-3.388

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army										<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>				<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
ES3: <i>Blackhawk Product Improvement Program</i>	-	48.406	66.653	46.765	-	46.765	34.586	18.279	5.047	7.786	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

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.

**A. Mission Description and Budget Item Justification**

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.

FY 2017 UH-60V funds hardware and software development as well as training material development and developmental testing.

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

	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Title:</b> Product Development	38.953	55.293	34.335
<b>Description:</b> The UH-60V program provides an integrated digital map, integrated performance planning, common functionality and commonality of training with UH-60M. Product Development includes all activities related to Hardware and Software development, Prototype Manufacturing (5 units), Training Equipment, Data, and Production Engineering and Planning for the UH60V program. Examples of specific activities include drawing development, work instruction development, prototype builds, Preliminary Design Review (PDR)/Critical Design Review (CDR), Software Engineering Directorate (SED) Simulation Integration Laboratory (SIL) design, Software Development (aircraft and off aircraft), trainers, and training material development.			
<b>FY 2015 Accomplishments:</b> Initiated development of the UH-60V kit. Design included refinement of Performance Specification and development of sub-system specifications to support requirements. Artifacts produced during FY15 to support design development and reviews included: Mechanical Drawings, Electrical Drawings, Installation Drawings, Safety Documentation. Successful completion of System Requirements Review (SRR) System Functional Review (SFR), Preliminary Design Review (PDR) and Technical Interchange Meetings. Early User Dem (EUD) 1 & 2 were completed, this activity included user involvement to insure user requirements were captured and contractor design would meet the user needs. EUDs focused on Pilot Vehicle Interface Design			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<p>Description (PVIDD) to maintain similarity to UH-60M and to capture pilot input. Project Architecture Workshop was completed to ensure all stakeholders agreed to the structure being created for requirements management. Integrated Baseline Review for primary and sub-contractor to assure key milestones and risks were identified, resources were allocated and earned value method understood. Identified and provided GFE/GFI for prototype development and System Integration Laboratories (SIL). Inducted aircraft to be used for Engineering Development Model (EDM) 1-3.</p> <p><b>FY 2016 Plans:</b> Continue development of the UH-60V kit. Refinement of Performance Specification and sub-system specifications to support requirements. Artifacts to be updated during FY16 to support design refinement and reviews include: Mechanical Drawings, Electrical Drawings, Installation Drawings, and Safety Documentation. Successful completion of Critical Design Review (CDR) Software Stages of Involvement Audit (SOI) and Technical Interchange Meetings (TIM) planned for May 2016. Conduct activities in support of Flight Readiness Review (FRR). Risk reduction activities to be conducted in the SIL for early assessment of software maturity. Deliver GFE/GFI for prototype development and System Integration Laboratories. Complete demodification of electrical and mechanical for EDM 1-3. Complete installation of UH-60V kit on EDM 1 and begin installation on EDM 2. Begin induction activities on EDM 4 &amp; 5 at Corpus Christi Army Depot (CCAD).</p> <p><b>FY 2017 Plans:</b> Conduct Physical Configuration Audit (PCA) on delivered UH-60V kit. Delivery of software Build 1 and associated technical data package (TDP) that will be used for first flight. Conduct FRR to obtain Airworthiness Release (AWR) for flight testing. Conduct Formal Qualification Testing (FQT), Software SOI 3 and TIM. Continue risk reduction activities in the SIL for early assessment of software maturity. Begin verification of Technical Manuals (TMs) on EDM 4 &amp; 5. Complete installation of UH-60V kit on EDM 2 and begin installation on EDM 3. Begin induction activities on EDM 4 &amp; 5 at Corpus Christi Army Depot (CCAD).</p>				
<p><b>Title:</b> Support</p> <p><b>Description:</b> Support Costs include Systems Engineering/Program Management (SEPM) type activities performed at the Prototype Integration Facility (PIF). This includes Army Engineering Directorate (AED) support for propulsion, structures, aeromechanics, mission equipment, as well as PIF program management.</p> <p><b>FY 2015 Accomplishments:</b> Continued SEPM activities in support of UH-60V.</p> <p><b>FY 2016 Plans:</b> Continued SEPM activities in support of UH-60V.</p> <p><b>FY 2017 Plans:</b></p>		3.171	3.358	3.104

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army		<b>Date:</b> February 2016		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Continued SEPM activities in support of UH-60V.				
<p><b>Title:</b> Test &amp; Evaluation</p> <p><b>Description:</b> The Utility Helicopters Project Office (UHPO) is responsible for day-to-day test management activities to include execution of all developmental tests and support of operational tests for the UH-60V Program. The focal point for test management is the UH-60V Test Lead Engineer who is the chair for the UH-60V Test and Evaluation (T&amp;E) Working-level Integrated Product Team. The UH-60 T&amp;E team ensures integration and coordination of test and data requirements among all agencies involved in the test and acquisition of the UH-60V effort. T&amp;E activities include, but not limited to, ensuring component hardware qualification is accomplished, system level Electromagnetic Environmental Effects (E3) testing, Daylight Readability testing, Air Traffic Control Radar Beacon System (ATCRBS), Identification Friend or Foe (IFF), Mark XIIA System (AIMS) certification testing, Limited User Test (LUT), Initial Operational Test and Evaluation (IOTE), Cybersecurity, Interoperability tests, and AFTD Baseline Flight Testing.</p> <p><b>FY 2015 Accomplishments:</b> Successfully conducted a T&amp;E WIPT in coordination with the key T&amp;E community stakeholders on 21 July 2015. Initiated long-term system test planning efforts with the Redstone Test Center (RTC)/ Aviation Flight Test Directorate (AFTD) for conducting development tests at Redstone Arsenal for the UH-60V test program. Provided a UH-60V Test Program status update to the Office of Secretary of Defense (OSD) Director of Operational Test and Evaluation (DOT&amp;E).</p> <p><b>FY 2016 Plans:</b> Continue test planning and execution efforts for developmental system level test events. Development and approval of system level checklists, flight test plans, Electromagnetic Compatibility (EMC) test plan, Modal Rap test plan, Electromagnetic Vulnerability (EMV) test plan, Delta Electromagnetic Environmental Effects (E3) test plan, Interoperability test plan and AIMS certification test plan. Conduct the following test events: system level power quality checks, ground EMC, ground Acceptance Test Procedures (ATP) rotors turning, Maintenance Test Flight (MTF) and system level testing.</p> <p><b>FY 2017 Plans:</b> Prepare, document and receive approval of flight test Airworthiness Release (AWR) for developmental flight test activities. Continue test planning and execution efforts for continuous improvement of system level test. Conduct test planning efforts for IOT&amp;E.</p>		0.100	1.833	3.597
<p><b>Title:</b> Management Services</p> <p><b>Description:</b> Management Services includes all activities related to Government/Contractor SEPM to include the cost of Government and Contractor personnel supporting the UH-60V program.</p> <p><b>FY 2015 Accomplishments:</b></p>		6.182	6.169	5.729

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2017 Army	<b>Date:</b> February 2016
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<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Continued core and contractor (SEPM) activities in support of UH-60V.			
<b><i>FY 2016 Plans:</i></b> Continued core and contractor (SEPM) activities in support of UH-60V.			
<b><i>FY 2017 Plans:</i></b> Continued core and contractor (SEPM) activities in support of UH-60V.			
<b>Accomplishments/Planned Programs Subtotals</b>	48.406	66.653	46.765

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• UH-60 A and L Models A05009: <i>UH-60 Black Hawk A and L Models A05009</i>	-	55.441	46.173	-	46.173	75.133	167.079	209.205	213.716	0.000	766.747

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

**D. Acquisition Strategy**  
The UH-60V program plans to leverage a Government-owned Government-operated (GOGO) facility to design, integrate and build five production representative aircraft. The Prototype Integration Facility (PIF) will build three aircraft and two more aircraft will be built at Corpus Christi Army Depot (CCAD). The GOGO facility uses a cost plus contract vehicle and conducted full and open competition for the selection of the avionics solution provider.

**E. Performance Metrics**  
N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 7				PE 0607136A / Blackhawk Product Improvement Program				ES3 / Blackhawk Product Improvement Program							
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
UH-60V - Organic	MIPR	Various : Redstone Arsenal, AL	0.000	3.606	Oct 2014	3.661	Oct 2015	3.231	Oct 2016	-		3.231	0	10.498	0
UH-60V - Contractor	C/LH	Various : Redstone Arsenal, AL	0.000	2.576	Oct 2014	2.508	Oct 2015	2.498	Oct 2016	-		2.498	0	7.582	0
<b>Subtotal</b>			0.000	6.182		6.169		5.729		-		5.729	0.000	18.080	0.000
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
UH-60V Development Engineering	C/CPFF	AMRDEC PIF : Redstone Arsenal, AL	0.000	38.953	Mar 2015	55.293	Oct 2015	34.335	Oct 2016	-		34.335	0	128.581	0
<b>Subtotal</b>			0.000	38.953		55.293		34.335		-		34.335	0.000	128.581	0.000
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
UH-60V	MIPR	Various : Redstone Arsenal, AL	0.000	3.171	Oct 2014	3.358	Oct 2015	3.104	Oct 2016	-		3.104	0	9.633	0
<b>Subtotal</b>			0.000	3.171		3.358		3.104		-		3.104	0.000	9.633	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
UH-60V	MIPR	Redstone Test Center : Redstone Arsenal, AL	0.000	0.100	Oct 2014	1.833	Jan 2016	3.597	Dec 2016	-		3.597	0	5.530	0
<b>Subtotal</b>			0.000	0.100		1.833		3.597		-		3.597	0.000	5.530	0.000

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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			

**Remarks**  
Government Support

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	48.406	66.653	46.765	-	46.765	0.000	161.824	0.000

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>
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Event Name	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
UH-60V Development (Research, Development, Test, and Evaluation (RDTE))	<b>UH-60V EMD (Product Development)</b>																											
Support	<b>Support</b>																											
Test and Evaluation	<b>Test and Evaluation</b>																											
Management Services	<b>Management Services</b>																											
UH-60V Future Integration Efforts (RDTE)																									<b>Integration</b>			
UH-60V Digital Modifications (Low Rate Initial Production (LRIP); (APA))																									<b>UH-60V LRIP</b>			
UH-60V Digital Modifications Production (APA)																									<b>UH-60V Production</b>			

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2017 Army		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607136A / <i>Blackhawk Product Improvement Program</i>	<b>Project (Number/Name)</b> ES3 / <i>Blackhawk Product Improvement Program</i>

Schedule Details

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

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