Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Army										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	104.229	57.454	62.193	-	62.193	66.660	73.039	76.774	78.762	Continuing	Continuing
313: *ADV ROTARYWING VEH TECH*	37.993	42.149	44.939	-	44.939	46.777	50.279	56.515	58.170	Continuing	Continuing
435: *AIRCRAFT WEAPONS*	2.615	2.608	-	-	-	-	-	-	-	Continuing	Continuing
436: *ROTARYWING MEP INTEG*	-	1.754	7.619	-	7.619	10.070	12.762	10.092	10.252	Continuing	Continuing
447: *ACFT DEMO ENGINES*	17.264	10.943	9.635	-	9.635	9.813	9.998	10.167	10.340	Continuing	Continuing
BA7: *AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)*	46.357	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) matures and demonstrates manned and unmanned rotary wing vehicle (RWV) technologies to enable Army transformation. Within this PE, aviation technologies are developed and integrated into realistic and robust demonstrations. The PE supports enabling component and subsytems for rotorcraft in the following areas: rotors, drive trains, structures and survivability (project 313), weapons integration (project 435), mission equipment packages to enable control of unmanned systems (project 436) and affordable and efficient engines (project 447). Projects BA7 and BA8 fund congressional special interest items.

Work in this PE is related to and fully coordinated with PE 0602211A (Aviation Technology), PE 0603313A (Missile and Rocket Advanced Technology) and PE 0603270A (Electronic Warfare Technology). Efforts under this PE transition to programs supported by PE 0603801A (Aviation - Advanced Development), PE 0604801A (Aviation - Engineering Development), and PE 0604270A (Electronic Warfare Development).

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) with facilities located at Redstone Arsenal, AL; Fort Eustis, VA; and Moffett Field, CA.

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B. Program Change Summary ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**
Previous President's Budget	112.388	57.454	59.983	-	59.983
Current President's Budget	104.229	57.454	62.193	-	62.193
Total Adjustments	-8.159	-	2.210	-	2.210
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-6.242	-			
• SBIR/STTR Transfer	-1.917	-			
• Adjustments to Budget Years	-	-	2.210	-	2.210

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
313: *ADV ROTARYWING VEH TECH*	37.993	42.149	44.939	-	44.939	46.777	50.279	56.515	58.170	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project matures and demonstrates systems/subsystems for manned/unmanned rotorcraft that provide, improved survivability, greater performance and reduced operational costs and required maintenance. Systems demonstrated include rotors, drivetrains, robust airframe structures and integrated threat protection systems.

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 Aviation Applied Technology Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Fort Eustis, VA., and the System Simulation Development Directorate, AMRDEC, Redstone Arsenal, AL. Work in this project is coordinated with Program Manager ? Aircraft Survivability Equipment (PM-ASE).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Rotorcraft Survivability	9.378	12.306	6.763
Description: These efforts increase rotorcraft survivability by reducing platform signatures and providing the means to more efficiently counter enemy detection and tracking systems. This effort also enhances situational awareness, allowing manned/ unmanned aircraft to avoid enemy air threats.			
FY 2010 Accomplishments: Completed development of a lightweight, multi-function laser to counter man-portable air-defense systems, small arms, rocket propelled grenades, and laser designated threats through multi-band, infra-red and eye-safe visual laser energy.			
FY 2011 Plans: Integrate the lightweight, multi-function laser on an Apache platform and demonstrate improved countermeasures effectiveness through flight testing on a threat range; and demonstrate an aircraft survivability software adapter to allow plug & play capability for legacy and future aircraft survivability equipment (ASE) components and software products through hardware-in-the-loop (HITL) lab testing.			
FY 2012 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Will conduct follow-on HITL demonstration of survivability software adapter utilizing Integrated Aircraft Survivability Equipment (IASE) system, developed by PM-ASE, and additional aircraft survivability systems; and will finalize Super - Application Programming Interface (API) definition to allow plug & play capability for legacy and future aircraft ASE.			
Title: Rotorcraft Drive Systems ***Description:*** This effort demonstrates advanced rotorcraft drive technologies that: increase the horsepower-to-weight ratio; reduce drive system noise; reduce production, operating and support costs; and provide automatic component impending failure detection. ***FY 2010 Accomplishments:*** Conducted over-torque fatigue demonstration of the tail rotor enhanced power density gears; completed endurance and over-torque demonstration of the helical face gears; and completed demonstration of the composite gearbox housings and composite shaft/coupling. ***FY 2011 Plans:*** .Investigate material technologies through bench testing to validate materials for lightweight housings, new bearings and ultra-highly loaded gears; initiate preliminary and detailed design of a demonstrator drive system; and evaluate these technologies relative to conventional single-speed transmissions as well as proposed multi-speed drive configurations. ***FY 2012 Plans:*** Will complete detailed design and begin fabrication of drive system component test hardware to validate key materials for ultra-highly loaded gears and bearings as well as lightweight gearbox housings with improved corrosion resistance and reduced operational maintenance.	3.462	3.278	3.202
Title: Rotor Design and Capabilities ***Description:*** This effort determines the performance benefits of advanced rotors and air vehicles through the evaluation of alternative designs aimed to satisfy future force capability needs for increased system durability, speed, range and payload. ***FY 2010 Accomplishments:*** Characterized acoustic properties of Optimum Speed Rotor through flight testing and demonstrated full flight envelope; conducted component demonstrations for rotor durability technologies; and conducted whirl stand and wind tunnel testing on full-scale rotor blades to demonstrate high performance rotor technologies that improve aeromechanical performance, reduce acoustic detection, and reduce vibration. ***FY 2011 Plans:***	14.016	12.017	15.306

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Demonstrate enhanced integrated rotor durability to assess benefit to aircraft maintenance; demonstrate permanent erosion protection, reliable icing protection and battle damage assessment as well as repair technologies on full-scale rotor blades; and demonstrate improved hover performance. ***FY 2012 Plans:*** Will complete assessment of reconfigurable rotors technology; will design a high performance, low vibration, low noise rotor and integrated control system; will investigate advanced air vehicle concepts that address Army Aviation performance gaps; and will initiate trade studies that support the evaluation of candidate next generation air vehicle designs that will include performance, survivability, cost and sustainability attributes to be pursued for demonstration.			
Title: Capability-based Operations & Sustainment Technologies (COST) ***Description:*** Mature and demonstrate technologies that improve the operational availability of rotorcraft while reducing operating and support (maintenance) costs. Efforts include component sensing, diagnostics, prognostics, and control systems. ***FY 2010 Accomplishments:*** Integrated engine, flight control, electrical and rotor technologies to demonstrate the feasibility of implementing these technologies as a single solution, as well as applied system level data fusion techniques to increase accuracy and reduce false alarms; and conducted a system integration demonstration in an avionics systems integration laboratory. ***FY 2011 Plans:*** Develop prognostic technologies to predict failures and remaining useful life of engine accessories such as fuel controls, pumps and generators; and begin demonstration of on-board automatic adjustments for in-flight rotor smoothing/balance capability. ***FY 2012 Plans:*** Will demonstrate individual algorithms for prognostics of engine components, structural integrity, rotor components, and vehicle management systems for improved component time on wing and reduced maintenance; and will develop data fusion techniques to improve sensor coverage and account for system-to-system influences.	6.655	5.852	6.669
Title: Adaptive Vehicle Management System (AVMS) ***Description:*** The AVMS integrates advanced flight controls with real-time aircraft state information to enable safe, low-effort maneuvering and real-time adaptation to aircraft state changes (degradation, damage, mission, etc.). The AVMS demonstrates technology that enables Level 1 (most acceptable) handling qualities in the entire flight envelope, reduces flight control line replaceable unit counts by over 20%, and reduces flight control system weight. ***FY 2010 Accomplishments:***	1.176	1.402	3.842

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Compiled and identified technologies, including emerging applied research, and analyzed the technology status as well as the risk assessment of each for inclusion in the AVMS flight demonstration; and generated a preliminary design of a baseline AVMS system for flight demonstration. ***FY 2011 Plans:*** Complete preliminary design of required AVMS hardware and software; prioritize technologies to be flight demonstrated and conduct a risk/reward assessment of each technology; and generate several candidate systems to analyze in simulation to support a planned flight demonstration. ***FY 2012 Plans:*** Will finish simulation evaluation of candidate systems to determine final candidates via flight demonstration. Will begin detailed analysis and design of the best candidate AVMS suites in preparation for flight demonstration.			
Title: Integrated Aircraft and Crew Protection ***Description:*** This effort demonstrates combined rotorcraft platform durability and survivability improvements through a fully optimized and integrated structure, Vehicle Management System (VMS), and rotors/subsystems technology integration program. ***FY 2010 Accomplishments:*** Conducted a series of platform system trade studies to identify the sensitivities of technology contributions to battlefield and operational survivability from structures, rotors, subsystems, and vehicle management systems areas. ***FY 2011 Plans:*** Finalize the platform system trade studies; and conduct hardware refinement and validation to mature system level solutions of structures, rotors, subsystems and VMS technologies. ***FY 2012 Plans:*** Will fabricate and demonstrate, at the full-scale component level, technology optimized concepts in structures, rotors, subsystems, and vehicle management systems areas, derived from the earlier trade studies; and will begin design of a combat tempered platform integrated technology demonstrator and will conduct system trade studies.	1.882	3.392	5.286
Title: Real-time Airspace Collision Avoidance and Teaming (REACT) and Joint Common Architecture (JCA) ***Description:*** This program evaluates, and integrates real-time airspace de-confliction and collision avoidance technologies. The JCA effort will develop standards and requirements for an aviation open systems, mission processing architecture that is scalable across joint rotorcraft missions. This effort will implement these standards into a prototype processing system and demonstrate through Software Integration Lab (SIL) testing.	1.424	3.902	3.871

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Matured the Army tactical airspace model for systems engineering analysis of potential airspace de-confliction and collision avoidance methods, as well as demonstrated improved airborne and ground control station based real-time situational awareness displays. ***FY 2011 Plans:*** Evaluate and demonstrate airspace/battlespace integration technologies, including real-time situational awareness display concepts and collision avoidance technology concepts, and evaluate effectiveness. ***FY 2012 Plans:*** Will increase complexity of airspace/battlespace scenario and demonstrate effectiveness of real-time displays and collision avoidance technologies; and begin development of a software developer toolkit and integrator toolkit to verify software compliance with defined JCA standards and requirements.			
Accomplishments/Planned Programs Subtotals	37.993	42.149	44.939

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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APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*	PROJECT 435: *AIRCRAFT WEAPONS*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
435: *AIRCRAFT WEAPONS*	2.615	2.608	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project develops, demonstrates and integrates manned and unmanned sensor and weaponization technologies such as advanced missiles, guns, fire controls, advanced target acquisition and pilotage sensors into Army aviation platforms. Efforts are directed toward reducing the integrated weight of weapons, increasing engagement ranges, providing selectable effects on a variety of threats, and enabling cost-effective integration across multiple aviation platforms.

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 Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Redstone Arsenal, AL and Fort Eustis, VA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Aviation Multi-Platform Munition (AMPM)	2.615	2.608	-
Description: Aircraft weapons efforts were consolidated in this project to focus technologies toward integrating a new lightweight weapon for use with both manned and unmanned rotorcraft systems. ***FY 2010 Accomplishments:*** Developed and published interface control documentation of weapons for multi-platform integration; began development of a weapon system engineering concept and developed key technologies; and completed flight demonstration of industry candidate missile systems (30 lb. class) in conjunction with Kiowa Warrior weapons pylon evaluation. ***FY 2011 Plans:*** Complete the system concept and system engineering plan for integration of smart weapons, to include initial definition of a universal weapon integration architecture; and demonstrate smart weapon (Shadow Hawk) integration implementing the Universal Armaments Interface (UAI) standard.			
Accomplishments/Planned Programs Subtotals	2.615	2.608	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*	**PROJECT** 435: *AIRCRAFT WEAPONS*

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.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*	PROJECT 436: *ROTARYWING MEP INTEG*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
436: *ROTARYWING MEP INTEG*	-	1.754	7.619	-	7.619	10.070	12.762	10.092	10.252	Continuing	Continuing

Note

The objective of this project is to mature and validate man-machine integration and mission equipment technologies, such as artificial intelligence, intelligent agents, cognitive decision aiding (CDA) sensors, avionics, communications, pilot vehicle interfaces, and autonomous assistants. This project improves the overall mission execution by demonstrating manned and unmanned system teaming, enhanced helicopter pilotage capability, improved crew workload distribution, and new capabilities for both manned and unmanned aircraft. This project supports Army transformation by providing mature technology to greatly expand the capabilities of unmanned aircraft, in current operating roles and future unmanned wingman roles. This project also develops, demonstrates and integrates manned and unmanned sensor and weaponization technologies such as advanced missiles, guns, fire controls, advanced target acquisition and pilotage sensors into Army aviation platforms. Efforts are directed toward reducing the integrated weight of weapons, increasing engagement ranges, providing selectable effects on a variety of threats, and enabling cost-effective integration across multiple aviation platforms.

The cited work is consistent with the Director, Defense Research and Engineering Strategic Plan, the Army Modernization Strategy, the Army Science and Technology Master Plan.

A. Mission Description and Budget Item Justification

Work in this project is performed by the Aviation Applied Technology Directorate of the Aviation and Missile Research, Development and Engineering Center (AMRDEC), Fort Eustis, VA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Intelligent Autonomy for Unmanned Systems	-	1.754	2.719
Description: Mature and apply tactical behaviors and safe-flight technologies to enable unmanned aircraft to maintain safe, responsive, flexible and tactical formation flight with manned helicopters for unmanned wingman applications in re-supply, reconnaissance, surveillance and attack missions. ***FY 2011 Plans:*** Evaluate and down-select flight-following algorithms. Assess architectures for integrating flight-following algorithms and tactical behaviors with flight controls. ***FY 2012 Plans:*** Will migrate autonomy functions from ground control station to the unmanned aircraft to enable precise adjustment of delivery location in re-supply mission and autonomous onboard real time mission re-planning.			
Title: Aviation Weapons System Integration	-	-	4.900

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Develop an integrated, networked sensor and weapons management system that enables manned-unmanned teams to conduct cooperative precision engagements of short dwell targets with distributed Mission Equipment Packages (MEPs) . ***FY 2012 Plans:*** Will develop a lightweight, integrated weapon system for manned and unmanned engagements of ground and airborne targets, to include advanced munitions for platform self-defense from threat unmanned aircraft.			
Accomplishments/Planned Programs Subtotals	-	1.754	7.619

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.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army			DATE: February 2011
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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
447: *ACFT DEMO ENGINES*	17.264	10.943	9.635	-	9.635	9.813	9.998	10.167	10.340	Continuing	Continuing

Note

This project matures and demonstrates power system technologies through design, fabrication, and evaluation of advanced engine components in order to improve the performance of turbine engines. This project supports Army transformation by demonstrating mature technologies for lighter turbine engines that provide increased power, increased fuel efficiency, improved sustainability and reduced maintenance. These advanced engine designs will significantly improve the overall aircraft performance characteristics and reduce the logistical footprint of rotary wing aircraft.

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.

A. Mission Description and Budget Item Justification

Work in this project is performed by the Aviation Applied Technology Directorate of the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), at Fort Eustis, VA.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Advanced Affordable Turbine Engine (AATE) Technology	17.264	10.943	-
Description: Demonstrate a 3000 horsepower gas turbine engine for improved operational capability for Blackhawk, Apache, and other future rotorcraft. AATE includes two competitive engine demonstrator efforts (1 - General Electric and 2 - Advanced Turbine Engine Company (ATEC) (Honeywell and Pratt & Whitney Joint Venture)). Work in this project is complementary with efforts in PE 0602211A, project 47A. ***FY 2010 Accomplishments:*** Integrated core engine components into gas generator configurations, completed initial evaluation, and demonstrated mechanical integrity of the integrated core engine designs; integrated power turbines and conducted first full engine evaluations, establishing initial engine performance capability; determined design modifications required to fully achieve performance goals; and designed and fabricated component modifications to meet performance goals. ***FY 2011 Plans:*** Complete optimized component evaluations and analyze results in support of engine demonstration; integrate optimized components into goal engine demonstrator hardware; complete full engine demonstration to include final engine performance and weight assessment; complete additional engine evaluations to gain insight into engine durability characteristics; and upon			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
completion of this effort, this program transitions to the PEO Aviation Improved Turbine Engine Program (ITEP) for Engineering Manufacturing Development (EMD).			
Title: Future Affordable Turbine Engine (FATE) ***Description:*** Demonstrate an advanced, innovative gas turbine engine that provides significant improvement in operational capability for current and future rotorcraft. FATE uses sequential design and fabrication iterations to mature a design to demonstrate the following performance and cost goals: 35% reduction in specific fuel consumption (SFC); 80% improvement in horsepower-to-weight ratio; and a 45% reduction in production and maintenance cost compared to year 2000 state-of-the-art engine technology. Work in this project is coordinated with efforts in PE 0602211A, project 47A. ***FY 2012 Plans:*** Will complete preliminary design, detailed design, and component fabrication efforts for initial build of advanced engine system demonstrator, building on knowledge gained under other DoD Versatile Affordable Advanced Turbine Engine (VAATE) efforts; and design activities will include 2-D and 3-D mechanical and aero-thermal efforts to evaluate the merits of individual components.	-	-	9.635
Accomplishments/Planned Programs Subtotals	17.264	10.943	9.635

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 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
BA7: *AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)*	46.357	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Aviation advanced technology development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: UAV-Resupply (BURRO) ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Supported the development of an unmanned aerial logistics resupply delivery system designed to overcome effects of threat, weather, elevation and chem-bio-radiation; Effort focused on unmanned aerial system concept to increase reliability, reduce susceptibility and reduce vulnerability.	3.184	-	-
Title: Universal Control Full Authority Digital Engine Control (FADEC) ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed a universal control architecture that incorporates model-based schemes to improve operational performance and reduce ownership cost for turboshaft engine control systems; Effort was re-scoped for future ITEP 3000hp engine application.	7.162	-	-
Title: Drive System Composite Structural Component Risk - Reduction Program ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Evaluated the results of the earlier material testing and implemented necessary changes; Other materials were also evaluated and tested; A final geometry and material system was down-selected for advancement.	2.387	-	-
Title: Autonomous Cargo Acquisition for Rotorcraft Unmanned Aerial Vehicles ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:***	1.273	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Investigated rotorcraft unmanned aerial systems (UAS) to provide logistics supply and precise load emplacement and extraction.			
Title: Inter Turbine Burner for Turbo Shaft Engines ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Validated the final design selection of an inter turbine burner flame-holder and combustion chamber geometry.	2.387	-	-
Title: Enhanced Rapid Tactical Integration and Fielding of Systems ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Supported development of systems that provide network-centric capabilities to the future force.	3.104	-	-
Title: Parts-on-Demand for CONUS Operations ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed a process for Parts-on-Demand for CONUS Operations.	4.477	-	-
Title: Next Generation Green, Economical and Automated Production of Composite Structures for Aerospace ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed tooling system processes to reduce labor costs, improve efficiency, and improve capabilities; Included semi-automated/automated processes: batching, mixing, forming, drying, and sealing for soluble tooling; Rapid prototyping methods were evaluated to make small production runs more cost effective for soluble and insoluble tooling.	0.995	-	-
Title: UH-60 Transmission/Gearbox Galvanic Corrosion Reduction ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Researched ways to reduce corrosion and thus increase mission readiness.	1.492	-	-
Title: Robust Composite Structural Core for Army Helicopters	1.592	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*	PROJECT BA7: *AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This Congressional Interest Item matured a more robust structural core product through material characterization, product development and technology transition. ***FY 2010 Accomplishments:*** In FY10, this Congressional Interest Item matured a more robust structural core product through material characterization, product development and technology transition.			
Title: Crewmember Alert Display Development Program ***Description:*** This Congressional Interest Item developed and combined already installed crewmember displays to alert the door gunners with immediate and accurate detections of hostile fire from enemy weapon systems. ***FY 2010 Accomplishments:*** In FY10, this Congressional Interest Item developed and combined already installed crewmember displays to alert the door gunners with immediate and accurate detections of hostile fire from enemy weapon systems.	1.592	-	-
Title: Wireless HUMS for Condition Based Maintenance of Army Helicopters ***Description:*** This Congressional Interest Item evaluated ways to improve operational safety of Army helicopters in both training and combat operations, while concurrently supporting cost reduction through condition based maintenance. ***FY 2010 Accomplishments:*** In FY10, this Congressional Interest Item evaluated ways to improve operational safety of Army helicopters in both training and combat operations, while concurrently supporting cost reduction through condition based maintenance.	1.592	-	-
Title: Heavy Fuel Engine Family for Unmanned Systems ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed and tested a fuel efficient heavy fuel engine to meet the DoD requirement that UAS engines operate on JP-8 fuel.	3.183	-	-
Title: Transitioning Stretch Broken Carbon Fiber to Production Programs ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Researched methods to develop and qualify carbon fiber composite material forms for use on military aircraft.	3.183	-	-
Title: Advanced Affordable Turbine Engine Program	3.979	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603003A: *AVIATION ADVANCED TECHNOLOGY*	PROJECT BA7: *AVIATION ADVANCED TECHNOLOGY INITIATIVES (CA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed and tested components of the next generation engine for attack and utility helicopters in support of the Army Advanced Affordable Turbine Engine (AATE) program.			
Title: New Hi Temp Dom PES Foam Fab/Cert DoD Aerospace Applications ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Qualified a low density polyethersulphone (PES) foam for high performance core materials as an alternative source for defense and aerospace structural core applications.	2.387	-	-
Title: Technologies for Military Equipment Replenishment ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed solutions to facilitate the return of equipment to service; Re-engineered essential parts to reduce costs and give equipment a longer useful life.	1.592	-	-
Title: Foil Bearing Supported UAV Engine ***Description:*** This is a Congressional Interest Item. ***FY 2010 Accomplishments:*** Developed proof-of-concept air cushion foil bearings that provide extended part life relative to conventional engine bearings.	0.796	-	-
Accomplishments/Planned Programs Subtotals	46.357	-	-

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.