

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 7: Operational Systems Development</i>					<b>R-1 Program Element (Number/Name)</b> PE 0607145A / <i>Apache Future Development</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	5.224	52.502	10.067	-	10.067	-	-	-	-	-	-
FD5: <i>Apache Product Improvement</i>	-	5.224	52.502	10.067	-	10.067	-	-	-	-	-	-

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

The Apache Capabilities Enhancements (ACE) prioritizes, informs, influences, matures, tracks, statuses, and packages technologies and/or material solutions to address known capability gaps, identified during real-world combat missions and associated with current/emerging threats; for transition to Apache development for integration and implementation to the AH-64E fleet to increase combat capability.

**B. Program Change Summary (\$ in Millions)**

	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	5.448	77.177	9.024	-	9.024
Current President's Budget	5.224	52.502	10.067	-	10.067
Total Adjustments	-0.224	-24.675	1.043	-	1.043
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-26.858			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.224	-2.817			
• Adjustments to Budget Years	-	-	1.043	-	1.043

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** FD5: *Apache Product Improvement*

Congressional Add: *Program Increase - Crossbow*

Congressional Add Subtotals for Project: FD5

Congressional Add Totals for all Projects

	<b>FY 2020</b>	<b>FY 2021</b>
	-	5.000
	-	5.000
	-	5.000

**Change Summary Explanation**

Adjustment to Budget Year FY 2022 funding from Previous Presidents Budget to Current Presidents Budget position will be used to continue the development of the Improved Tail Rotor Drive System (ITRDS) requirement, with a focus on completing any remaining activities to successfully enter the PDR. The remainder

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Army		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0607145A / <i>Apache Future Development</i>	
<p>of the funding will be used to explore additive manufacturing opportunities, conduct a structural design impact analysis, and successfully complete the Critical Design Review (CDR).</p>		

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Army										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 2040 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0607145A / Apache Future Development				<b>Project (Number/Name)</b> FD5 / Apache Product Improvement			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
FD5: Apache Product Improvement	-	5.224	52.502	10.067	-	10.067	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Apache Capabilities Enhancements (ACE) prioritizes, informs, influences, matures, tracks, statuses, and packages technologies and/or material solutions to address known capability gaps, identified during real-world combat missions and associated with current/emerging threats; for transition to Apache development for integration and implementation to the AH-64E fleet to increase combat capability.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Product Development	5.224	2.245	10.067
<b>Description:</b> Future development of production program.			
<b>FY 2021 Plans:</b> Apache Program management Office (PMO) needs to develop a phased approach to incorporate an Improved Tail Rotor Drive System (ITRDS) for the AH-64 platform. Several improvements to the existing drivetrain are necessary to increase safety margins on the tail rotor anti-torque capability. The platform overtime will continue to increase in gross weight through system upgrades and larger payloads being authorized. Missions being conducted at higher density altitudes and an increased gross weight will put the warfighters at risk of being in a loss of tail rotor authority scenario which can lead to a catastrophic situation. These product improvements would increase performance from the legacy design, decrease the maintenance burden on the warfighter, and reduce overall O&S costs. These improvements would also build the infrastructure for an improved Drive system that will be able to handle increased performance upgrades, provide a positive impact to future sustainment, support Multi-Domain Operations, and ensuring the warfighter is not placed in a catastrophic situation when it is preventable. The funding would be utilized to conduct analysis, determine feasibility of life limits, and initiate redesign plans on new components of the drive system to include hanger bearings, elastomeric mounts, Intermediate Gearbox (IGB), Tail Rotor Gearbox (TRGB), drive shafts, and other components impacted on the Tail Rotor Drive System found during testing.			
<b>FY 2022 Plans:</b> Apache Program management Office (PMO) will continue to develop a phased approach to incorporate an Improved Tail Rotor Drive System (ITRDS) for the AH-64 platform. This second phase will build on the previous efforts that culminated in Preliminary Design Review (PDR). This phase will use the			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Army		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607145A / Apache Future Development	<b>Project (Number/Name)</b> FD5 / Apache Product Improvement		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>information gained previously and culminate in the Critical Design Review (CDR). Ultimately, these product improvements would increase performance from the legacy design, decrease the maintenance burden on the warfighter, and reduce overall O&amp;S costs. These improvements would also build the infrastructure for an improved Drive system that will be able to handle increased performance upgrades, provide a positive impact to future sustainment, support Multi-Domain Operations, and ensuring the warfighter is not placed in a catastrophic situation when it is preventable. Additionally, As Joint Battle Spaces become more and more technically demanding, the need for greater processing power, hardware and software that supports Open System Architecture also increases. The Apache PMO needs to pursue trade studies and demonstrations on capabilities that support Open System Architecture and speeding insertions of technology. The funding would be utilized to conduct analysis, determine feasibility, identify integration challenges and ultimately prove out these capabilities.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase in funding for Project FD5 Apache Product Improvement from FY 2021 to FY 2022 will be used to continue the development of the Improved Tail Rotor Drive System (ITRDS) requirement. This funding will focus on completing any remaining activities to successfully enter the PDR. The remainder of funding will be used to explore additive manufacturing opportunities, conduct a structural design impact analysis, and successfully complete the Critical Design Review (CDR).</p>				
<p><b>Title:</b> Spike NLOS (Non Line Of Sight)</p> <p><b>FY 2021 Plans:</b> Apache will federate the Spike NLOS (Non Line of Sight) missile system by providing Program Management, Systems Engineering, Development Test, Live Fire Test, Life Cycle Management and Integrated Logistics. This effort will provide an interim Long Range Precision Munition Solution for the AH-64E. The Army will optimize the Aviation munitions portfolio as part of this strategy creating reinvestment opportunities to close existing lethality gaps by making the portfolio sufficiently lethal for both manned and unmanned platforms against a broad range of increasingly more sophisticated threats.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease in funding for Spike NLOS from FY 2021 to FY 2022 due to efforts ahead of need.</p>		-	45.257	-
<b>Accomplishments/Planned Programs Subtotals</b>		5.224	47.502	10.067

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Army	<b>Date:</b> May 2021
--	-----------------------

<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607145A / Apache Future Development	<b>Project (Number/Name)</b> FD5 / Apache Product Improvement
--	---	--

	<b>FY 2020</b>	<b>FY 2021</b>
<b>Congressional Add:</b> Program Increase - Crossbow	-	5.000
<b>FY 2021 Plans:</b> This is for demonstration of the AH-64 dual-piloted portion of the CROSSBOW System		
<b>Congressional Adds Subtotals</b>	-	5.000

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

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• A05111: AH-64 Apache Block IIIA Reman	1,010.100	961.487	696.366	-	696.366	-	-	-	-	-	-
• A05133: AH-64 Apache Block IIIB New Build	-	69.154	-	-	-	-	-	-	-	-	-
• AA6605: AH-64 MODS	58.172	99.816	118.560	-	118.560	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

The NRE will encompass subsystem integration and will utilize existing test aircraft, incorporate the technical insertions, and initiate appropriate qualification and operational flight-testing. In FY 2014, a contract for Apache AH-64E Lot 3, initiating Full Rate Production, was awarded with options for Lot 4. Training device concurrency will be maintained with each technical insertion. The Engineering/Manufacturing Design (EMD) effort is managed as Cost Reimbursable. Production efforts will be awarded as Fixed Price Incentive (FPI) and include the Advance Procurement requirements. In FY 2013, FY 2014, and FY 2015 MRL NRE encompassed US Government (USG) design of the Hydra Launcher Electronics Assembly (LEA), modification of the M261 launcher, launcher fabrication, and launcher testing. In FY 2015 - FY 2019, Apache AH-64E Version 6 System Development and Demonstration (SDD) Contract. Multi-year production awarded March 15, 2017. FY 2020 - FY 2023, the Apache Capabilities Enhancements (ACE) delivers required capability enhancements supported by Apache's Modernization Strategy to ensure AH-64E maintains relevance and dominance throughout its expected service life.



**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Army</b>			<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607145A / Apache Future Developmen t	<b>Project (Number/Name)</b> FD5 / Apache Product Improvement	

Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
ITRDS/OSA Activities																												
Contract Award for SPIKE NLOS																												

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Army		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0607145A / Apache Future Development	<b>Project (Number/Name)</b> FD5 / Apache Product Improvement

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ITRDS/OSA Activities	4	2022	4	2028
Contract Award for SPIKE NLOS	3	2021	2	2024