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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607137A I Chinook Product Improvement Program							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	35.424	37.407	-	37.407	79.339	73.185	60.865	45.330	-	331.550
ES4: Chinook Product Improvement Program	-	-	35.424	37.407	-	37.407	79.339	73.185	60.865	45.330	-	331.550

Note

PE 273744 Project Number 430 was realigned starting in FY 15 to new PE 0607137A Project Number ES4.

A. Mission Description and Budget Item Justification

The CH-47 Chinook is the only heavy lift helicopter for the Army and is an essential element of the current Army Aviation master plan. This program funds improvements to the CH-47F System that include: T55-GA-714A engine control and component upgrades to increase power to support emerging 6K/95 requirements, continued development and testing of the Advanced Chinook Rotor Blades (ACRB) which will provide increased lift in high/hot conditions and reduce O&S costs. Production of the ACRB will begin in FY 2018. Funding also initiates advanced flight control and drive train component improvements to improve aircraft performance. Development of requirements specifications, studies and risk reduction prototyping are also part of this effort.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	35.424	37.407	-	37.407
Total Adjustments	-	35.424	37.407	-	37.407
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• PE & PROJECT 273744 430 realigned to 0607137A ES4	-	35.424	37.407	-	37.407

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program				Project (Number/Name) ES4 / Chinook Product Improvement Program			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
ES4: Chinook Product Improvement Program	-	-	35.424	37.407	-	37.407	79.339	73.185	60.865	45.330	-	331.550
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Note Not applicable for this item.												
A. Mission Description and Budget Item Justification The CH-47 Chinook is the only heavy lift helicopter for the Army and is an essential element of the current Army Aviation master plan. This program funds improvements to the CH-47F System that include: T55-GA-714A engine control and component upgrades to increase power to support emerging 6K/95 requirements, continued development and testing of the Advanced Chinook Rotor Blades (ACRB) which will provide increased lift in high/hot conditions and reduce O&S costs. Production of the ACRB will begin in FY 2018. Funding also initiates advanced flight control and drive train component improvements to improve aircraft performance. Development of requirements specifications, studies and risk reduction prototyping are also part of this effort.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2014	FY 2015	FY 2016	
Title: Electronic Control Unit (ECU) Software Upgrade Description: This effort is to develop, generate, and qualify the latest software version of the T55-GA-714A Electronic Control Unit. Effort will correct any deficiencies noted in the field and/or incorporate upgrades as needed. FY 2015 Plans: This effort is to develop, generate, and qualify the latest software version of the T55-GA-714A Electronic Control Unit. Effort will correct any deficiencies noted in the field and/or incorporate upgrades as needed. FY 2016 Plans: This effort is to develop, generate, and qualify the latest software version of the T55-GA-714A Electronic Control Unit. Effort will correct any deficiencies noted in the field and/or incorporate upgrades as needed.									-	3.505	2.485	
Title: Ratio Detector Power Supply (RDPS) Description: This effort will consist of design, development, and qualification of a replacement T55-GA-714A Engine Ratio Detector Power Supply (RDPS) and torque head to alleviate obsolescence issues with the current system. FY 2015 Plans:									-	2.665	3.010	

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015		
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program	Project (Number/Name) ES4 / Chinook Product Improvement Program		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
This effort will consist of design, development, and qualification of a replacement T55-GA-714A Engine Ratio Detector Power Supply (RDPS) and torque head to alleviate obsolescence issues with the current system. FY 2016 Plans: This effort will consist of design, development, and qualification of a replacement T55-GA-714A Engine Ratio Detector Power Supply (RDPS) and torque head to alleviate obsolescence issues with the current system.				
Title: Modernization Integration Description: The Modernization Integration effort is aimed at system engineering, associated programmatic activity, manufacturing and modification planning, integrated test planning, and associated logistics planning that will coordinate multiple independent engineering change proposals into a ground and flight test program. FY 2015 Plans: This effort provides the systems engineering approach to ensure successful integration of upgrades at the platform level to realize efficiencies and reduce costs. FY 2016 Plans: The Modernization Integration effort is aimed at system engineering, associated programmatic activity, manufacturing and modification planning, integrated test planning, and associated logistics planning that will coordinate multiple independent engineering change proposals into a ground and flight test program.		-	11.396	4.181
Title: Advanced Chinook Rotor Blade (ACRB) Description: This effort provides an Advanced Chinook Rotor Blade which is a redesign of the current rotor blade to provide increased hover lift in payload capability. It improves high/hot performance and is a Form, Fit, Function replacement for the legacy blade. FY 2015 Plans: This effort provides an Advanced Chinook Rotor Blade which is a redesign of the current rotor blade to provide increased hover lift in payload capability. It improves high/hot performance and is a Form, Fit, Function replacement for the legacy blade. FY 2016 Plans: This effort provides an Advanced Chinook Rotor Blade which is a redesign of the current rotor blade to provide increased hover lift in payload capability. It improves high/hot performance and is a Form, Fit, Function replacement for the legacy blade.		-	8.350	15.184
Title: Improved Drive Train		-	5.396	7.266

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Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>	Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015
Description: This effort addresses Operation and Support Cost reduction while simultaneously re-qualifying the combining, forward, and aft transmissions to a higher power level to utilize engine power available at sea-level conditions. The effort also supports the development of the MH-47 and CH-47 Active Parallel Actuator System effort that provides pilot tactical cueing and high accuracy torque measurement. Funding completes Preliminary Design Review and begins Phase II effort. FY 2015 Plans: The Improved Drive Train effort addresses Operation and Support cost reduction while simultaneously re-qualifying the combining, forward and aft transmissions to a higher power level to utilize engine power available at sea-level conditions. The effort also supports the development of the MH-47 and CH-47 Active Parallel Actuator System effort that provides pilot tactical cueing and high accuracy torque measurement. FY 2016 Plans: The Improved Drive Train effort addresses Operation and Support cost reduction while simultaneously re-qualifying the combining, forward and aft transmissions to a higher power level to utilize engine power available at sea-level conditions. The effort also supports the development of the MH-47 and CH-47 Active Parallel Actuator System effort that provides pilot tactical cueing and high accuracy torque measurement.			
Title: In-house and Program Management Administration Description: This funding provides support costs for various government agencies. FY 2015 Plans: This funding provides support costs for various government agencies. FY 2016 Plans: This funding provides support costs for various government agencies.		-	1.771
Title: Testing and Evaluation Description: This effort incorporates all testing requirements to integrate numerous Engineering Change Proposals (ECPs) into one system level requirement to include Advanced Chinook Rotor Blade (ACRB). FY 2015 Plans: This effort incorporates all testing requirements to integrate numerous Engineering Change Proposals (ECPs) into one system level requirement to include Advanced Chinook Rotor Blade (ACRB). FY 2016 Plans:		-	2.341
			1.781
			3.500

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Army										Date: February 2015		
Appropriation/Budget Activity 2040 / 7				R-1 Program Element (Number/Name) PE 0607137A / <i>Chinook Product Improvement Program</i>				Project (Number/Name) ES4 / <i>Chinook Product Improvement Program</i>				
B. Accomplishments/Planned Programs (\$ in Millions)												
This effort incorporates all testing requirements to integrate numerous Engineering Change Proposals (ECPs) into one system level requirement to include Advanced Chinook Rotor Blade (ACRB).										FY 2014	FY 2015	FY 2016
Accomplishments/Planned Programs Subtotals										-	35.424	37.407
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
• AA0252: CH-47 CARGO HELICOPTER MODS	91.064	32.092	86.330	-	86.330	103.672	144.866	90.339	90.582	Continuing	Continuing	
• A05105: CH-47 SLEP (Including Adv Proc)	639.021	758.622	766.111	-	766.111	735.775	307.254	233.343	242.331	Continuing	Continuing	
• A05008: CH-47 CARGO HELICOPTER NEW BUILD	290.005	236.243	357.820	-	357.820	0.197	268.764	-	-	-	1,153.029	
Remarks												
The CH-47F program replaces one for one, the aging CH-47D aircraft by FY2020, incorporates a new machined airframe, and includes a new Common Avionics Architecture System (CAAS) cockpit with digital communication/navigation capability allowing improved interoperability on the digital battlefield. The CH-47F program includes recapitalization of key dynamic components, bringing them to a near zero time.												
D. Acquisition Strategy												
N/A												
E. Performance Metrics												
N/A												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army												Date: February 2015			
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program						Project (Number/Name) ES4 / Chinook Product Improvement Program			
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Electronic Control Unit (ECU) Software Upgrade	SS/CPFF	Honeywell : Phoenix, AZ	0.000	-		3.505	May 2015	2.485	Mar 2016	-		2.485	Continuing	Continuing	Continuing
Ratio Dectector Power Supply (RDPS)	SS/CPFF	Boeing Ridley : Park, PA	0.000	-		2.665	Jun 2015	3.010	Mar 2016	-		3.010	Continuing	Continuing	Continuing
Modernization Integration	SS/CPFF	Boeing Ridley : Park PA	0.000	-		11.396	May 2015	4.181	Mar 2016	-		4.181	Continuing	Continuing	Continuing
Advanced Chinook Rotor Blade (ACRB)	SS/CPFF	Boeing Ridley : Park PA	0.000	-		8.350	Jun 2015	15.184	Dec 2016	-		15.184	Continuing	Continuing	Continuing
Improved Drive Train	SS/CPFF	Boeing Ridley : Park, PA	0.000	-		5.396	May 2015	7.266	Jan 2016	-		7.266	Continuing	Continuing	Continuing
Subtotal			0.000	-		31.312		32.126		-		32.126	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
PMO/OGA	Various	Various Government : Redstone Arsenal AL	0.000	-		1.771	Mar 2015	1.781	Dec 2015	-		1.781	Continuing	Continuing	Continuing
Subtotal			0.000	-		1.771		1.781		-		1.781	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Testing of configuration update ECPs to include the Advanced Chinook Rotor Blades	SS/CPFF	Boeing Ridley : Park PA	0.000	-		2.341	May 2015	3.500	Mar 2016	-		3.500	Continuing	Continuing	Continuing
Subtotal			0.000	-		2.341		3.500		-		3.500	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army											Date: February 2015				
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program					Project (Number/Name) ES4 / Chinook Product Improvement Program					
			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		35.424		37.407		-		37.407	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army

Date: February 2015

Appropriation/Budget Activity

2040 / 7

R-1 Program Element (Number/Name)

PE 0607137A / Chinook Product

Improvement Program

Project (Number/Name)	Start Date	End Date	Status	Manager	Budget (USD)	Actual Cost (USD)	Progress (%)	Risk Level	Notes
101/Alpha	2023-01-15	2023-03-31	Completed	J. Doe	150,000	148,500	100	Low	Exceeded budget by 1.5%
102/Beta	2023-02-01	2023-05-15	In Progress	A. Smith	220,000	180,000	82	Medium	Minor delays in procurement
103/Gamma	2023-03-10	2023-06-30	On Hold	M. Chen	95,000	0	0	High	Waiting for client approval
104/Delta	2023-04-01	2023-07-31	Planned	S. Kim	310,000	0	0	Medium	Initial planning phase
105/Epsilon	2023-05-01	2023-08-31	Not Started	L. Garcia	180,000	0	0	Low	Resource allocation pending

ES4 / Chinook Product Improvement

Program

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607137A / Chinook Product Improvement Program	Project (Number/Name) ES4 / Chinook Product Improvement Program

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Full Rate Production	2	2015	2	2020