Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Army											DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604663A: *FCS Unmanned Ground Vehicles*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	104.571	124.962	249.948	0.000	249.948	98.737	25.368	0.000	0.000	0	853.534
FC4: *FCS UNMANNED GROUND VEHICLES*	104.571	124.962	249.948	0.000	249.948	98.737	25.368	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

There are three products covered by the Unmanned Ground Vehicle (UGV) Program Element: the family of Multifunction Utility/Logistics Equipment (MULE) platforms, the Small Unmanned Ground Vehicle (SUGV) platform, and the Autonomous Navigation System (ANS).Small Unmanned Ground Vehicle (SUGV), designated as the XM-1216, is a lightweight (32 lbs), man-portable, DC powered UGV capable of conducting Military Operations in Urban Terrain (MOUT) to include tunnels, sewers, and caves. The SUGV provides an unmanned capability for those missions that are manpower intensive or high-risk such as Urban Intelligence, Surveillance, and Reconnaissance (ISR) missions in a MOUT environment and Chemical/Toxic Materials reconnaissance missions without exposing soldiers directly to the hazard.SUGV IBCT Increment 1 (IBCT INC 1): The Army has included the current SUGV IBCT INC 1 configuration into Spin Out to the IBCT. The IBCT INC 1 SUGV does not meet all of the INC 1 Capability Production Document (CPD) threshold requirements. The Army believes that the current level of technology will still greatly enhance our Soldiers' capabilities on the battlefield. The SUGV IBCT INC 1 features an enhanced SUGV chassis with an integrated Commercial off the Shelf (COTS) sensor head and radio. The procurement and fabrication of the SUGV prototypes for testing were purchased as part of this development effort in FY08.SUGV IBCT Increment 2 (IBCT INC 2): The SUGV configuration for IBCT INC 2 is based on the INC1 CPD objective requirements. It will weigh 32 pounds and is capable of carrying up to 4 lbs of payload weight. The SUGV will have the following capabilities: a harden militarized EO/IR sensor to meet stringent day & night detection of enemy personnel & systems, a NSA compliant radio, provide grid location of the enemy, tether payload, manipulator arm, Chemical, Radiological, Nuclear (CRN) capabilities and the potential for integrating future technologies for Laser Target Designator (LTD), Sense Through the Wall (STTW) and Mine/Unexploded ordnance (UXO)/ Improvised Explosive Device (IED) detection ability. The SUGV will utilize the Common Controller for command & control and connectivity to the network to pass battlefield images to higher headquarters for situational awareness. The SUGV can operate up to 6 hours on a single charge (two BB2590 batteries).Multifunction Utility/Logistics Equipment (MULE) IBCT Increment 2: The MULE vehicle is a 3.5-ton UGV that will support dismounted and mounted operations. The MULE consists of three major components: Common Mobility Platform, Autonomous Navigation System (ANS), and two mission equipment packages (MEPs)/variants. The three variants sharing a common mobility platform are: MULE-Countermine (MULE-CM), MULE-Transport (MULE-T) and the Armed Robotics Vehicle-Assault-Light (ARV-A (L)). The MULE-CM and MULE-T configurations were terminated in Jan 2010 by the Army. The ARV-A (L) is a lethal platform with two weapon systems: the M240 Machine Gun & two Javelin missiles. The ARV-A-L will employ a target acquisition package to include aided target recognition. This integrated package will support the dismounted infantry and mounted operations providing the capability to locate and destroy enemy platforms and positions. The ARV-A(L) is CH-47 transportable and designed to maintain hard surface road-speeds of up to 65 KPH. The ARV-A (L) will be fielded as part of IBCT INC 2 and is based on current TRADOC defined requirements. Autonomous Navigation System (ANS) IBCT Increment 2: ANS is the mission sensor and computational package that will be integrated on the ARV-A (L) to provide robotic semiautonomous capability. The ANS primary system components are: Laser Radar (LADAR) Imaging Perception Module (LIPM), Imaging Perception Module (IPM), Millimeter Wave Radar (MMWR), GPS/INS, Self-Cleaning System, Precision Timing Module, and the ANS

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Computer System (ACS). ANS provides Global Positioning System (GPS)/Inertial Navigation System (INS) for core navigation, targeting support and timing. ANS provides the sensors and software processing for unmanned operations for day, night, all weather conditions and the platform mobility control for on/off roads, cross country and complex terrain. MMWR provides tracking in rain, smoke, or fog along with an early warning for approaching vehicles with high closing rates. ACS provides SoSCOE interface, path planning, video processing, hardware sensor processing, object processing and platform speed and curvature commands. The ANS software development baseline is a phased approach consisting of three builds. Build 1 supported simulation and early prototypes using external waypoints at limited speeds. Increment 2, Phase 1 supports emulator and prototype operational hardware to support entry into Mule IQT in 2011. INC 2, Phase 2 will meet all ANS threshold ORD requirements for platform speed, terrain types and operational modes: semiautonomous and leader-follower. ANS for unmanned platforms will be incorporated into IBCT INC 2. In July 2009, the ANS effort associated with Manned Ground Vehicle (MGV) integration was terminated.The ARV-L will include the following C4ISR systems: Joint Tactical Radio System (JTRS)/Ground Mobile Radio (GMR) radios, Integrated Computer System (ICS), Medium Range EO/IR sensor and the Acoustic sensor. The SUGV will incorporate the following C4ISR systems: HMS radios, EO/IR sensor, and Chemical, Radiological & Nuclear (CRN) sensor. IN FY09 and FY10 these are funded by PE 0604665A FC6 (Networks). In FY11 they are included in the platform PE.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	102.976	125.616	42.517	0.000	42.517
Current President's Budget	104.571	124.962	249.948	0.000	249.948
Total Adjustments	1.595	-0.654	207.431	0.000	207.431
• Congressional General Reductions		-0.654			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	4.300	0.000			
• SBIR/STTR Transfer	-2.705	0.000			
• Adjustments to Budget Years	0.000	0.000	207.431	0.000	207.431

Change Summary Explanation

Change Summary Explanation: Funding: FY11: Program made a Work Breakdown Structure realignment to meet the Congressional request to have the contractor's fee spread to the individual Program Elements

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army			DATE: February 2010
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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
FC4: *FCS UNMANNED GROUND VEHICLES*	104.571	124.962	249.948	0.000	249.948	98.737	25.368	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Not applicable for this item.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program #1	13.574	0.000	0.000	0.000	0.000

SUGV FY 09 INC 1 - SUGV completed Characterization Testing at Aberdeen Proving Grounds 3Q FY09. 15 SUGV INC1 systems were used to support the INC1 TFT A-C, FDT&E, and LUT 09. In addition, these 15 SUGV systems were also used by the AETF to conduct Platoon and Company Situational Training Exercises.SUGV FY09 INC 2- Continued SUGV INC 2 design efforts in support of SUGV Critical Design Review (CDR) scheduled for 3QFY10. Developed design and program artifacts to support the CDR to insure that the SUGV INC 2 CDR design meets the Prime Item Development Specifications (PIDS) requirements. Continued the effort to integrate the Electro Optical/Infrared (EOIR) and other components into the SUGV design prior to the CDR. Drawings completed to date is 300. Conducted Engineering and Manufacturing Readiness Level (EMRL) 2 assessment of production planning maturation activities for the SUGV system to support CDR and development of Production Plans to include schedules and capacity planning. Implemented Cost Reduction Initiatives such as Lean and producibility trades to meet Average Unit Procurement Cost (AUPC) targets. Completed design of the SUGV system leading up to the SUGV CDR in 3Q FY10 to include completing the E-TESS sensor design and completion of all Interface Control Documents (ICDs). Contracts for the Laser Target Designator (LTD) and Chemical, Radiological, Nuclear (CRN) were put in place to begin payload development. Design Verification Testing planning was initiated. Completed Design Producibility analysis and incorporation into trade studies.

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Developed engineering changes to support lessons learned from field testing with SUGV INC 1 units. Continued internal testing of SUGV INC 2 components leading up to the Critical Design Review (CDR) in 3Q FY10. These components included drive motors, circuit cards, head and neck assembly, Manipulator Arm and the Fiber Optic Tether payloads. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #2 SUGV FY09 (continued) - Also tested the new functionality and design upgrades associated with Preliminary Design Review (PDR) closeout, Continued development of the Build 2 software for SUGV. Conducted LCA review for Build 2 Software. Build 2 Test Readiness Review (TRR) was conducted in 4Q FY09. Build 2 simulation software was delivered in 4th qtr FY09. Began integration of Build 2 Final (B2F) software with SUGV prototypes. Build 2 Final (B2F) capabilities include: power up and initialization, configure SUGV Network Elements, establish SUGV Control, control Integrated SUGV Maneuver, Flippers, Head Neck and pose change, Mode Transition/basic maintenance, Basic manual Electric Optical/Infrared (EO/IR), Imagery collection. Began requirement definition for Software Build 3. Began requirement definition for Software Build 3.	0.000	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #3 SUGV FY10 IBCT Increment 1 - Supported successful MS C for the IBCT INC 1 in 1QFY10. Refurbish, after completion of FY09 Limited User Test (LUT), the 15 Spinout Prototype units to support the FY10 LUT. Refurbishment includes upgrades to software, replacement of components in response to design changes and test/checkout to ensure the units are functional. The 15 Spinout units will be used to support soldier training, and platform integration in FY10. Characterization testing will be conducted on Three (3) IBCT INC 1 units at Aberdeen Proving Ground scheduled for 1QFY10. The program will build six additional Increment 1 units to support LUT testing in FY10 at Ft. Bliss. IBCT INC 1 will utilize Build 1 software and Ruggedized Personal Data Assistants (PDAs); the SUGV controller will provide images to an external port that can then be captured by the PDA and sent to the external network. SUGV units will support testing of alternative radio solutions in 2QFY10. *FY 2009 Accomplishments:* FY 2009	0.000	3.614	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #4 SUGV FY10 IBCT Increment 2 -Develop and mature SUGV INC 2 design of manipulator arm and tether spooler payloads, militarized head and integration of the EO/IR sensor and Handheld Manpack and Small form fit (HMS) radio. Conduct Critical Design Review 3Q FY10. Begin procurement of material for six prototype builds in 4Q FY10. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO	0.000	8.690	0.000	0.000	0.000
Program #5	0.000	0.000	14.131	0.000	14.131

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
SUGV FY 11 IBCT Increment 2 - Complete the engineering tasks and analysis from the SUGV CDR design review to enable the contractor to proceed to the build of the SUGV platforms for IBCT INC 2 IQT. Complete integration, build and checkout of the EO/IR sensor, Handheld Manpack & Small form fit (HMS) radio, and payloads. Begin IQT testing using the six IBCT INC 2 prototypes in 4QFY11-2QFY12. Complete Functional Qualification Test (FQT) of Build 3 operational software. Provide closure of software problem reports (SPRs) and software-hardware integration in support of the platform IQT scheduled for completion in 3Q FY12. Begin development of Build 3 modeling and simulation software. Support interface definition activities for Build 3. Deliver six prototypes in FY11. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #6 Ground Sensors Integrator Hardware FY11 IBCT Increment 2 - Commence procurement of 15 ALASs (14 prototypes and 1 spare) for ARV-A(L) with delivery in FY11. Delivery of 8 MREOs (7 prototypes and 1 spare) for ARV-A(L) . Conduct Production Readiness Review (PRR) for MREO/ALAS ARV-A(L). Support Ground Sensor Suite (GSS) integration and test. Support platform integration and test. Prior to FY11 all Ground Sensor Hardware included in Networks PE 0604665A FC6.	0.000	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #7 MULE FY09 - Continued preparation for Critical Design Review (CDRs), including 938 drawings, on MULE-Transport, MULE-Countermine, and ARV-A (L). Drawings included 434 drawings for the Common Mobility Platform, 75 for the MULE-T, 280 for ARV-A (L), and 144 for the MULE-C. Completed MULE Subsystem CDRs. Supported Tire/Wheel Combination Tire (TWEEL) (non-pneumatic tire) Testing with Engineering Evaluation Unit (EEU). Completed Manufacturing Plan and Prototyping Facilities upgrade. Completed Producibility Assessments for the chassis, equipment bay, Mission Equipment Packages (MEPs), Power Distribution management System (PDMS), Vehicle Management System (VMS), cabling, connectors, and harnesses. Engineering and Manufacturing Readiness Level (EMRL) 2 assessment of production planning maturation activities to support CDR, and development of Production Plans for vehicle integrator and major subtier suppliers to include schedules and capacity planning. Initiated design of special inspection and test equipment. Completed Thermal Management System PDR. Completed final structural, thermal, and dynamic analyses. Released hardware detailed drawing package with 938 drawings. Progressed detailed design toward 2QFY10 CDR. Performed Design Verification Testing. Completed Design Producibility analysis and incorporation into trade studies. Began Long Lead Items procurement of subsystems (engine and suspension) to support FY10 build and delivery of 16 prototypes including 5 MULE-T, 5 MULE-CM, and 6 ARV-A(L).	42.404	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Completed chassis and electrical harness mockup activities. Conducted MULE/ANS integration software and hardware risk reduction on Engineering Evaluation Unit (EEU). Began final integration and checkout of common mobility platform (chassis). Conducted TWEEL (non-pneumatic tire) design risk reduction on EEU. Continued test planning to support FY11 IQT. Completed Javelin initial integration testing to support final weapon system design of Javelin Vehicle Launcher. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #8 MULE FY09 (continued) - Demonstrated the design of the ARV-A-L Javelin missile pod with the following test events:. Javelin Fit Check Test, fired two Mechanical Separation rounds and conducted live firing of one Javelin round from the missile pod from a test fixture. Conducted M240 firing with the Remote Operating Kit (ROK) to demonstrate ROK design and Dunnage testing. Began Hardware In The Loop (HWIL) testing to support Build 2 software. Conducted firing test, temperature, vibration and high humidity on ballistic panels. Conducted cable submersion testing and TWEEL (non-pneumatic tire) performance testing. Completed ARV-A (L) simulation interim Technical Readiness Review (iTRR) and interim Functional Qualification Test (iFQT) for Integrated Mission Test (IMT) 1 and delivery to System of Systems Integration Lab (SoSIL). Completed software build	0.000	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
and functionality planning for both Phase 1 and Phase 2. Completed software requirements definition for Phase 1 including Vehicle Control and On-Board Sensor Control Requirements. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #9 ARV-L FY10 IBCT Increment 2 - Complete subsystems Critical Design Review (CDRs) for PPS, ITMS, and Mobility. Conduct system level CDR for ARV-A (L). Design, Develop and Test a surrogate ARV-A(L) prototype. Build ARV-A(L) platform mock-up. Complete vehicle final assembly design, top level drawings and any remaining detail part drawings. Complete Engineering and Manufacturing Readiness Level (EMRL) 2 assessments and update Industrial Capabilities Assessment (ICA) to support CDR. Develop Prototype Pilot line development to include work instruction development, and acceptance test procedure development Begin assembly and fabrication of prototype hardware to support delivery of ARV-A (L) prototypes in FY11. Receive initial subsystem deliverables. Complete design and integration of BAE Power and Propulsion System, Advanced Integrated Systems M240 Remote Operating Kit, and MillenWorks suspension. Conduct final integration and checkout of common mobility platform (chassis) and begin integration and assembly of first Integrated Qualification Test (IQT) vehicle. Prepare subsystem Acceptance Test Plans (ATPs). Conduct development testing of detail parts and Line Replaceable Units (LRUs). Complete subsystem qualification testing. Begin	0.000	64.370	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
integration of C4ISR, ANS & CC software in Hardware in the Loop (HWIL). Completed Increment 2 Phase 1 Software Build Definition Checkpoint November 18, 2009. Conduct IBCT INC 2 Phase 1 ARV-A (L) Software Life Cycle Architecture (LCA) and Build Readiness Checkpoint (BRC). Phase 1 software functionality includes vehicle control functionality such as power up, states and modes, manual and tether vehicle control, waypoint plan and teleops. Conduct IBCT INC 2 Phase 2 Life Cycle Objectives (LCO), Build Definition Checkpoint (BDC), LCO and Build Planning Checkpoint (BPC), which includes Weapons control, Platform IA and Countermine functionality and requirements. Begin IBCT INC 2 Phase 1 software integration and testing. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #10 ARV-A(L) FY10 IBCT Increment 2 (continued) - IBCT INC 2 Phase 2 addresses: control Mine Search Operations, Arm/Safe Weapon/Check Fire and End Engagement; Management of CRN Data and Javelin Video; Weapon Aim/Firing/Selection; Sensor Alignment; Meteorological Data; Deconflict Fires; Situation Awareness;Low Latency EO/IR Laser Range Finder; Laser Designation/Target Tracking; Anti Tamper and Counter-Measures Deployment. MULE-CM and MULE-T platforms were terminated in Jan 2010. This cost element includes "other" termination costs associated with MULE-CM and MULE-T.	0.000	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #11 ARV-A(L) FY11 IBCT Increment 2 - Complete the engineering effort for integration of all sensors, payloads, battle command software, network communications and Common Controller for ARV-A-L. Deliver 9 ARV-A(L) prototypes. Verify integration of all allocated subsystems: (EO/IR, Radio/Waveform, ICS, M240 ROK, Javelin Vehicle Launcher (JVL), for IQT testing. Test and validate software build functionality with prototypes. Support preparation for IBCT INC 2 level testing of prototypes (Technical Field Test (TFT), Force Development Testing & Experimentation (FDTE) & Limited User Test (LUT)) scheduled for FY12. Assess durability of prototypes during test evaluations in support of RAM-T. Continue development of IBCT INC 2 Phase 1 operational software, including the Vehicle Control Services (VCS), Mobility Control Services (MCS) and Power & Propulsion Services (PPS). Begin integration with the ICS Type VII, SoSCOE Standard Edition, and BCS Build 2 Final software following the Network System Qualification Test (NSQT) scheduled in 4Q FY10. FQT and release IBCT INC 2 Phase 1 operation software in 3Q FY11 prior to ARV-A (L) IQT. Provide closure of SPRs and software-hardware integration in support of the platform IQT scheduled for completion in FY13. FQT and release IBCT INC 2 Phase 1 platform simulations in 1Q FY11 to support software-software, hardware-software and system integration activities conducted in the NSIT and SoSIL labs. Begin IBCT INC 2 Phase 1 operation and simulation software development. Support interface definition activities for IBCT INC 2 Phase 2. Begin	0.000	0.000	135.379	0.000	135.379

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
preparing for the FQT and release of IBCT INC 2 Phase 2 operational software and platform simulations. Conduct integration and validation of IBCT INC 2 Phase 2 software in support of Mission Equipment Packages for the ARV-A (L) to demonstrate functionality of payloads for IQT and SoS Testing: M240, JAVELIN, Medium Range EO/IR sensor. Conduct ARV-A (L) IBCT INC 2 Phase 2 LCA and Build Readiness Checkpoint (BRC.) *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #12 ARV-A(L) FY11 IBCT Increment 2 (continued) - Continue IBCT INC 2 Phase 1 software integration and testing and begin IBCT INC 2 Phase 2 software integration and testing. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010	0.000	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #13 MULE-CM & MULE-T Special Termination - Special termination costs include severance pays, settlement expenses, and return of field service representatives. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO	0.000	2.500	0.000	0.000	0.000
Program #14 ANS FY09 - Continued to conduct weight reduction initiative to address size, weight and power allocation challenges. Finalized coordination of ICD efforts with MULE platforms. Implemented design changes from early Engineering Development Unit (EDU) testing. Facilitized final integration and test site for prototype Pilot line development. Completed thermal and armor analyses. Released first portion of hardware detailed drawing package containing 300 drawings. Began prototype long-lead item procurement to support build of 15	48.593	0.000	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Engineering Development Units to be completed by May 2010. A total of fourteen emulators were produced and delivered to the MGV Systems Integration Labs (SIL) and the MULE SIL, and three ANS emulators with (18) cameras to the MGV SIL. Thirty-nine Global Positioning System/Inertial Navigation System (GPS/INS) Phase II units procured as long lead items per GPS/INS Configuration Item Development Specifications (CIDS) requirements necessary for MULE IQT's. Due to termination of MGV effort, emulators originally planned for MGV efforts may be used in other areas of the program for risk reduction. Conducted ANS Robotic Convoy Experiment IIb at WSMR to incorporate algorithm updates, leader-follower activities with up to three vehicles, continuous operations, night time human detection exercises, negative obstacle detection experiments, and negotiations of slopes and hills. Began ANS Integration and Test on Emulators. Completed plan to change Build 2 focus from Simulation to Operational. Completed Build 2 Operational requirements analysis and design and conducted an architecture review in 2Q FY09. Started Build 2 Operational design and completed Build 2 SIM design, and conducted Build 2 Simulation Life Cycle Architecture (LCA) in 3rd Qtr. Started Build 2 Simulation construction in 3rd Qtr. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #15	0.000	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
ANS FY09 (continued) - The ANS Build 2 addresses: Basic power up and self test; Simple/basis PS-MRS report status; GPS/INS encryption key entry; Initial render useless emulation; Navigation state reporting; Remote operations; Blind waypoint following; Obstacles avoidance; Obstacles negotiation and Follow Vehicle leader. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #16 ANS FY10 - IBCT Increment 2 - ANS CDR planned for 2nd qtr FY10. Complete final assembly and detail part drawing release and revision of the remaining 250 drawings. Complete Physical Configuration Audit (PCA) for all prototype hardware components. Finalize coordination of ICD efforts including Part II ICDs and complete review of 94 artifacts and 41 data items in preparation for CDR. Begin tooling design, fabrication and proofing. Continue long lead-time procurement of hardware and begin fabrication/assembly to support prototype builds for delivery of 20 units to MULE in FY11. Based on termination of MULE-CM and MULE-T, the Army will reduce number of prototypes to about 10 units to support ARV-A(L). Implement Manufacturing Plan for ANS Computer System (ACS), Imaging Perception Module (IPM), and Laser Radar (LADAR) Imaging Perception Module (LIPM) enclosures; internal cabling; and integration of long lead items. Conduct assembly, integration and developmental testing of detail parts. ANS Prototype environmental testing begins 1Q FY10. Begin contractor testing of prototype components. Initiate planning and support for the IQT scheduled in FY11. Complete	0.000	42.289	0.000	0.000	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
construction of IBCT INC 2 Phase 1 software, followed by FQTs of simulation and operational code scheduled for 4Q FY10. Conduct INC 2 Phase 2 operational/simulation software architecture reviews in 1Q FY10. Begin IBCT INC 2 Phase 2 coding in 1QFY11 and preparation for a Test Readiness Review. Perform IBCT INC 2 Phase 2 Operational requirements analysis; conduct objectives and architecture reviews in 3Q and 4Q FY10, respectively; and begin software construction in 4QFY10. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #17 ANS FY11 IBCT Increment 2 - Closeout final CDR action items. Support integration in accordance with ICDs and execution of ARV-A (L) . Implement design changes that result from lessons learned from IQT to ensure the ANS system is prepared for Milestone C and LRIP. Complete procurement and fabrication of prototype hardware to support delivery of 10 prototype sets (IPMs, LIPMs, GPS/INS, and ACS) for integration and IQT. Assess performance and durability of prototype components during test evaluations in support of RAM-T development. Test and validate software performance at the system level. Support preparation for SoS testing (TFT, FDTE & LUT). Continue to provide closure of software problem reports (SPRs) and software-hardware integration with the ANS prototype (P1) and ARV-A(L) platform integration. Continue ANS IBCT INC 2 Phase 2 software construction, and begin preparing for the IBCT INC 2 Phase 2 TRR and FQT scheduled in 1QFY12. Support	0.000	0.000	54.283	0.000	54.283

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
software testing/integration and build checkpoints. Conduct IBCT INC 2 Phase 2 Test Readiness Review in 1QFY11. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #18 CONTRACTOR FEE FY11 - Moved from System of Systems Engineering consists of prime contractor fee for remaining work in FY11. *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base	0.000	0.000	20.379	0.000	20.379

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 OCO Plans: FY 2011 OCO					
Program #19 GOVERNMENT FY11- Special independent studies to determine improvements reliability, availability and maintainability (RAM) improvements to ARV-A(L). *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO	0.000	0.000	3.430	0.000	3.430
Program #20 IED COUNTERMEASURE DEV FY11 - Initiated planning efforts to support of Chief of Staff of the Army's Counter IED/Route Clearance initiative. Leveraging work done on existing MULE prototypes, ANS and GSTAMIDS; and work from TARDEC and RDECOM. Evaluating both a short term and long term strategy to meet the requirements of the Army. Strategy will evaluate current and future IED detection threats and capabilities. *FY 2009 Accomplishments:* FY 2009	0.000	0.000	22.346	0.000	22.346

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO					
Program #21 Small Business Innovative Research/Small Business Technology Transfer Program *FY 2009 Accomplishments:* FY 2009 *FY 2010 Plans:* FY 2010 *FY 2011 Base Plans:* FY 2011 Base *FY 2011 OCO Plans:* FY 2011 OCO	0.000	3.499	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	104.571	124.962	249.948	0.000	249.948

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army		DATE: February 2010
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• Ord. #1: *0604646A Non Line of Sight - Launch System*	253.684	91.223	81.247	0.000	81.247	58.718	27.418	0.000	0.000	0	512.290
• Ord. #2: *0604647A Non Line of Sight - Cannon*	87.038	47.964	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	135.002
• Ord. #3: *0604660A FCS Manned Grd Vehicles & Common Grd Vehicle Components*	760.744	275.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	1,035.860
• Ord. #4: *0604661A FCS System of Systems Engr & Program Management*	1,022.165	912.399	568.711	0.000	568.711	566.378	582.775	618.755	727.415	Continuing	Continuing
• Ord. #5: *0604662A FCS Reconnaissance (UAV) Platforms*	55.923	75.107	50.304	0.000	50.304	12.058	4.180	0.000	0.000	0	197.572
• Ord. #6: *0604664A FCS Unattended Ground Sensors*	20.135	26.778	7.515	0.000	7.515	1.071	1.071	0.000	0.000	0	56.570
• Ord. #7: *0604665A FCS Sustainment & Training R&D*	819.721	655.745	610.389	0.000	610.389	523.580	366.647	253.810	258.367	Continuing	Continuing
• Ord. #8: *0604666A Spin Out Technology/Capability Insertion*	122.788	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	122.788
• Ord. #9: *0605625A - Manned Ground Vehicles*	0.000	79.583	934.366	0.000	934.366	1,882.839	2,242.756	1,375.128	744.771	Continuing	Continuing
• Ord. #10: *WTCV G86100 FCS Core Program*	154.127	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	154.127
• Ord. #11: *WTCV G86200 FCS Spin Out Program*	67.268	326.909	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0	394.177
• Ord. #12: *WTCV G86000 Ground Combat Vehicle (GCV)*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	98.030	778.220	Continuing	Continuing
• Ord. #13: *ACFT A00015 BCT Unmanned Aerial Veh (UAVs) Incr 1*	0.000	0.000	44.206	0.000	44.206	40.216	12.770	3.718	1.850	Continuing	Continuing

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• Ord. #14: *ACFT A00016 BCT Unmanned Aerial Veh (UAVs) Incr 2*	0.000	0.000	0.000	0.000	0.000	2.141	85.345	90.245	92.686	Continuing	Continuing
• Ord. #15: *OPA B00001 BCT Unattended Ground Sensor*	0.000	0.000	29.718	0.000	29.718	60.578	9.582	1.544	1.328	Continuing	Continuing
• Ord. #16: *OPA B00004 BCT Unattended Ground Sensor Incr 2*	0.000	0.000	0.000	0.000	0.000	19.093	87.478	96.172	86.259	Continuing	Continuing
• Ord. #17: *OPA B00002 BCT Network*	0.000	0.000	176.543	0.000	176.543	192.632	20.619	0.317	0.187	Continuing	Continuing
• Ord. #18: *OPA B00003 BCT Network Incr 2*	0.000	0.000	0.000	0.000	0.000	81.277	301.864	454.480	431.835	Continuing	Continuing
• Ord. #19: *OPA F00001 BCT Unmanned Ground Vehicle*	0.000	0.000	20.046	0.000	20.046	42.703	6.002	2.288	1.870	Continuing	Continuing
• Ord. #20: *OPA F00002 BCT Unmanned Ground Vehicle Incr 2*	0.000	0.000	0.000	0.000	0.000	373.193	710.680	676.230	711.940	Continuing	Continuing
• Ord. #21: *OPA G80001 BCT Training/Logistics/Management*	0.000	0.000	61.581	0.000	61.581	12.178	94.491	68.033	50.468	Continuing	Continuing
• Ord. #22: *OPA G00002 BCT Training/Logistics/Management Incr 2*	0.000	0.000	0.000	0.000	0.000	75.069	387.173	396.593	446.806	Continuing	Continuing
• Ord. #23: *MSLS C64501 BCT NLOS-LS Incr 1*	0.000	0.000	350.574	0.000	350.574	758.657	112.115	0.000	0.000	0	1,221.346
• Ord. #24: *MSLS C64601 BCT NLOS-LS Incr 2*	0.000	0.000	0.000	0.000	0.000	0.000	605.192	679.078	579.210	Continuing	Continuing

D. Acquisition Strategy

A 23 June 2009 Acquisition Decision Memorandum (ADM) directed the cancellation of the FCS (BCT) acquisition program. It also instructed the Army to transition to an Army modernization plan consisting of a number of integrated acquisition programs. At that time, the SO E-IBCT was designated a pre-MDAP, with a Milestone C decision scheduled for the first quarter FY 2010. A follow-on ADM was issued 9 July 2009. In it, the Army was directed to continue efforts to improve the brigades beyond the Early Infantry Brigade Combat Team acquisition until a standalone program(s) is defined later in 2010. An Army BCT Modernization Defense Acquisition Board (DAB) was then held on October 16, 2009 to review the Army's plans for the post-Future Combat Systems efforts and confirm the Army brigade modernization acquisition plans were consistent with the Secretary of Defense's guidance.

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An ADM issued after this DAB stated: "The approach, for Increment 1 (Early-Infantry Brigade Combat Team (E-IBCT)) and the Ground Combat Vehicle (GCV) effort, is consistent with the Secretary's guidance and each is being positioned for more in-depth review and acquisition decisions later in 2009." The Increment 1 E-IBCT Milestone C took place 22 December 2009 and was approved in an ADM dated 24 December 2009. The Program Executive Officer-Integration (PEO-I) has modified the existing contract to be compliant with the aforementioned ADMs. This budget justification reflects the Milestone C approved Increment 1 (E-IBCT) program and the follow-on IBCT modernization program planned by the Army.

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-3, RDT&E Project Cost Analysis: PB 2011 Army		DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Small Unmanned Ground Vehicle (SUGV)	C	The Boeing Company St Louis, MO see remark 1	0.000	12.304		135.378		0.000		135.378	Continuing	Continuing	0
Autonomous Navigation System - Software	C	The Boeing Company St Louis, MO see remark 3	0.000	42.289		14.131		0.000		14.131	Continuing	Continuing	0
MULE	C	The Boeing Company St Louis, MO see remark 2	0.000	64.370		54.283		0.000		54.283	Continuing	Continuing	0
IED COUNTERMEASURE DEV	C/TBD	TBD Location could not be determined.	0.000	0.000		22.346		0.000		22.346	Continuing	Continuing	0
CONTRACTOR FEE	C	The Boeing Company St Louis, MO	0.000	0.000		20.380		0.000		20.380	Continuing	Continuing	0
MULE-CM & MULE-T SPECIAL TERMINATION	C	The Boeing Company St Louis, MO	0.000	2.500		0.000		0.000		0.000	Continuing	Continuing	0
		Subtotal	0.000	121.463		246.518		0.000		246.518			0.000

Remarks

Remark 1: Subcontractor: iRobot Corp. - Burlington, MARemark 2: Subcontractor: Lockheed Martin Missile and Fire Control - Grand Prairie, TXRemark 3: Subcontractor: General Dynamics Robotic Systems - Westminister, MD

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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR	C	OSD Location could not be determined.	0.000	3.499		0.000		0.000		0.000	Continuing	Continuing	0
Adjustments to budget Year:	C	ABO Location could not be determined.	0.000	0.000		0.000		0.000		0.000	Continuing	Continuing	0
GOVERNMENT OTHER SUPPORT	C	PEO Integration St Louis, MO	0.000	0.000		3.430		0.000		3.430	Continuing	Continuing	0
		Subtotal	0.000	3.499		3.430		0.000		3.430			0.000

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	124.962		249.948		0.000		249.948			0.000

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Army			**DATE:** February 2010
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Increment 1 Total Program Tasks			#	#	#	#	#	#	#	#	#																	
Incr 1 Limited User Test FY09			#																									
Incr 1 STX / FDT&E / LUT 10						#	#																					
Incr 1 Milestone C				#																								
Incr 1 Production Contract Award					#																							
Incr 1 Production Delivery							#	#	#	#																		
Incr 1 Initial Operational Test & Evaluation											#																	
Incr 1 First Unit Equipped											#																	
Incr 1 Initial Operational Capability													#															
Increment 2 Total Program Tasks										#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#		
Incr 2 CDR										#																		
Incr 2 FDT&E / STX / LUT 13															#	#												
Incr 2 Milestone C																		#										
Incr 2 Initial Operational Capability																										#		
SUGV Block 1 Prototype Deliveries		#																										
SUGV Block 1 TFT/FDTE/LUT		#	#																									
SUGV Threshold CDR						#																						
SUGV Threshold Prototype Build/Delivery									#																			
SUGV Threshold IQT													#															
SUGV Threshold TFT/FDTE/ LUT													#	#														

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Army			**DATE:** February 2010
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	FY 2009				FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ARV A(L)/MULE-CM CDR						#																						
ARV A(L)/MULE-CM Prototype BUILD/ Deliveries											#	#																
ARV A(L)/MULE-CM IQT										#	#	#	#	#	#													
ARV A(L)/MULE-CM TFT/FDTE/LUT													#	#														
ANS Critical Reviews - CDR						#																						
ANS Prototype Build/Delivery								#	#	#																		

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Army		DATE: February 2010
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Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Increment 1 Total Program Tasks	3	2009	3	2011
Incr 1 Limited User Test FY09	3	2009	3	2009
Incr 1 STX / FDT&E / LUT 10	2	2010	3	2010
Incr 1 Milestone C	4	2009	4	2009
Incr 1 Production Contract Award	1	2010	1	2010
Incr 1 Production Delivery	3	2010	2	2011
Incr 1 Initial Operational Test & Evaluation	3	2011	3	2011
Incr 1 First Unit Equipped	3	2011	3	2011
Incr 1 Initial Operational Capability	1	2012	1	2012
Increment 2 Total Program Tasks	2	2011	2	2015
Incr 2 CDR	2	2011	2	2011
Incr 2 FDT&E / STX / LUT 13	3	2012	4	2012
Incr 2 Milestone C	2	2013	2	2013
Incr 2 Initial Operational Capability	2	2015	2	2015
SUGV Block 1 Prototype Deliveries	2	2009	2	2009
SUGV Block 1 TFT/FDTE/LUT	2	2009	3	2009
SUGV Threshold CDR	2	2010	2	2010
SUGV Threshold Prototype Build/Delivery	1	2011	1	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Army		DATE: February 2010
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	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
SUGV Threshold IQT	1	2012	1	2012
SUGV Threshold TFT/FDTE/ LUT	1	2012	2	2012
ARV A(L)/MULE-CM CDR	2	2010	2	2010
ARV A(L)/MULE-CM Prototype BUILD/Deliveries	3	2011	4	2011
ARV A(L)/MULE-CM IQT	2	2011	3	2012
ARV A(L)/MULE-CM TFT/FDTE/LUT	1	2012	2	2012
ANS Critical Reviews - CDR	2	2010	2	2010
ANS Prototype Build/Delivery	4	2010	2	2011