Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army										DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*							
COST ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**Cost To Complete**	**Total Cost**
Total Program Element	125.677	145.914	104.359	-	104.359	103.140	108.757	104.234	109.142	Continuing	Continuing
221: *COMBAT VEH SURVIVABLTY*	29.733	44.205	53.322	-	53.322	51.013	50.617	50.898	51.576	Continuing	Continuing
441: *COMBAT VEHICLE MOBILTY*	39.207	42.441	36.028	-	36.028	36.192	37.003	37.477	39.565	Continuing	Continuing
497: *COMBAT VEHICLE ELECTRO*	7.295	8.645	6.620	-	6.620	7.353	9.850	6.911	7.564	Continuing	Continuing
515: *ROBOTIC GROUND SYSTEMS*	10.263	10.686	8.389	-	8.389	8.582	11.287	8.948	10.437	Continuing	Continuing
53D: *NAC Demonstration Initiatives (CA)*	35.028	39.937	-	-	-	-	-	-	-	Continuing	Continuing
C66: *DC66*	4.151	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This program element (PE) matures, integrates and demonstrates combat and tactical vehicle automotive technologies that enable a lighter, more mobile and more survivable force. Project 221 matures and demonstrates protection and survivability technologies such as active protection systems (APS), advanced vehicle armors, blast mitigation and safety devices to address both traditional and asymmetric threats to ground vehicles. Project 441 matures and demonstrates advanced ground vehicle power and mobility technologies such as powertrains, power generation and storage, force projection and running gear subsystems for military ground vehicles to enable a more efficient, mobile and deployable force. Project 497 matures, integrates, and demonstrates vehicle electronics hardware (computers, sensors, communications systems, displays, and vehicle command/control/driving mechanisms) and software that result in increased crew efficiencies, vehicle performance, reduced size, weight, and power (SWaP) burdens and vehicle maintenance costs. Project 515 matures and demonstrates unmanned ground vehicle (UGV) technologies with a focus on sensors, perception hardware and software, and robotic control algorithms that enable UGV systems to maneuver on- and off-road at speeds which meet mission requirements with minimal human intervention. Project C66 supports classified activities. Properly accessed individuals can obtain further information from the ASA(ALT) Special Programs Office on C66.

Work in this PE is coordinated with, PEs 0602105A (Materials), 0602120A (Sensors and Electronic Survivability, Robotics Technology), 0602601A (Combat Vehicle and Automotive Technology), 0602618A (Ballistics Technology), 0602624A (Weapons and Munitions Technology), 0602705A (Battery/Ind Power Technology), 0603004A (Weapons and Munitions Advanced Technology), and 0708045A (Manufacturing Technology).

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The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this PE is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, Michigan.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	89.499	106.145	107.544	-	107.544
Current President's Budget	125.677	145.914	104.359	-	104.359
Total Adjustments	36.178	39.769	-3.185	-	-3.185
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	39.306	40.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.128	-			
• Adjustments to Budget Years	-	-	-3.185	-	-3.185
• Other Adjustments 1	-	-0.231	-	-	-

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COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
221: *COMBAT VEH SURVIVABLTY*	29.733	44.205	53.322	-	53.322	51.013	50.617	50.898	51.576	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures, integrates and demonstrates protection and survivability technologies such as active protection systems (APS), advanced vehicle armors, blast mitigation and occupant safety devices to address both conventional and asymmetric threats to ground vehicles. This project integrates complimentary survivability technologies to enable advanced protection suites, providing greater survivability and protection against emerging threats.

Work in this project supports the Army S&T Ground Portfolio.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, Michigan.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Active Protection Systems (APS) against Kinetic Energy (KE) and Long-Range Threats:	1.509	-	0.400
Description: This effort conducts essential trade studies, technical evaluations, and demonstrations of APS components/ subsystems designed for protection against KE penetrators and long-range threats. Coordinated work is also being conducted under Program Elements (PE) 0602624A, 0603004A, and 0603313A. ***FY 2011 Accomplishments:*** Supported KE APS demonstration including homing, guidance and accurate fuzing with interceptor/system testing, demonstration and analysis; finalized all system interfaces. ***FY 2013 Plans:*** Will support closeout of KE APS program including collection and archiving of documents and artifacts enabling knowledge preservation and transition feasibility.			
Title: Tactical Wheeled Vehicle (TWV) Survivability:	11.187	13.372	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Description: This effort matures and demonstrates viable integrated survivability suites that can be tailored to meet current and future threats for light, medium, and heavy tactical wheeled vehicles. Coordinated work is also being performed under Program Elements (PE) 0602601A, 0602618A, and 0602105A. ***FY 2011 Accomplishments:*** Utilized requirements analysis, technology assessments, concept integration studies based upon emerging technology, and lessons learned to apply a systems engineering evaluation approach to provide a holistic, platform-level process for the maturation of the integrated survivability suites; matured advanced armor to include: opaque, transparent, and underbody kits; integrated advanced tactical vehicle active protection; and established a concept for an optimized convoy mission focused survivability suite based upon a down selection process. ***FY 2012 Plans:*** Apply the lessons learned from the systems engineering evaluation and survivability suite; begin work on an optimized suite of survivability systems that focus on convoy protection; define, fabricate, integrate and evaluate an advanced active protection system for tactical vehicles.			
Title: Vision Protection: ***Description:*** This effort matures and integrates devices to protect occupant's eyes, vehicle cameras and electro-optic fire control systems against anti-sensor laser devices as well as reduce the sensor's optical signature. Anti-sensor laser devices can deny vision either temporarily or permanently, by flooding the sensor with too much light (jamming) or by damaging the sensor. These jamming or damaging effects can slow our battle tempo, disrupt fire control solutions, or prevent vehicles from completing their mission entirely. This effort focuses on optical systems that protect sensors to maintaining fire control capability, situational awareness and protect Warfighter vision from pulsed, continuous wave and future laser threats. Coordinated work is also being performed in Program Elements (PE) 0602120A, 0602705A, 0602712A, and 0602786A. ***FY 2011 Accomplishments:*** Evaluated and refined an architecture that enables a large focal plane optical switch to be implemented; conducted lab testing of laser protected fire control and driver's cameras; and designed and implemented a liquid optical limiter handling system. ***FY 2012 Plans:*** Fabricate vision protection technologies at TRL 6; explore application of protection techniques to other Heavy Brigade platforms and perform laboratory assessments to address evolving threats. ***FY 2013 Plans:***	4.716	5.163	4.775

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Will demonstrate a laser-protected optical design for the Abrams Gunner's Primary Sight providing protection for the gunner's eye; design and integrate a laser-protected day camera solution for the gunner.			
Title: Armor Technologies: ***Description:*** This effort designs, fabricates, integrates and evaluates advanced ground vehicle armor systems such as emerging base armor, applique armor, multifunctional armor systems (embedded antennas and health monitoring devices); matures scalable / modular / common armor system integration design standards; creates armor system test & evaluation standards; refines armor modeling and simulation system engineering process; matures armor system manufacturing processes. This effort is done in coordination with efforts in 0602601A, project C05. ***FY 2012 Plans:*** Fabricate and evaluate combat and tactical wheeled vehicle armor recipes and improved mine kit designs against objective threats while reducing armor weights; integrate armors on demonstrator vehicles and begin performance evaluations; validate platform-level mine-blast response modeling and simulation tools to include crew/occupant response to support system level analysis. ***FY 2013 Plans:*** Will evaluate various methods for reducing delamination and rock strike damage of transparent armor and demonstrates improved performance while maintaining armor visual transparency.	-	8.323	0.970
Title: Lighter Weight Armor Solutions ***Description:*** This effort explores new ***FY 2011 Accomplishments:*** Conducted automotive performance, durability, survivability and human factors evaluations on three lightweight tactical research prototype vehicles. (FY11 reprogramming)	5.500	-	-
Title: High Performance Lightweight Track (Blast Mitigation): ***Description:*** This effort improves lightweight track durability and survivability. This effort is done in coordination with PE 0603005A projects 441 and 497. ***FY 2011 Accomplishments:*** Integrated track solutions, fabricated prototypes and demonstrated blast protection. ***FY 2012 Plans:***	2.431	2.975	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Complete validation of track performance in an operational environment and transition design to PM Bradley Block II modernization program.			
Title: Vehicle Integration Laboratory: ***Description:*** This effort provides for continuous improvements to ground vehicles to include technology trades, integration, concepts and configuration management designs and development of a ground system vertical test rig to enable in-house Occupant Centric Survivability evaluations. The system vertical test rig will simulate the vertical forces that occur from an underbelly explosive event (initial vertical and drop-down forces). This test device evaluates the occupant and restraint system (seat, seat belt, floor kits) response to the vertical forces. ***FY 2011 Accomplishments:*** Integrated prototype tactical wheeled vehicle active protection systems onto a surrogate platform and conducted performance testing; evaluated integration techniques and concepts for advanced armor kits that defeat objective and emerging threats for ground and tactical vehicle fleets; and conducted system-level testing of combined fire protection technologies on representative ground vehicle platforms. ***FY 2012 Plans:*** Initial occupant protection suites being analyzed for tradeoff studies, balancing protection against performance and payload; conduct an in -progress review to present analysis results and make recommendations for a program selection of demonstrator platform and occupant protection technologies; design, build, and integrate the selected technologies onto the demonstrator vehicle and optimization of the ideal occupant cab.	4.390	9.047	-
Title: Underbody Blast Methodolgy: ***Description:*** Advancement of modeling and simulation to improve the survivability of ground vehicle occupants to underbody blast threats. Beginning in FY13, this effort is captured in the Blast Mitigation effort. ***FY 2012 Plans:*** Evaluate vehicle and underbody Soldier blast protection and modeling to address information knowledge gaps that include sensitivity of the elements of the blast kill chain, human effects and injury modeling, blast insult to injury mechanisms and optimization of form, fit and performance.	-	5.325	-
Title: Occupant Centric Survivability (OCS): ***Description:*** This effort develops and validates design philosophies, guidelines, military standards, handbooks, etc. that embody a focused, systems engineering approach to occupant-centric protection in vehicle design. This is accomplished using tools such as modeling and simulation (M&S), full vehicle and subsystem demonstrators, evaluations and component optimizations. This	-	-	14.271

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
effort will address and validate the products from requirements generation through design and build to incorporate occupant centric philosophies. This effort is done in coordination with efforts in 0602601A, project C05. ***FY 2013 Plans:*** Will establish baseline of state-of-the-art commercial occupant protection components such as seats, restraints, and shock absorbing materials; conduct M&S of an OCS design demonstrator as well as legacy vehicles to optimize occupant centric philosophies, guidelines and processes; build physical prototypes, models and proofs of concept to validate M&S and reduce risk; mature and demonstrate technologies such as energy absorbing materials and storage systems for securing equipment/gear for potential transition to tactical and combat vehicle producers.			
Title: Blast Mitigation: ***Description:*** This effort designs, fabricates and matures advanced survivability and protection components, tools and subsystems for enhanced protection against vehicle mines, improvised explosive devices (IEDs) and other underbody threats, and crash events. This effort also integrates and improves occupant protection technologies such as seats and restraints. This effort creates the laboratory capability needed to enable expeditious research and development of blast-mitigating technologies in such areas as active and passive exterior/hull/cab/kits, interior energy absorbing capabilities for seats, floors, restraints, sensors for active technologies and performance evaluation, M&S, experimentation and instrumentation.This effort is done in coordination with efforts in 0602601A, project C05. ***FY 2013 Plans:*** Will fabricate, mature and integrate energy absorbing technologies on the interior and exterior of vehicle systems to mitigate the effects of blast and crash. Technologies include padding for walls and floors, energy absorbing seats, integrated restraints and airbags, and sensors for active components. Exterior technologies include unique hull shaping and energy absorbing materials. Will leverage use of M&S, produce data to validate models and improve modeling capabilities; mature and integrate sensors and instrumentation capabilities to support active technologies as well as collect higher fidelity blast/crash/impact data in live fire, test, and evaluation (LFT&E) and in theater attacks; fabricate and integrate lab evaluation capabilities such as a linear impact sled system to refine experimentation methodologies and standards for occupant protection technologies; design lab devices for simulating fuller effects of blast/crash/impact events; create methodologies and protection standards for crash, rollover and side improvised explosive device (IED) events; conduct component and sub-system level evaluation of occupant protection technologies.	-	-	14.827
Title: Vehicle Fire Protection: ***Description:*** This effort designs, matures, integrates and demonstrates technologies to minimize vehicle and crew vulnerabilities to fires in current and future military ground vehicles. Supporting technologies include M&S, sensor systems, software, chemical	-	-	4.612

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
agents, fire-resistant materials and hardware components. This effort is done in coordination with efforts in 0602601A, project C05. ***FY 2013 Plans:*** Will demonstrate better fire protection for vehicles and crews by improving designs and form/fit/function of existing and new chemical extinguishing agents, sensor systems, and fire-resistant materials in an in-house laboratory; design, fabricate and evaluate common Automatic Fire Extinguishing System (AFES) components for combat and tactical vehicles; enhance modeling and simulation tools optimize system detection and response to vehicle fire events.			
Title: Hit Avoidance: ***Description:*** This effort designs and matures active protection components and systems to a maturity level acceptable for transition to acquisition programs and/or tactical/combat vehicle producers and builds laboratory evaluation capabilities to conduct maturation activities. This effort also seeks to understand and define the process and requirements of fielding active protection systems (APS) including developing safety release criteria, identifying vehicle integration constraints and engaging the user to determine how hit avoidance will change tactics and procedures. In executing the development process, fieldable hard kill and softkill active protection technologies are matured for future transition to tactical and combat vehicle platforms. This effort is done in coordination with efforts in 0602601A, project C05. ***FY 2013 Plans:*** Will conduct evaluation and verification of hardkill and softkill active protection system components and establish component level compliance to the requirements; determine technology gaps in existing APS systems; integrate design of the hardkill APS onto a vehicle platform to determine safety, integration, test, and fielding requirements for APS on military platforms; develop open software architecture for future component and system development.	-	-	13.467
Accomplishments/Planned Programs Subtotals	29.733	44.205	53.322

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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
441: *COMBAT VEHICLE MOBILTY*	39.207	42.441	36.028	-	36.028	36.192	37.003	37.477	39.565	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates advanced mobility and electric technologies for advanced propulsion, power, and electrical components and subsystems to enable lightweight, agile, deployable, fuel efficient, and survivable ground vehicles. This project will also mature and demonstrate advanced mechanical and electrical power generation systems to ensure that future capabilities such as next generation communications and networking, improvised explosive device (IED) jamming systems and next generation sensor devices that can be integrated onto combat and tactical vehicles.

Work in this project supports the Army S&T Ground Portfolio.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this project is performed by Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, in conjunction with Army Research Laboratory (ARL), Adelphi, MD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Hybrid Electric Vehicle (HEV) Propulsion and Power & Energy (P&E) System Integration Lab (SIL):	1.407	-	-
Description: This effort matures and demonstrates power and energy component technologies and assesses HEV performance benefits and burdens. Information transitions to PEO Combat Support and Combat Service Support.			
FY 2011 Accomplishments: Matured and demonstrated HEV components and system integration capabilities in simulated field conditions to solve user identified-technical issues and evaluated high temperature/high power electronic devices.			
Title: Ground Systems Power Evaluation:	2.320	-	-
Description: This effort matures and demonstrates power and energy components for propulsion, control systems, communications, life support, electric weapons, and protection systems. Work under this effort is continued in Hybrid Electric Component Development bullet for FY12 and beyond.			
FY 2011 Accomplishments:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Continued optimization of higher temperature power electronics for use in wheeled vehicle platforms; and continued the optimization of hybrid electric (HE) systems for wheeled vehicle system upgrades, as well as advanced motors and generators that offer onboard and export power generation.			
Title: Hybrid Electric Component Development: ***Description:*** This effort focuses on meeting the Army's demand for more onboard vehicle electric power to enable technologies such as advanced survivability systems, situational awareness systems and the Army network. This effort matures and integrates and demonstrates electrical power generation machines and their associated power conversion boxes such as inverters and converters, advanced control algorithms, and high efficiency power conversion (mechanical to electrical) components. Additionally, it matures and integrates advanced electric machines such as integrated starter generators and their controls for mild hybrid electric propulsion and high power electric generation. Coordinated work is also being conducted under Program Elements (PE) 0602601A, project H91 and PE 0603005A, project 497. ***FY 2012 Plans:*** Demonstrate SiC power conversion components, such as SiC DC-DC converter, DC/AC motor inverter and AC/DC generator inverter to evaluate their performance at higher inlet coolant temperatures, to assess their impact on the total system efficiency and cooling burden, and the effect on total system reliability; mature thermal systems to increase HVAC efficiency; and demonstrate electronics cooling technologies for increased performance. ***FY 2013 Plans:*** This effort will mature and demonstrate on board vehicle power (OBVP) components, high temperature inverters, and controls development for Integrated Starter Generator (ISG) and mild hybrid capabilities. These demonstration efforts will be used to validate combat vehicle OBVP component models and the effectiveness of high power / high temperature inverters to reduce high power electronics cooling burden. These activities will validate high voltage architecture to support growing combat vehicle electric power requirements.	-	5.994	5.439
Title: Advanced Running Gear: ***Description:*** This effort matures and demonstrates running gear components and advanced suspension technologies to increase vehicle mobility and durability in response to increased ground vehicle platform weights. Components and subsystems include new elastomer compounds, lightweight, survivable track systems and road wheels, advanced compensating track tensioners, advanced damping suspension technologies, energy regenerative suspension systems, Electronic Stability Control (ESC) systems, and preview sensing technologies linked to advanced suspension designs. Coordinated work is also being conducted under Program Elements (PE) 0602601A, project H91 and PE 0603005A, projects 221 and 497. ***FY 2011 Accomplishments:***	4.183	6.730	5.860

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Refined, fabricated, and conducted vehicle performance and durability testing of the advanced lightweight track systems, which demonstrated greater than 1,000 lbs weight savings over the legacy track system; tested over 3,000 durability miles on advanced lightweight track design for T-161, durability improvements were demonstrated with new fire-resistant elastomer compounds; successfully demonstrated over 5,000 miles on semi-active suspension technologies for the Stryker, and Family of Medium Tactical Vehicle (FMTV) platforms, which reduced vehicle shock and vibration by up to 60%, and reduced vehicle roll rates by up to 30%. ***FY 2012 Plans:*** Evaluate reformulated track elastomer improvements through on-vehicle evaluation to determine effectiveness in increasing track system durability and survivability. Construct and complete demonstration of material improvements to the T-161 track system with the goal to reduce the track system weight by over 1,000 lbs. Mature advanced suspension systems such as energy regenerative suspensions, for integration on-vehicle platforms. Establish components necessary to increase vehicle stability in conjunction with on-board vehicle braking systems. ***FY 2013 Plans:*** This effort will integrate and demonstrate performance of an energy regenerative suspension system for a large combat wheeled vehicle platform in a controlled environment; install, tune, and evaluate (ESC) systems for tactical vehicles to mitigate vehicle rollover events; mature lightweight materials for track systems to reduce platform weight; demonstrate high durability, fire resistant elastomers for combat tracked vehicle systems; develop an extensive evaluation suite to characterize running gear rolling resistance in order to inform future fuel efficiency improvement efforts of legacy track systems.			
Title: Power Management: ***Description:*** This effort demonstrates power management components to meet objective tactical and combat vehicle power requirements. ***FY 2012 Plans:*** Validate and integrate advanced intelligent (learning and adaptive) control architecture to control multiple vehicular power sources and loads and validate the modeling and simulation toolset.	-	2.300	-
Title: Energy Storage Systems Development: ***Description:*** This effort matures and demonstrates advanced ground vehicle energy storage devices such as advanced chemistry batteries and ultra capacitors, as well as, leverages commercial industry battery development efforts to reduce battery volume and weight while improving their energy and power densities. It also develops a common specification for battery management systems to improve the battery state of charge indicator accuracy and battery state of health information, to reduce the frequency of battery replacement, optimize starting, lighting, and ignition functions; The goal of this work it to enable silent	-	3.054	3.569

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
watch capability and improve survivability through energy storage components for electromagnetic armor. Coordinated work is also being conducted under Program Elements (PE) 0602601A , project H91. ***FY 2012 Plans:*** Improve battery energy density resulting in reduced battery size and weight thereby minimizing component footprint on vehicle platform for pulse power electromagnetic armor applications. ***FY 2013 Plans:*** Will demonstrate and integrate a battery monitoring and battery management system for accurate state of charge and state of health information. This effort will also mature and demonstrate a second generation power brick battery to provide energy storage for advanced armors by optimizing volume, power density and extreme temperature performance.			
Title: Pulse Power: ***Description:*** This effort matures and demonstrates high energy, compact pulse power components, subsystems and systems that enable significantly improved survivability and lethality applications comprising of elements such as DC to DC chargers, high energy batteries, pulse chargers, high density capacitors, solid state switches, control systems and electro-magnetic armor panels. Coordinated work is also being conducted under Program Elements 0602601A, 0603005A and 0602705A. ***FY 2011 Accomplishments:*** Demonstrated Advanced Pulse forming card for the programmable pulse power supply at objective metrics for ground combat systems; and demonstrated SiC switch at objective metrics defined by ground combat systems. ***FY 2012 Plans:*** Start integration of power brick based electro-magnetic armor components for ground combat systems schedule, and start build of generation 2 Programmable Pulse Power supply for the High Energy Laser (HEL) Technology Demonstrator at Space and Missile Defense Center (SMDC). ***FY 2013 Plans:*** Demonstrate first generation power brick based electro-magnetic armor system, begin development of a second generation power brick based electro-magnetic armor system (reduced form factor) and continue development of the second generation high energy laser programmable pulse power supply.	10.014	3.679	2.235
Title: JP-8 Fuel Cell Reformer System: ***Description:*** This effort identifies and demonstrates fuel cell technology, that when integrated with a JP-8 reformer, creates an Auxiliary Power Unit (APU). This effort is done in coordination with efforts in PE 0602601A.	3.785	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
FY 2011 Accomplishments: Began integration demonstration of essential reformer components; characterized performance of components when integrated in complete reformer system and showed that component performance matched predicted performance; and began physical assembly of a JP-8 reformation system.			
Title: Non-Primary Power Systems: ***Description:*** This effort will exploit, mature, and demonstrate Auxiliary Power Unit (APU) technologies such as a small modular/ scalable engine based APUs, fuel cell reformer system to convert JP8 to hydrogen, sulfur tolerant JP8 fuel cell APU, and novel engine based APUs for military ground vehicles and unmanned ground systems. This effort will also create interface control documents for simplified integration of current and future APUs, improve reliability to reduce logistic burden, as well as reduce acoustic signature for silent operation. Additionally, this effort will exploit JP8 fuel cell and engine APUs to optimize prime power in unmanned ground systems. Coordinated work is also being conducted under Program Elements (PE) 0602601A , Project H91. ***FY 2012 Plans:*** Begin integrating JP-8 reformer/fuel cell system into a relevant Abrams space claim; finalize JP-8 reformer/fuel cell system design; begin testing engine based auxiliary power units in a relevant environment; integrate small engine technologies for use on small unmanned ground vehicles. ***FY 2013 Plans:*** Will demonstrate a JP8 fuel cell APU system in a laboratory environment; improve small engine based APU performance for operational environments (shock, vibration and cooling); reduce acoustic signature through laboratory demonstrations; perform vehicle integration and demonstration of small engine APUs.	-	3.531	4.374
Title: Fuel Efficiency ground vehicle Demonstrator (FED): ***Description:*** This effort focuses on demonstrating the viability of achieving significant decreases in fuel consumption without sacrificing tactical vehicle performance or capability. ***FY 2011 Accomplishments:*** Completed fabrication of demonstrator and began validation of the findings of the FED system modeling and simulation.	4.673	-	-
Title: Propulsion and Thermal Systems: ***Description:*** This effort researches, designs and evaluates high power density engines and transmission systems needed to offset increasing combat vehicle weights (armor), increased electrical power generation needs (onboard communications, surveillance and exportable power), improved fuel economy (fuel cost & range), enhanced mobility (survivability), and reduced cooling system burden (size, heat rejection). Currently, less than 1/3 of the total available energy from the fuel is converted into	7.397	10.122	10.256

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 441: *COMBAT VEHICLE MOBILTY*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
usable mechanical work (propulsion). This effort also researches and matures thermal management technologies and systems including heat energy recovery, propulsion and cabin thermal management sub-systems to utilize waste heat energy and meet objective power and mobility requirements on all ground vehicles. Lastly, this effort maximizes efficiencies within propulsion and thermal systems to reduce burden on the vehicle while providing the same or greater performance capability. ***FY 2011 Accomplishments:*** Completed testing of the magneto-rheological (MR) suspension on a Stryker vehicle; performed advanced development and integration of sensors and control algorithms for closed- loop control of diesel engines; performed vehicle noise analysis; improved control strategy for powertrain; evaluated and selected power generation components. ***FY 2012 Plans:*** Advance powertrain technologies by increasing thermal efficiency and reducing heat rejection of diesel engines; improve the development and integration of sensors and control algorithms for closed-loop control of diesel engines; validate advanced high efficiency transmissions; evaluate and mature control strategies for powertrain systems; adapt power generation components through powertrain analysis; improve and mature components to reduce engine cooling burden. ***FY 2013 Plans:*** Will finalize the design, fabricate and integrate components for high output, power-dense combat and tactical vehicle powertrain systems; conduct evaluation of advanced powertrain systems utilizing highly efficient transmissions and advanced algorithms and control strategies; evaluate the integration of energy recovery components onto powertrain subsystems to determine system performance characteristics and engine issues associated with integration; evaluate advanced Heating, Ventilation and Cooling system against existing system and vehicle requirements.			
Title: Power and Thermal Management: ***Description:*** This effort demonstrates power and thermal management components and control strategies to meet objective tactical and combat vehicle power requirements. This effort is done in coordination with efforts in PE 0602601A. ***FY 2011 Accomplishments:*** Investigated optimal strategy for combining power and thermal management components into a system architecture.	1.249	-	-
Title: Non-primary Power Sources (NPS): ***Description:*** This effort demonstrates component technologies for energy storage and generation. This effort is done in coordination with efforts in PE 0602601A. ***FY 2011 Accomplishments:***	0.889	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 441: *COMBAT VEHICLE MOBILTY*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Completed maturation of electrochemical cells, modules, and batteries; demonstrated and refined hybrid battery systems.			
Title: Force Projection: ***Description:*** This effort focuses on reducing the logistics footprint, improving fuel efficiency, and ensuring mobility by maturing and demonstrating technologies in areas such as, water purification, wastewater treatment and reuse, water generation, water quality monitoring, water storage and distribution, petroleum quality monitoring, petroleum storage and distribution, fuel filtration, lightweight bridging materials, new bridging design concepts, bridge health monitoring, military load classification, mine roller concepts, mine roller materials, mine roller integration, hybrid hydraulic technology, efficient hydraulic technology, semi autonomous safety and effectiveness advances, alternative fuels, fuel additives, lubricants, power train fluids, coolants, and petroleum, oil, and lubricant products to support new military technology requirements (i.e. anti-lock brakes, semi-active suspension, etc.). This effort is done in coordination with efforts in PE 0602601A, project H91. ***FY 2011 Accomplishments:*** Conducted field evaluation and military utility assessment of water from air demonstrators; integrated basic in-line water quality monitoring demonstration technology into purification systems and designed and fabricated advanced hand held monitoring technology for water treatment process monitoring; developed water reuse technology; completed laboratory and engine testing and initiated field evaluation of the single powertrain lubricant. ***FY 2012 Plans:*** Complete field evaluation, military utility assessment and refurbishment of water from air demonstrators, fabricate hand held and in-line monitoring technology for water treatment process monitoring, develop wastewater treatment and recycle technology, develop nanofluid technology that suspends nanoparticles in coolants and lubricants to improve thermal, friction, and wear properties and evaluate alternative fuels for use in ground systems. ***FY 2013 Plans:*** Will mature wastewater treatment and recycling technology for demonstration in a field environment; demonstrate successful in-line water quality and processes monitoring capability from previous development; characterize alternative fuels and fuel additives that improve performance and diversify energy sources; assess the impact of using emerging alternative fuels in tactical equipment to identify and address potential changes needed in fuel specifications; create and evaluate Petrolium, Oils and Lubricants to meet new military technology requirements (i.e. anti-lock brakes and semi-active suspension) while exceeding future and legacy equipment performance and technical requirements; evaluate nanocoolants, gear oils and hydraulic fluids which promote improved energy efficiencies and are longer lasting.	3.290	7.031	4.295
Accomplishments/Planned Programs Subtotals	39.207	42.441	36.028

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 441: *COMBAT VEHICLE MOBILTY*

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 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 497: *COMBAT VEHICLE ELECTRO*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
497: *COMBAT VEHICLE ELECTRO*	7.295	8.645	6.620	-	6.620	7.353	9.850	6.911	7.564	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures, integrates, and demonstrates vehicle electronics hardware such as computers, sensors, communications systems, displays, and vehicle command/control/driving mechanisms as well as vehicle software to enhance crew performance, increase vehicle fuel efficiency, reduced Size, Weight, and Power (SWAP) burdens and reduce vehicle maintenance costs. This project also advances open system architectures (power and data) for military ground vehicles to enable common interfaces, standards and hardware implementations. Additionally this project matures integrated condition based maintenance technologies that reduce the operation and sustainment costs of vehicle electronics and electrical power devices. Technical challenges include: increased levels of automation for both manned and unmanned systems, secure data networks, interoperability of intra-vehicle systems, and advanced user interfaces. Overcoming these technical challenges enables improved and increased span of collaborative vehicle operations, efficient workload management, commander's decision aids, embedded simulation for battlefield visualization and fully integrated virtual test/evaluation.

Work in this project supports the Army S&T Ground Portfolio.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Improved Mobility and Operations Performance through Autonomous Technologies:	6.350	2.930	-
Description: This effort matures indirect vision technologies to provide the Soldier with full hemispherical situational awareness in closed hatched vehicle operations. ***FY 2011 Accomplishments:*** Integrated driver assist technologies and mounted Soldier monitoring, along with the local situational awareness system for dismounting Soldiers; integrated motion based cueing, video capture with closed hatch 360/90 Electro-Optic Indirect Vision (EOIV) system; and conducted Warfighter assessment and engineering evaluations to collect enhanced quantitative performance level			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 497: *COMBAT VEHICLE ELECTRO*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
understanding of future EOIV operations; conducted testing of data distribution system software for inter-process communication between software applications. ***FY 2012 Plans:*** Integrate advanced crew stations with state of the art EOIV (high resolution threat interrogation and driving sensors, digital video recording and displays), assisted mobility aids, mounted Soldier assessment and dismounting Soldier local situational awareness technologies; conduct the final experiment to quantify system performance.			
Title: Enhanced Vehicle Technologies to Improve Lightweight Track Reliability: ***Description:*** This effort will improve/optimize lightweight segmented band track technology through utilization of high performance elastomers and design with the goal of improving track durability. This effort is done in coordination with related efforts in PE 0603005A projects 221 and 441. ***FY 2011 Accomplishments:*** In FY11, identified and demonstrated health monitoring systems for track applications. Developed diagnostic and prognostic algorithms to report health predictions and future failures on track system components. ***FY 2012 Plans:*** Integrate and evaluate the optimized track health monitoring system design performance including wear gauges, damage algorithms, and diagnostic/prognostics algorithms.	0.945	1.928	-
Title: Vehicle Electronics Integration and Power Architecture: ***Description:*** This effort matures and demonstrates military ground vehicle electronics, electrical power architectures and technologies such as video/data networking and computing equipment, Silicon Carbide (SiC) high voltage power electronics, low voltage power distribution, and crew station controls/displays. This effort is coordinated with efforts in 0602601A, project H91 and PE 0603005, project 441. ***FY 2012 Plans:*** Support technical standards development or modification to existing standards for military ground vehicle electrical systems. Perform trade analyses of existing and future combat and tactical vehicle electrical systems and develop architectural design concepts for intra-vehicle data and video networks, general purpose computing resources, input/output devices, and associated software architectures. Also, support technical standards development or modification to existing standards for low, medium, and high voltage power systems for military ground vehicles. ***FY 2013 Plans:***	-	3.787	4.220

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 497: *COMBAT VEHICLE ELECTRO*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Will demonstrate the use of a high voltage and 28V power distribution system within the Vehicle Electronic Architecture (VEA) Research System Integration Laboratory (SIL); establish the hardware architecture of the VEA SIL; evaluate displays and control technologies along with networking and computing equipment with a goal of assessing the performance and size, weight, and power - cooling (SWaP-C) impacts of these technologies			
Title: Vehicle Electronics Architecture and Standards: ***Description:*** This effort matures and integrates new electronic and electrical power architectures, technologies and standards for existing and future combat and tactical vehicle ground vehicles. Technical standards such as Vehicular Integration for C4ISR/EW Interoperability (VICTORY), Institute of Electrical and Electronics Engineers (IEEE) 1588, Display Port will be identified, evaluated or modified for military ground vehicle electrical systems. This effort also analyzes and designs electronic, and electrical power architectures to support the efficient integration of systems such as intra-vehicle data and video networks, general purpose computing resources, input/output devices, low, medium, and high voltage power systems, and associated software architectures. This effort is coordinated with 0602601A, project H91 and PE 0603005, project 441. ***FY 2013 Plans:*** Will support technical standards writing and modification of existing standards for low, medium, and high voltage power systems for military ground vehicles; initiate new open vehicle electronics architectures to address future requirements for military ground vehicles in compliance with VICTORY; perform trade analyses of existing and future combat and tactical vehicle electrical systems to create architectural design concepts; begin VICTORY SIL development and interoperability evaluation; finalize Vehicle Electronic Architecture (VEA) Research SIL designs; begin SIL subsystem integration, fabrication, verification and validation activities.	-	-	2.400
Accomplishments/Planned Programs Subtotals	7.295	8.645	6.620

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 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 515: *ROBOTIC GROUND SYSTEMS*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
515: *ROBOTIC GROUND SYSTEMS*	10.263	10.686	8.389	-	8.389	8.582	11.287	8.948	10.437	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

This project matures and demonstrates Unmanned Ground Vehicle (UGV) technologies including sensor technologies, perception hardware and software, and robotic control technologies that enable UGV systems to maneuver on- and off-road at militarily significant speeds with minimal human intervention, thereby enabling the Soldier to perform other mission tasks. Challenges addressed include: obstacle avoidance, overcoming perception limitations, intelligent situational behaviors, command and control by Soldier operators, frequency of human intervention, operations in adverse weather, and robots protecting themselves and their surroundings from intruders. Mature technologies are incorporated in UGV technology demonstrators so that performance can be evaluated for tactical maneuver and sustainment applications.

The approach builds upon, complements, and does not duplicate previous and ongoing investments conducted under the Joint Robotics Program Office, in program element (PE) 0602601A, project H91 (Ground Vehicle Technology) and by the Army Research Laboratory (ARL) PE 0602120A (Sensors and Electronic Survivability).

Work in this project supports the Army S&T Ground Portfolio.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this project is performed by Tank Automotive Research, Development, and Engineering Center (TARDEC), Warren, MI, in collaboration with the Army Research Laboratory (ARL), Adelphi and Aberdeen Proving Ground, MD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Safe Operations of Unmanned systems for Reconnaissance:	10.263	10.686	-
Description: This effort demonstrates perception, control and tactical behavior technologies to safely conduct unmanned urban operations.			
FY 2011 Accomplishments: Integrated and evaluated behaviors that enable UGVs to navigate safely around people and other vehicles in a realistic military testing environment; integrated situational awareness and operational procedures to assure safe UGV employment across anticipated missions; demonstrated tactical behaviors focused on mission execution; integrated specialized classification			

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 515: *ROBOTIC GROUND SYSTEMS*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
algorithms for sensor and algorithm fusion; increased capabilities of M&S tools to evaluate perception/control algorithms and human-robot interaction; and evaluated sensors and tactical behaviors that enable the use of UGVs to assist in the security of maneuver elements (i.e., Convoy Operations). ***FY 2012 Plans:*** Perform integration of all developed technologies on relevant test bed platforms and conduct a final Warfighter evaluation designed to examine resultant capabilities for a group of heterogeneous unmanned systems to conduct urban operations; collect and provide performance data that will be validated through M&S and live experimentation to support transition into future systems; Ensure interoperability and begin integration of subsystems, assess system design through modeling and simulation; Mature relevant technologies for systems integration, gain safety approval for testing, and mature robotic control station.			
Title: Unmanned Ground Systems Technology: ***Description:*** This project leverages perception, control and tactical behavior technologies created for the Safe Unmanned Operations for Reconnaissance (SOURCE) effort and matures, integrates and demonstrates advanced robotic and autonomous technologies to the tactical and combat vehicle fleets. Unmanned ground systems technologies will be employed to overcome critical Army challenges to include automated resupply and sustainment, improved tactical intelligence, and reduced physical and cognitive burden. Challenges will be met by utilizing relevant technologies such as maneuver and tactical behavior algorithms, autonomy kits, sensor and weapons integration, advanced navigation and planning, vehicle self-protection, manipulation, local situational awareness, advanced perception, vehicle and pedestrian safety, and robotic command and control. This effort is coordinated with efforts in 0602601A, project H91 and PE 0603005, projects 441 and 497. ***FY 2013 Plans:*** Will integrate autonomous maneuver hardware, software, algorithms and control interfaces, as well as weapon and sensor payloads onto a robotic demonstrator vehicle to provide demonstrations of armed unmanned vehicle missions, validate emerging safety methodology and tactics, techniques and procedures for armed robotic operations; finalize integration of scalable autonomy kits and control interfaces into tactical wheeled vehicles to increase soldier safety, operational efficiency and effectiveness and culminate with technical demonstrations of this technology in a relevant environment; begin integration of scalable autonomy kits and control interfaces onto tracked and wheeled combat vehicles to increase soldier and system performance, operational tempo and mission effectiveness.	-	-	8.389
Accomplishments/Planned Programs Subtotals	10.263	10.686	8.389

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 515: *ROBOTIC GROUND SYSTEMS*

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 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT 53D: *NAC Demonstration Initiatives (CA)*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
53D: *NAC Demonstration Initiatives (CA)*	35.028	39.937	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

These are Congressional Interest Items

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Alternative Energy Research	35.028	39.937	-
Description: This is a Congressional Interest Item. ***FY 2011 Accomplishments:*** Alternative Energy Research ***FY 2012 Plans:*** Alternative Energy Research			
Accomplishments/Planned Programs Subtotals	35.028	39.937	-

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 2013 Army			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603005A: *Combat Vehicle and Automotive Advanced Technology*	PROJECT C66: *DC66*	

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
C66: *DC66*	4.151	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Classified Efforts	4.151	-	-
Description: Funding is provided for the following effort ***FY 2011 Accomplishments:*** Classified Efforts			
Accomplishments/Planned Programs Subtotals	4.151	-	-

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.