Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army											Date: March 2019	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*					R-1 Program Element (Number/Name) PE 0602211A *I Aviation Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
Total Program Element	-	72.170	81.805	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	153.975
47A: *AERON & ACFT Wpns Tech*	-	54.490	53.851	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	108.341
47B: *Veh Prop & Struct Tech*	-	10.180	10.954	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.134
47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*	-	7.500	17.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.500

Note

In Fiscal Year (FY) 2020 this Program Element (PE) is realigned with continuity of effort to the following PE:
* 0602148A Future Vertical Lift Technology

A. Mission Description and Budget Item Justification

This Program Element (PE) conducts air vehicle component design, fabrication and evaluation to enable Army aviation transformation. Emphasis is on developing aviation platform technologies to enhance manned and unmanned air vehicle combat and combat support operations for attack, reconnaissance, air assault, survivability, logistics and command and control missions. Project 47A researches and evaluates components and subsystems for air vehicles in the areas of aviation and aircraft weapons technology. Project 47B researches and evaluates components and subsystems for air vehicles in the areas of propulsion and structures. Focus areas include: engines & drive trains; rotors & vehicle management systems; platform design & structures; aircraft & occupant survivability; aircraft weapons & sensors; maintainability & sustainability; and unmanned & optionally manned systems.

Work in this PE contributes to the Army Science and Technology (S&T) air systems portfolio and is fully coordinated with efforts in PE 0603003A (Aviation-Advanced Technology), PE 0602624A (Weapons and Munitions Technology), PE 0602303A (Missile Technology) and PE 0603710A (Night Vision Advanced Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering S&T focus areas and the Army Modernization Strategy. Work in this PE is performed by the United States Army Futures Command (AFC).

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army	Date: March 2019
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602211A *I Aviation Technology*

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	66.086	64.847	61.594	-	61.594
Current President's Budget	72.170	81.805	0.000	-	0.000
Total Adjustments	6.084	16.958	-61.594	-	-61.594
• Congressional General Reductions	-0.029	-0.042			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	7.500	17.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.387	-			
• Adjustments to Budget Years	-	-	-61.594	-	-61.594

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2018	FY 2019
Project: 47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*		
Congressional Add: *Adaptive Digital Automated Pilotage Technology (ADAPT)*	2.500	-
Congressional Add: *Aviation Technology Transfer and Innovation Technology*	5.000	-
Congressional Add: *Adaptive Flight Control Technology Development*	-	7.000
Congressional Add: *Aviation and Missile Technology Transfer and Innovation*	-	5.000
Congressional Add: *UH-60 Main Rotor Blade Modernization*	-	5.000
Congressional Add Subtotals for Project: 47C	7.500	17.000
Congressional Add Totals for all Projects	7.500	17.000

Change Summary Explanation

FY19 increase related to Congressional Adds totaling $17.000 million
FY20 decrease related to Science and Technology financial restructuring.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602211A / *Aviation Technology*	Project (Number/Name) 47A / *AERON & ACFT Wpns Tech*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
47A: *AERON & ACFT Wpns Tech*	-	54.490	53.851	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	108.341

Note

In Fiscal Year (FY) 2020 this Project is being realigned to Program Element (PE) 0602148A Future Vertical Lift Projects:
* Project AI5 Next Gen Tactical UAS TD Technology
* Project AI7 Alternative Concept Engine Technology
* Project AJ2 Next Generation Rotorcraft Transmission Technology
* Project AJ4 Digital Vehicle Management and Control Technology
* Project AJ6 Advanced Rotors Technology
* Project AJ8 Experimental and Computational Aeromechanics Techn
* Project AK1 UAS Survivability Technology
* Project AK2 Aviation Survivability Technology
* Project AK9 Adv Teaming for Tactical Aviation Oper
* Project AL2 High Performance Computing for Rotorcraft App Tech
* Project AM2 Aircraft and Aircrew Protection Technology

A. Mission Description and Budget Item Justification

This Project designs and evaluates technologies for Army/Department of Defense (DoD) vertical lift and unmanned air systems to increase strategic and tactical mobility/deployability, improve combat effectiveness, increase aircraft and crew survivability, and improve combat sustainability. Areas of research address desired characteristics applicable to all aviation platforms, such as enhanced rotor efficiencies, improved survivability, increased structure and airframe capability, improved engine performance, improved sustainability, improved mission avionics performance, and reduced cost. This Project leverages work accomplished in collaboration with the National Aeronautics and Space Administration (NASA). Technologies within this project transition to advanced technology development programs with application to future, as well as current, Army/DoD aircraft systems.

Work in this Project is fully coordinated with PE 0603003A (Aviation Advanced Technology) and work in this Project related to aircraft weapons integration is also fully coordinated with PE 0602624A (Weapons and Munitions Technology), PE 0602303A (Missile Technology), and PE 0603710A (Night Vision Advanced Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering Science and technology (S&)T focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Platform Design & Structures Technologies	10.619	3.897	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47A / *AERON & ACFT Wpns Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: Enables survivable, sustainable rotorcraft configurations by conceiving of and evaluating critical aviation technologies using design and analysis methods with greater modeling fidelity with an ultimate goal of reducing the timelines associated with overall design of new aircraft. Introduces high fidelity methodology for improved performance and design predictions earlier in the development and acquisition process. Use physics of failure modeling and coupled discipline analysis to drastically improve component and system reliability. ***FY 2019 Plans:*** Conduct aircraft system conceptual design research of advanced manned and unmanned platforms. Analyze and assess viability and potential performance of Next Generation Tactical UAS (NGTUAS) and other manned and unmanned system designs. Conduct conceptual trade studies and analyses to refine the Model Performance Specification for NGTUAS. Develop decision support tools to be incorporated into the integrated design environment to perform rapid trade space exploration and conduct technology and requirement sensitivity analyses. Investigate conceptual design methodologies to assess uncertainty and reliability within the integrated design environment. Further develop improved stress and load prediction capability that more accurately determines structural loads resulting from aerodynamic loads. Explore biology-inspired, light-weight concepts that enable efficient, reliable, lighter weight platform structures. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort realigned to PE 0602148A (Future Vertical Lift Technology) / Projects AI5 (Next Gen Tactical UAS TD Technology) and Project AM2 (Aircraft and Aircrew Protection Technology) in FY20 as part of the financial restructuring.			
Title: Rotors & Vehicle Management Technologies ***Description:*** Design and investigate advanced airfoil and rotor blade technologies, including active control elements, to support goals of increased hover and cruise efficiency. Design and evaluate advanced flight control and vehicle management component technologies to support goals of increased maneuverability, reliability, and reduced weight and cost. ***FY 2019 Plans:*** Conduct investigation of winged-compound aeromechanics and technologies; conduct fundamental computational and experimental investigation of rotor blade structural loads; develop and improve flow measurement techniques such as infra-red thermography for flow transition measurement; examine interactional aerodynamic effects on of multi-rotor configurations including the rotor downwash/outwash; investigate advanced vertical lift aircraft configurations using both high-fidelity and mid/low fidelity computational methods; validate computational aeromechanics models against wind tunnel and flight test data. Investigate advanced hub and rotor concepts for high speed flight. Explore technologies that enable high performance Unmanned Aircraft Systems (UAS) rotors and propulsors. Develop and release an integrated flight simulation modeling tool that transforms or stitches a few specific frequency-domain flight data points into a full-flight non-linear model. Investigate an initial set of Unmanned Aerial Vehicle (UAV) handling qualities and UAV flight control design and test methods. Conduct flight test research to: develop	10.332	10.855	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47A / *AERON & ACFT Wpns Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
criteria for active inceptors; confirm techniques for improving measurements of rotor states for feedback to the flight control system; and new Mission Task Elements for high-speed configurations. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort realigned to PE 0602148A (Future Vertical Lift Technology) / Project AJ4 (Digital Vehicle Management and Control Technology), Project AJ6 (Advanced Rotors Technology), Project AJ8 (Experimental and Computational Aeromechanics Techn), and Project AL2 (High Performance Computing for Rotorcraft App Tech) in FY20 as part of the financial restructuring.			
Title: Engine and Drives Technologies ***Description:*** Design and evaluate advanced turboshaft engine component technologies to support goals of reduced fuel consumption, engine size, weight, and cost, as well as improved reliability and maintainability. Design and evaluate advanced drive system component technologies to support multi-speed transmissions, lighter weight gearboxes, and reduced costs, while improving reliability and maintainability ***FY 2019 Plans:*** Continue investigation of alternative adaptable engine components in support of the high performance alternative concept engine program and Future Vertical Lift/Future Tactical Unmanned Aircraft Systems; initiate design of high reduction ratio component concepts to provide improved drive system horsepower to weight and life capability to Future Vertical Lift aircraft. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort realigned to PE 0602148 (Future Vertical Lift Technology) / Projects AI7 (Alternative Concept Engine Technology), and AJ2 (Next Generation Rotorcraft Transmission Technology) in FY20 as part of the financial restructuring.	6.664	7.392	-
Title: Survivability For Degraded Visual Environment (DVE) Operations ***Description:*** Research advanced sensor and cockpit display technologies to provide ability to maintain terrain and obstacle situational awareness during aircraft induced (brown-out & white-out) and environmentally induced (rain, snow, smog, fog, smoke, low light, etc.) DVE. ***FY 2019 Plans:*** Finalize Obstacle Field Navigation (OFN), Safe Landing Area Determination (SLAD) guidance that includes auto landing capability, and sensor driven guidance to enroute and multiple helicopter landing zone selection. Technologies in this area transition to Survivability For Degraded Visual Environment (DVE) Operations efforts in PE 0603003A (Aviation Advanced Technology), Project 313 (Adv Rotarywing Veh Tech). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort ends in FY 2019.	8.500	0.489	-
Title: Aircraft and Occupant Survivability Technologies	6.448	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47A / *AERON & ACFT Wpns Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: Investigate advanced technologies to reduce susceptibility and vulnerability of aircraft to damage from threats or accidents, as well as technologies to defeat small arms, rocket and missile threats.			
Title: Aircraft Weapon & Sensor Technologies ***Description:*** Design and develop innovative approaches for integrating advanced weapons and sensors on aircraft platforms, including smart dispensers, data transfer, and post-launch weapon communication.	1.654	-	-
Title: Mission Systems ***Description:*** Investigate technologies to reduce susceptibility and vulnerability of aircraft to damage from threats or accidents, as well as technologies to defeat small arms, rocket and missile threats. Investigate advanced engagement concepts of organically launch systems from Army aviation platforms. ***FY 2019 Plans:*** Investigate adaptive Infrared (IR) engine suppression systems for future Army aircraft in an engine test cell to evaluate engine and IR suppression performance. Continue maturation of signature management technologies for Future Vertical Lift (FVL). Develop modeling and simulation tools to support survivability analysis against advanced threat systems. Define, develop and assess advanced engagement concepts for exploitation of organically launch systems off of Army aviation platforms. Investigate platform integration, mission systems, and survivability requirements to enable organically launch system engagements from Army aviation platforms. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort realigned to PE 0602148A (Future Vertical Lift Technology) / Project AI5 (Next Gen Tactical UAS TD Technology) and Project AK2 (Aviation Survivability Technology) in FY20 as part of the financial restructuring.	-	11.643	-
Title: Unmanned and Optionally Manned Technologies ***Description:*** Design and Develop advanced Manned-Unmanned Teaming (MUM-T) concepts to expand aviation mission sets that include resupply, reconnaissance, surveillance, electronic warfare, protection, medical evacuation and attack. Design and develop collaborative and cooperative algorithms to support the goal of intelligent teaming for manned-unmanned operations. Design and develop advanced UAS components to support goal of improved UAS performance. When applicable, technologies in this area are leveraged to support mitigation of DVE. ***FY 2019 Plans:*** Continue to investigate management of aircrew workloads throughout mission execution, to include advanced teaming. Continue to develop algorithms for increased air platform autonomy and contingency management to support mission execution independent of a constant data link to a ground control station. Investigate and evaluate human/machine interface technologies	6.427	18.472	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47A / *AERON & ACFT Wpns Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
that enable reduced workloads, increased situational understating, and maximize human/machine performance in an aviation environment. Evaluate technologies to support the following capabilities; resupply, reconnaissance, surveillance, electronic warfare, protection, medical evacuation and attack. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was been realigned to PE 0602148A (Future Vertical Lift Technology) / Project AJ6 (Advanced Rotors Technology), Project AJ6 (Advanced Rotors Technology), and Project AK9 (Adv Teaming for Tactical Aviation Operations) in FY20 as part of the financial restructuring.			
Title: Maintainability & Sustainability Technologies ***Description:*** Enables highly reliable, low maintenance platforms that can survive un-sustained in the multi-domain battle space for extended periods. Explores enabling technologies comprising aircraft health state awareness, data driven sustainment approaches, and operationally durable designs.	3.846	-	-
Title: FY 2019 SBIR / STTR Transfer ***Description:*** FY 2019 SBIR / STTR Transfer ***FY 2019 Plans:*** FY 2019 SBIR / STTR Transfer ***FY 2019 to FY 2020 Increase/Decrease Statement:*** FY 2019 SBIR / STTR Transfer	-	1.103	-
Accomplishments/Planned Programs Subtotals	54.490	53.851	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602211A / *Aviation Technology*	Project (Number/Name) 47B / *Veh Prop & Struct Tech*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
47B: *Veh Prop & Struct Tech*	-	10.180	10.954	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	21.134

Note

In Fiscal Year (FY) 2020 this Project is being realigned to
Program Element (PE) 06022148A Future Vertical Lift Projects:
* Project AI9 Future UAS Engine Technology
* Project AK9 Adv Teaming for Tactical Aviation Operations Tech
* Project AL4 High Speed and Efficient VTOL Vehicle Technology
* Project AL5 Air Vehicle Structures and Dynamics Technology

A. Mission Description and Budget Item Justification

This Project investigates engine, drive train, and airframe enabling technologies such as multifunctional materials, fluid mechanics and high temperature, high strength, low cost shaft materials. Additional areas of research include platform, aerodynamic, transmission, and control technologies for implementation in autonomous Unmanned Aerial Systems (UAS) and failure analysis and prediction models and techniques to support a "zero maintenance helicopter" concept.

Work in this Project complements and is fully coordinated with PE 0603003A (Aviation Advanced Technology) and leverages basic research performed in PE 0601104A (University and Industry Research Centers) / Project H09 (Robotics Collaborative Technology Alliance).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering S&T focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Rotor and Structure Technology	2.269	2.635	-
Description: Devise improved tools and methodologies to more accurately design for improved component reliability and durability, resulting in platforms that are lighter in weight and less costly to acquire and maintain. Investigate rotors and structures to significantly improve rotorcraft range and speed.			
FY 2019 Plans: Explore techniques for coalescing data from structural sensors, novel damage models, and advanced multifunctional material systems for extreme light weighting. Improve aero elasticity modeling, along with uncertainty quantification and propagation across requirements, design variables, and technology maturity level will be investigated to enable air vehicle design. Technology enablers such as self-responsive materials/structures, three-dimensional topology optimization, and machine learning are being investigated to improve reliable and durable vehicle components.			
FY 2019 to FY 2020 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47B / *Veh Prop & Struct Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
This research effort was realigned to PE 0602148A (Future Vertical Lift Technology) / Project AL5 (Air Vehicle Structures and Dynamics Technology) in FY20 as part of the financial restructuring.			
Title: Air Vehicle Propulsion and Power Technology (previously tittled: Engine and Drive Train Technology) ***Description:*** Applied research investigating engine and drivetrain technologies for Army manned and unmanned air vehicles. Research, investigates, and conducts experiments to develop, innovate, and validate advanced models and improved methods for propulsion system components and configurations to enable improvements in power density, efficiency, reliability and life cycle cost for increasing performance and capabilities of Army aviation systems. ***FY 2019 Plans:*** Conduct research that leads to enhancements in propulsion including material improvements for high temperature engine and high stress drivetrains, reliable air and fuel delivery components for robust energy conversion of multiple fuel inputs in small engine systems, and aerodynamic performance in high efficiency centrifugal compressors. Investigate more accurate simulations capable of predicting nonlinear and shifting dynamics and damage in complex and variable speed helicopter drivetrains. Techniques for interactive trade space navigation across performance, cost and capabilities are being investigated, which ties user value measures to performance and effectiveness. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort is ending in FY 2019.	1.502	1.968	-
Title: Micro/Small Scale Unmanned Aerial Systems ***Description:*** Develop means to maximize the endurance of Soldier and robot portable aerial Intelligence, Surveillance, and Reconnaissance (ISR) assets through investigation of technologies such as adaptive materials for wings/airframes and an array of behaviors, spanning low-level reflexive controls through higher intelligence path and mission planning. ***FY 2019 Plans:*** Develop the underlying aerodynamic models that will enable small Unmanned Aircraft System (UAS) to perform aggressive maneuver through complex environments, where the incorporation of higher fidelity methods into computationally efficient physics based modeling tools will enable the design of novel UAS concepts. Carry out research that will enable advanced speed, endurance, payload capability, and on-demand design and fabrication of small-mission based UAS. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602148A (Future Vertical Lift Technology) / Project AK9 (Adv Teaming for Tactical Aviation Operations Tech) in FY20 as part of the financial restructuring.	4.009	3.638	-
Title: Aviation Component Failure Modeling	1.000	0.974	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47B / *Veh Prop & Struct Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: Develop failure analysis and prediction models and techniques to support a "zero maintenance helicopter" concept. Work is coordinated with Aviation component and system reliability efforts in PE 0602211A (Aviation Technology) / Project 47A (Aeron & Acft Wpns Tech) at the United States (US) Army Aviation and Missile Research, Development and Engineering Center. ***FY 2019 Plans:*** Develop probabilistic models that will enable the prediction of useful life of advanced propulsion materials and components and failure prediction in aviation materials and structural components. Material and structural information can be used to inform damage-adaptive maneuvers in real-time. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This effort is ending in FY 2019			
Title: High Speed & Efficient Vertical Take-off and Landing ***Description:*** Perform Vertical Take-Off and Landing (VTOL) research investigations in propulsion, aeromechanics and platform technologies to explore, innovate and combine the most promising technologies to enable more efficient hover, high-speeds, and greater maneuverability at longer ranges for Army aviation. Reconfigurable and adaptive technologies include hover rotor systems that can achieve high speed, low drag; aerodynamic lift technologies capable of higher speed and efficient cruise; and convertible propulsion technologies to deliver more efficient hover and higher speed cruise power. ***FY 2019 Plans:*** Conduct research in the areas of propulsion and active/passive platform technology that will enable improved reliability, efficiency, and stability of VTOL vehicles. This includes research in emerging propulsion technology such as hybrid-electric concepts, and lightweight power distribution configuration, as well as in aeromechanics research to enable higher speeds and greater efficiency for reconfigurable rotor systems. Embedded sensing, actuation, and control methods are also being investigated. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** This research effort was realigned to PE 0602148A (Future Vertical Lift Technology) / Project AL4 (High Speed and Efficient VTOL Vehicle Technology) in FY20 as part of the financial restructuring.	1.400	1.461	-
Title: FY 2019 SBIR / STTR Transfer ***Description:*** FY 2019 SBIR / STTR Transfer ***FY 2019 Plans:*** FY 2019 SBIR / STTR Transfer ***FY 2019 to FY 2020 Increase/Decrease Statement:***	-	0.278	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** 47B / *Veh Prop & Struct Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2019 SBIR / STTR Transfer			
Accomplishments/Planned Programs Subtotals	10.180	10.954	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602211A / *Aviation Technology*	Project (Number/Name) *47C / ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*	-	7.500	17.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	24.500

Note

Congressional Increase for Fiscal Year (FY) 2018 & FY19.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Rotorcraft Component Technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019
Congressional Add: Adaptive Digital Automated Pilotage Technology (ADAPT) ***FY 2018 Accomplishments:*** Adaptive Digital Automated Pilotage Technology (ADAPT)	2.500	-
Congressional Add: Aviation Technology Transfer and Innovation Technology ***FY 2018 Accomplishments:*** Aviation Technology Transfer and Innovation Technology	5.000	-
Congressional Add: Adaptive Flight Control Technology Development ***FY 2019 Plans:*** Adaptive Flight Control Technology Development	-	7.000
Congressional Add: Aviation and Missile Technology Transfer and Innovation ***FY 2019 Plans:*** Aviation and Missile Technology Transfer and Innovation	-	5.000
Congressional Add: UH-60 Main Rotor Blade Modernization ***FY 2019 Plans:*** UH-60 Main Rotor Blade Modernization	-	5.000
Congressional Adds Subtotals	7.500	17.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602211A / *Aviation Technology*	**Project (Number/Name)** *47C / ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*

E. Performance Metrics

N/A