Exhibit R-2, PB 2011 Army RDT&E Budget Item Justification										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602211A: *AVIATION TECHNOLOGY*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**Base FY 2011 Estimate**	**OCO FY 2011 Estimate**	**Total FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	46.232	49.273	43.476	0.000	43.476	42.598	44.305	47.821	49.765	0	366.946
47A: *AERON & ACFT WPNS TECH*	36.970	36.859	38.028	0.000	38.028	38.027	39.634	43.059	44.909	Continuing	Continuing
47B: *VEH PROP & STRUCT TECH*	4.238	4.256	5.448	0.000	5.448	4.571	4.671	4.762	4.856	Continuing	Continuing
47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*	5.024	8.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This aviation technology program element (PE) conducts applied research applicable to rotary wing vehicle (RWV) technologies to move towards air vehicle objectives. Emphasis is on developing rotary wing platform technologies to enhance manned and unmanned RWV combat and combat support operations for attack, reconnaissance, air assault, survivability, logistics and command and control missions. The PE supports the research and development of components and subsystems for air vehicles in the areas of aviation and aircraft weapons technology (project 47A) and vehicle propulsion and structures technology (project 47B). This PE also supports the National Rotorcraft Technology Center (NRTC), a partnership of government, industry, and academia. Project 47C funds congressional special interest items. Efforts under this PE transition to projects supported by PE 0603003A (Aviation-Advanced Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this PE is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), located at Redstone Arsenal, AL; Fort Eustis, VA; Moffett Field, CA; and Hampton, VA, and at the Army Research Laboratory (ARL), located at Adelphi, MD; Hampton, VA; and Cleveland, OH.

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B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	46.898	41.332	42.329	0.000	42.329
Current President's Budget	46.232	49.273	43.476	0.000	43.476
Total Adjustments	-0.666	7.941	1.147	0.000	1.147
• Congressional General Reductions		-0.259			
• Congressional Directed Reductions					
• Congressional Rescissions		0.000			
• Congressional Adds		8.200			
• Congressional Directed Transfers					
• Reprogrammings	-0.141	0.000			
• SBIR/STTR Transfer	-0.525	0.000			
• Adjustments to Budget Years	0.000	0.000	1.147	0.000	1.147

Change Summary Explanation

FY10 congressionally directed increases.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
47A: *AERON & ACFT WPNS TECH*	36.970	36.859	38.028	0.000	38.028	38.027	39.634	43.059	44.909	Continuing	Continuing

A. Mission Description and Budget Item Justification

The objective of this project is to develop Rotary Wing Vehicle (RWV) technologies for manned and unmanned Army/ Department of Defense (DoD) rotorcraft 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 supports the National Rotorcraft Technology Center (NRTC), a partnership of government, industry, and academia. 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 rotorcraft systems. Work in this project is fully coordinated with PE 063003A (Aviation Advanced Technology) and work in this project related to aircraft weapons integration is also fully coordinated with PE 0602624A (Weapons and Munitions Technology) and PE 0602303A (Missile Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, and the Army Science and Technology Master Plan. Work in this project is performed by the Aeroflightdynamics Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), (located at the NASA Ames Research Center, Moffett Field, CA; and the NASA Langley Research Center, Hampton, VA); and the Aviation Applied Technology Directorate, Fort Eustis, VA.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1	8.466	7.763	8.091	0.000	8.091
National Rotorcraft Technology Center (NRTC): The goal of the NRTC is to focus government, US rotorcraft industry and academia resources on pre-competitive, high priority, military focused technology development to maintain preeminence in rotorcraft capabilities. In FY09, performed bird strike and head impact simulations to improve rotorcraft crashworthiness and survivability. Conducted certification testing and probabilistic analysis to evaluate damage tolerance methodologies. Tested advanced drive system designs for noise and wear characteristics. Evaluated an active crash protection system for application to rotary wing unmanned aerial systems. In FY10, conduct whirl tower testing of aero-morphing rotor system. Demonstrate composite material technology that provides up to a 25% reduction in component weight and a 40% reduction in recurring					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
manufacturing costs compared to a conventional metallic structure. Correlate nonlinear aeroelasticity analysis results with wind tunnel and flight test data to improve understanding and predictive capability for rotor stall flutter. In FY11, will evaluate metal matrix composite structural elements as replacements for titanium elements. Will incorporate new dynamic stall model, based on a hybrid computational approach, into a comprehensive code and validate the new model by comparison with test data. Will validate physics-based analysis methodology predictions for hub drag reductions with available test data. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #2 Rotor Technology: Evaluate performance enhancements gained from advanced rotor technologies, including on-blade controls. In FY09, acquired validation test data for highly instrumented, full-scale conventional UH-60 rotor, and validated advanced modeling and simulation methods for active rotor controls using previously acquired test data. In FY10, evaluate rotor aeromechanics issues for high speed configurations using high fidelity analyses. Validate methods for UH-60 and active rotor tests. Fabricate Active Elevon Rotor (AER) and modify test stand to avoid dynamic instabilities. In FY11, will acquire high quality interactional aerodynamics measurements for a high speed active flow control rotor configuration. Will execute active on-blade control test.	3.234	3.339	3.185	0.000	3.185

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Will utilize high quality UH-60 rotor measurements to assess rotorcraft modeling and simulation tools for rotor structural loads, deflections and flowfield measurements. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #3 Aircrew Survivability Technologies: Investigate advanced technologies to reduce susceptibility and vulnerability of aircraft to damage from threats or accidents and technologies to defeat small arms, rocket and missile threats. In FY09, developed updated structural design guidelines based on emerging criteria. Developed and tested innovative techniques for reducing detection of propeller and rotor driven aircraft by threat systems. Developed analytical tools required to evaluate material behaviors during both ballistic and high energy impact events. In FY10, complete conventional ballistic protection and advanced crew protection efforts and transition knowledge gained to ballistic protection and advanced crew protection technology maturation in PE 0603003A. Develop remote Optical Parametric Oscillators (OPOs) to tune laser countermeasure wavelengths to desired threat bands for effective InfraRed (IR) jamming of man-portable missiles. In FY11, will fabricate crashworthy systems/ subsystems, conduct testing, and correlate test results with models previously developed. Will integrate optic laser fiber and OPO component technologies into a complete multi-function IR and visual laser countermeasure system, and transition to PE 0603003A (project 313) effort for flight test on a threat range.	7.038	7.424	8.993	0.000	8.993

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
FY 2009 Accomplishments: FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #4 Rotorcraft Airframe Technology: Develop new rotorcraft structure technologies to improve structural performance while reducing fabrication, operating, and support costs. In FY09, conducted laboratory testing to validate strain-allowable integrity design approach, emerging platform concepts and modeling fidelity. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO	0.984	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #5	2.015	1.975	2.551	0.000	2.551
Advanced Engines: Design and develop advanced turboshaft engine component technologies to support goals of reduced fuel consumption, engine size, weight, and cost, and improved reliability, maintainability and survivability. In FY09, for cargo sized aircraft, completed design of an advanced gas generator turbine that improves engine performance and durability. For utility/attack sized aircraft, completed fabrication of an advanced compressor for improved performance and reduced weight, and conducted an advanced combustor rig-test to validate improved performance and structural life. In FY10, for utility/attack sized aircraft, complete the design of an advanced compressor and conduct laboratory rig test. For cargo sized aircraft, complete fabrication of a gas generator turbine. In FY11, for a cargo sized aircraft, will complete advanced combustor design for improved engine performance and structural life; will complete fabrication of advanced compressor for improved engine performance and reduced weight; and will complete rig testing of gas generator turbine to validate improved engine performance and durability.					
FY 2009 Accomplishments: FY 2009					
FY 2010 Plans: FY 2010					
Base FY 2011 Plans: FY 2011 Base					
OCO FY 2011 Plans: FY 2011 OCO					
Program #6	2.435	2.353	2.315	0.000	2.315
System Concepts Studies: Enables new rotorcraft configurations by evaluating critical advanced technology using design and analysis methods with greater modeling fidelity. Introduces high fidelity methodology for					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
improved performance and design predictions earlier in the acquisition process. In FY09, analyzed advanced tiltrotor configurations in maneuver flight conditions using comprehensive analysis. Analyzed an advanced tiltrotor fuselage and wing using computational fluid dynamics (CFD) in cruise. Evaluated the handling qualities of an advanced tiltrotor in hover. Completed investigation of rotorcraft handling qualities and met requirements in piloted simulation. Developed aerodynamic analysis and parametric evaluation capability for slowed rotor compound helicopter configurations. Documented analysis interfaces to allow inclusion of other new and emerging technical capabilities and rotorcraft configurations. In FY10, extend the CFD flight conditions for transition and maneuver flight. Continue the validation of modeling capabilities and the ability to pass/generate data within the integrated analysis environment, such as automating the methodology for transforming a 3-D Computer Aided Design (CAD) drawing into a grid which can be analyzed with CFD tools. In FY11, will enhance/extend the fidelity of the integrated analysis and design environment to increase prediction accuracy and will investigate techniques for rigorous optimization of the rotorcraft design in full flight envelope simulation. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #7 Network Operations and System Integration: Perform feasibility, operations and concept studies and Analysis of Alternatives to identify promising candidate technologies that can be evaluated as options for improved or	4.691	5.061	5.444	0.000	5.444

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
new platform capabilities. Digital Situational Awareness Testbed: In FY09, investigated supervisory control techniques for control of multiple Unmanned Aircraft Systems (UAS). In FY10, demonstrate UAS supervisory techniques in flight. In FY11, will investigate use of UAS supervisory techniques in Manned-Unmanned Teaming flight test. Advanced Rotary Wing Concepts: In FY09, conducted flight test experiments using various sensors and weapons systems to gauge precision expected from rotary wing UAS in varying flight modes, i.e., high and low hover and firing on the move, against moving and stationary targets. In FY11, will integrate Reconnaissance, Surveillance, and Target Acquisition (RSTA) and pilotage improvements onto a rotary or fixed wing UAS and demonstrate in a simulated environment. Will evaluate improvements in target detection, geolocation and pilotage. Advanced Rotary Wing Weapons Integration Concepts: In FY10, demonstrate geo-location improvements and lightweight sensors utilizing advanced image stabilization techniques incorporated to provide hemispherical situational awareness for improved pilotage. Pursue UAS/weaponization demonstration initiatives with the other Services. In FY11, will integrate a lightweight, distributed sensor array into a UAS testbed platform to evaluate autonomous pilotage and collision avoidance techniques. Will develop/evaluate virtual interface technologies for rapid virtual immersion of UAS operators into UAS operating environment. Will extend supervisory control techniques to airborne control station applications. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #8	3.042	3.490	2.603	0.000	2.603

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Intelligent and Active Control: Perform feasibility, operations and concept studies and Analysis of Alternatives to identify promising candidate technologies that can be evaluated as options for improved or new platform capabilities. In FY09, expanded handling quality requirements and flight control systems for legacy upgrades, multi-role and future rotorcraft. In FY10, develop handling quality criteria for legacy upgrades and future rotorcraft. Develop the Rotorcraft Air Crew Systems Concepts Airborne Laboratory (RASCAL, a JUH-60A Black Hawk helicopter) into a variable-stability in-flight simulator. Flight demonstrate increased-agility, obstacle field navigation and landing algorithms for unmanned platforms. Investigate geo-location improvements and lightweight sensors incorporating advanced image stabilization techniques to provide hemispherical situational awareness for improved pilotage. In FY11, will define control system architectures for emerging rotorcraft configurations based on initial dynamic simulation models and in-flight simulation experiments. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #9 Durability and Sustainment Technologies: Develop prognostic and system health assessment technologies to enable transition to a Condition Based Maintenance supportability structure. In FY09, performed rig-testing of engine prognostic algorithms. Began bench testing of automatic trim tab actuators. Initiated development of prognostic algorithms for structural components. Assessed structural corrosion and damage detection algorithms.	5.065	5.088	4.846	0.000	4.846

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Evaluated sensor and load monitoring feedback methods for structural diagnostics/prognostics and reduction of uncertainty in probabilistic methods for life management. In FY10, perform bench testing to demonstrate the accuracy and robustness of developed prognostic and diagnostic technologies. Bench test the physics of failure models for electronics, as well as validate prognostic reasoner to predict failures. Integrate a corrosion monitoring system into the Health and Usage Monitoring System and demonstrate on an airframe structural component. In FY11, will develop prognostic capabilities for more chaotic, nonlinear dynamic failure modes for mechanical systems. Will develop improved probabilistic methods for prediction of failure initiation and progression. Will evaluate nano-sensing technology for real-time integrity monitoring. Will implement improved design and analysis criteria. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #10 Small Business Innovative Research/Small Business Technology Transfer Programs *FY 2009 Accomplishments:* FY 2009	0.000	0.366	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
FY 2010 Plans: FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Accomplishments/Planned Programs Subtotals	36.970	36.859	38.028	0.000	38.028

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
47B: *VEH PROP & STRUCT TECH*	4.238	4.256	5.448	0.000	5.448	4.571	4.671	4.762	4.856	Continuing	Continuing

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.Work in this project is related to and fully coordinated with PE 0603003A (Aviation Advanced Technology). The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy and the Army Science and Technology Master Plan. Work in this project is performed by the Army Research Laboratory (ARL) located at facilities at the NASA Glenn Research Center, Cleveland, OH, and the NASA Langley Research Center, Hampton, VA.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1	0.841	0.898	2.010	0.000	2.010

Rotor and Structure Technology: 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.In FY09, evaluated new multi-function structural concepts based on biological systems that are key enablers for future microsystems development. In FY10, conduct wind-tunnel test on a conceptual active rotor system to improve performance. In FY11, will perform a series of analytical and validation studies, including in-flight evaluations conducted jointly with the Federal Aviation Administration (FAA) and other Research, Development and Engineering Center (RDEC) field elements, to enhance analytical tools and methodologies for structural damage detection and condition-based maintenance of key structural components. Will fabricate six 1/4-scale high-performance active-twist rotor blades based on Apache baseline performance characteristics. Will conduct parametric wind-tunnel evaluations of two sets of advanced active-twist rotor configurations, one of which has been optimized for rotor performance improvements. Will complete analytical comparison study with data validation to document benefits of high-performance active designs.

FY 2009 Accomplishments:
FY 2009

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
FY 2010 Plans: FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #2 Propulsion and Drive Train Technology: Investigate high temperature materials, advanced models for flow physics and improved methods for predicting propulsion system mechanical behavior to increase fuel efficiency and reduce propulsion system weight. In FY09, assessed the durability of advanced environmental barrier coatings to improve the design of hot section engine components and validated variable speed transmission sub-scale components to enable improvements in rotorcraft maneuverability and noise reduction. In FY10, assess the feasibility of fabricating sub-elements of hollow and solid turbine blades from monolithic ceramic/composite hybrid materials to reduce engine weight. Design sand injection facility to enable the development of improved inlet particle separators. In FY11, will develop joining technologies to enable the fabrication and integration of ceramic fuel injectors for improved combustion process design, and will develop a coupled engine and drive train dynamic model that will enhance the accuracy of mechanical behavior predictions. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010	3.397	3.328	3.438	0.000	3.438

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Base FY 2011 Plans: FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #3 Small Business Innovative Research/Small Business Technology Transfer Programs *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO	0.000	0.030	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	4.238	4.256	5.448	0.000	5.448

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

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E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	Base FY 2011 Estimate	OCO FY 2011 Estimate	Total FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*	5.024	8.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Rotorcraft Component Technologies.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Program #1	1.595	2.984	0.000	0.000	0.000
Composite Small Main Rotor Blades : In FY09 this Congressional Interest Item developed innovative rotor design and fabrication processes that reduced the time and cost of a typical metal blade to composite blade conversion program *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #2	1.595	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Aircraft Structural Condition Monitoring (ASCM) for Diagnostics and Prognostics: This Congressional Interest Item derived requirements to implement technology concepts to detect leading structural deformations, i.e. corrosion, erosion, cracks, de-lamination, stress/strain, then assess usable remaining life (prognostics) and schedule replacement parts or repair . *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #3 Intensive Quenching for Advanced Weapons Systems: In FY09 this Congressional Interest Item developed an advanced heat treating process that improved the performance, and cost of high strength steel components such as helicopter gears and gun barrels. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010	0.957	1.194	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
Base FY 2011 Plans: FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #4 Helicopter Reliability and Failure Analysis Center. This Congressional Interest Item established a reliability and failure analysis center that provided technical insight on component failure modes that could ultimately result in more reliable and maintainable aviation systems. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO	0.877	0.000	0.000	0.000	0.000
Program #5 Technologies for Military Equipment Replenishment. This is a Congressional Interest Item. *FY 2009 Accomplishments:* FY 2009	0.000	1.592	0.000	0.000	0.000

Exhibit R-2A, PB 2011 Army RDT&E Project Justification		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602211A: *AVIATION TECHNOLOGY*	PROJECT 47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	Base FY 2011	OCO FY 2011	Total FY 2011
FY 2010 Plans: FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO					
Program #6 OMNI Active Vibration Control System. This is a Congressional Interest Item. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *Base FY 2011 Plans:* FY 2011 Base *OCO FY 2011 Plans:* FY 2011 OCO	0.000	2.388	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	5.024	8.158	0.000	0.000	0.000

Exhibit R-2A, PB 2011 Army RDT&E Project Justification		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602211A: *AVIATION TECHNOLOGY*	PROJECT 47C: *ROTORCRAFT COMPONENT TECHNOLOGIES (CA)*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.