

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY <b>RDTE, Defense Wide BA# 5</b>		PE NUMBER AND TITLE <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>						
	COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate				
P051	Defense Acquisition Challenge Program (DACP)	28.188	28.409	28.862				

**A. Mission Description and Budget Item Justification:**

Authorized by Title 10, U.S. Code, Section 2359b, the Defense Acquisition Challenge Program (DACP) provides increased opportunities to insert innovative and cost-saving technologies into acquisition programs of the Department of Defense. DACP funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the component, subcomponent, or system level.

Since the program inception in FY 2003, OSD has initiated 105 projects; 39 projects have been completed to date; 28 met Service or Agency testing requirements and 23 led to procurements; To date, 16 projects have yielded technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities.

The Defense Acquisition Challenge Program (DACP) increases opportunities for domestic vendors to enter the DoD acquisition process. Although business size is not an evaluation criterion, it is noteworthy that to date approximately 60 percent of the DACP projects awarded are with technology providers at the small or mid-sized enterprise level. DACP has the additional DoD/National Security benefit of expanding the industrial base for defense acquisition.

Final selection of FY 2010 DACP new start projects will be determined in September 2009.

Congressional authority to execute Defense Acquisition Challenge Program currently ends September 30, 2012 (Title 10, U.S. Code, Section 2359b).

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<b><u>B. Program Change Summary</u></b>	FY 2008	FY 2009	FY 2010	
Previous President's Budget (FY 2008/2009)	28.718	30.363	30.882	
Current BES/President's Budget (FY 2010)	28.188	28.409	28.862	
Total Adjustments	-0.530	-1.954	-2.020	
Congressional Program Reductions		-1.797		
Congressional Rescissions		-0.157		
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer	-0.475			
Other	-0.055		-2.020	

The change in the FY 2008 funding amount from last year's President's Budget to this year is as a result of the implementation of mandated Congressional adjustments in SBIR/STTR and other DoD adjustments.

Other: The change in FY2010 reflect DoD programmatic decisions and fiscal alignments.

**C. Other Program Funding Summary:** Not applicable for this item.

**D. Acquisition Strategy:**

The Acquisition Strategy for DACP is as outlined in Title 10. DACP is to provide opportunities for the increased introduction of innovative and cost-saving technology in acquisition programs of the Department of Defense. DACP funding is used to fund testing of commercial and non-developmental items that could result in improvements in performance, affordability, manufacturability, or operational capability of an existing acquisition program. If testing is successful, it is expected that procurement using the respective current program funding would be used for acquisition.

**E. Performance Metrics:** Not Applicable.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate				
P051 Defense Acquisition Challenge Program (DACP)	28.188	28.409	28.862				

**A. Mission Description and Budget Item Justification:**

Authorized by Title 10, U.S. Code, Section 2395b, the Defense Acquisition Challenge Program (DACP) provides increased opportunities to insert innovative and cost-saving technologies into acquisition programs of the Department of Defense. DACP funds the test and evaluation of technologies and products with potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the component, subcomponent, or system level.

Since the program inception in FY 2003, Office of the Secretary of Defense (OSD) has initiated 118 projects; 58 projects have been completed to date: 42 met Service or Agency testing requirements; and 52 led to procurements. To date, 22 projects have yielded technology currently in use by our warfighters in Iraq, Afghanistan, or at U.S. training facilities.

The Defense Acquisition Challenge Program (DACP) increases opportunities for domestic vendors to enter the DoD acquisition process. Although business size is not an evaluation criterion, it is noteworthy that to date approximately 60 percent of the DACP projects awarded are with technology providers at the small or mid-sized enterprise level. DACP has the additional DoD/National Security benefit of expanding the industrial base for defense acquisition.

Final selection of FY 2010 DACP new starts will be determined in September 2009.

Congressional authority to execute Defense Acquisition Challenge Program currently ends September 30, 2012 (Title 10, U.S. Code, Section 2359b).

**B. Accomplishments/Planned Program:**

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
10kW Tactical Vehicle Inverter System (Army)	0.719		

**Outcome:** The outcome of this effort is to purchase and evaluate several 10 kilowatt inverter systems developed by commercial industry to determine if they meet the military's electrical and environmental requirements. These inverters will have to meet the same requirements as the vehicle-mounted Auxiliary Power Unit (APU). One key benefit in replacing the APU is a reduction in weight to light tactical vehicles of up to 500 lbs. The primary outputs and efficiencies to be demonstrated in the DAC Test are: (1) a reduction in weight to light tactical vehicles of up to 500 lbs, (2) potential procurement savings of \$1.041 million, (3) potential Life Cycle O&S Savings of \$10.695 million and provide a ROI of 4.28.

**FY 2008 Output:** DRS Pivotal Power delivered their first three units for Electrical and Operational Testing in Mar 08. The Electrical Testing at Ft Belvoir started in May and was completed in July 08. The inverter was installed on the M1151A1 and shipped to Army Test Center for the Operational Testing. The inverter is being tested and is expected to be finished 2Q FY 2009.

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FY 2009 Output: The Operational Test Report will be written and submitted to the Power Generation Branch for review and comments.

<u><b>Accomplishments/Planned Program Title:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Angel Fire - Situational Awareness of Large-Area Urban Operations (Air Force)	1.379			

Outcome: Provide a high-resolution spot-beam capability; a night, infrared, wide-area surveillance capability; and a comprehensive plan to transition Angel Fire (AF) to a full acquisition program. AF is a tactical situational awareness system that provides real-time, high resolution, city-sized images of infrastructure, vehicles and people to hundreds of users. This expansive coverage enhances tactical support, forensic analysis, and predictive analysis that in turn directly supports urban combat, base defense, border security, improvised explosive device detection and other anti-insurgency/counter terrorist efforts. Following a successful demonstration of the basic AF capability at the Marine Corps Air/Ground Combat Center in May/June 2006, United States Marine Corps (USMC) specifically requested three further refinements that would "customize" AF for deployment/employment in Operation Iraqi Freedom (OIF). The lead service is Air Force. The primary outputs and efficiencies are: (1) spot beam performance that will provide a multi-beam high-resolution capability to augment the wide-area lower resolution AF imagery, (2) provision of a night-time infrared capability similar in military utility to the day, optical capability; and (3) provision of a transition plan and associated documentation that will allow rapid transition of the AF capability to a fully developed acquisition program.

FY 2008 Output: Procured infrared cameras; conducted software integration activities; conducted aircraft integration; conducted flight evaluation operations and transition planning. Delays in software and aircraft integration necessitated delays in deployment of this Angel Fire Spiral.

FY 2009 Planned Output: Delivery of first aircraft is now scheduled 3Q FY 2009. The transition manager is Air Force Research Lab.

<u><b>Accomplishments/Planned Program Title:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Command Control (C2) Resource Management: Master Caution Panel (MCP) (Air Force)	0.279			

Outcome: Demonstrate technology that allows network/system administration personnel to monitor the internal network of a C2 enterprise, such as an Air Operations Center (AOC), providing status of machine availability, connectivity, software processes, and host health. Master Caution Panel (MCP) "bridges the gap" between the warfighter environment and the system administrators and engineers maintaining the IT resources used to plan and conduct AOC missions. The lead service is Air Force. The primary output and efficiency to be demonstrated is an improved situational awareness during real world operations.

FY 2008 Output: Completed evaluation reports based on the tests. Updated the training package based on the results of the demonstration. A final package of deliverables (training package, test plan, test reports, and System Security Authorization Agreement) completed for delivery at the end of the effort. The C2 MCP project was scheduled to conclude in FY 2008 but delays in securing a suitable Air Operations Center venue for final demonstration necessitated that a no-cost extension be granted.

FY 2009 Planned Output: Project expected to close-out 3Q FY 2009. Integration of the capability will be conducted through block upgrades to Air Operation Centers through FY 2010. Transition Manager is Air Force Research Lab.

<u><b>Accomplishments/Planned Program Title:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Combined Visible IR Light Unit for the M2 .50 Caliber Weapon (SOCOM)	0.479			

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Outcome: This comparative test project will evaluate a light unit for the M2 .50 caliber machine gun that combines a visible bright light with an infrared light, which will allow the warfighter to target enemy positions at night, without giving away their position. Primary Outputs and Efficiencies: Demonstrate that this light unit can be attached to crew-served weapons platforms and will provide enhanced recognition and identification of objects and targets out to a minimum of 700 meters; provide improved accuracy and greater lead on target efficiency. The RDT&E cost avoidance is \$2.000 million; manufacturing cost savings are estimated to be \$1.000 million; procurement cost avoidance is: \$1.600 million; operations and support cost avoidance is expected to be \$1.200 million. Completion date is anticipated 31 Nov 2009.

FY 2008 Output: Solicited candidate proposals and completed down selection of test item; negotiated contract for, and received test articles. Obtained a safety release; completed technical testing and published technical test report. Began early user assessment/operational testing.

FY 2009 Planned Output: Complete early user assessment/operational testing; publish test reports; prepare Milestone C decision packet; and complete DAC Closeout report.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Cost Effective Light Aircraft Missile Protection (CELAMP) (Air Force)	2.479		

Outcome: Demonstrate an integration of the Quiet Eyes turret with AAQ-24(V) Directed Infrared Countermeasures (DIRCM) components that will provide infrared (IR) threat protection for sub-sonic platforms such as the A-10 and helicopters. The AAQ-24(V) Large Aircraft Infrared Countermeasures (LAIRCM) system is not optimized to provide protection for small aircraft such as helicopters and fighters because of its cost, form, fit and weight. A light-weight, low-cost Infrared Countermeasures (IRCM) assembly (Quiet Eyes) was developed that leverages guidance components from the AIM-9X IR missile to provide highly responsive, all-aspect IR protection. The lead service is Air Force.

The primary outputs and efficiencies to be demonstrated are: (1) the ability of the Quiet Eyes turret to handle the higher power laser associated with the AAQ-24; and (2) demonstrate that the Quiet Eyes turret can successfully be integrated with the DIRCM processor, missile warning system and laser, resulting in a readily available lightweight IRCM jammer for Army and Navy helicopters while meeting the requirement for the next generation IRCM jammer for the Air Force.

FY 2008 Output: Quiet Eyes turret integrated with missile warning system, laser, processor and power supply demonstrated successfully in lab and at live fire demonstration at Tonopah Range.

FY 2009 Planned Output: The project has been handed off to the US Army Aircraft Countermeasures Improvement Program at Redstone Arsenal, Alabama, and is scheduled to be completed September 2009. Capability will transition to Army and Navy helicopters starting in 2011 and cargo aircraft for the Air Force in 2012. Transition manager is Air Force Aeronautical Systems Center.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Fiber Optic Gyro Rate Sensors for Combat Vehicles (Army)	0.979		

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Outcome: This project will provide the Army with a family of rate sensors based on fiber optic technology for use in current vehicles. Rate sensors are the sending elements of the stabilization and fire control subsystems and hence are an integral part of the lethality of these vehicles. Traditional rate sensors are based on the use of mechanical gyros and moving parts which are subject to wear in the extreme harsh environments. Fiber optic gyros use deflection of light waves to determine rate of motion change, which provides a much more reliable and accurate sensor. This project takes advantage of this more reliable device in a form, fit and function replacement for combat vehicle platforms. The Army is the lead service, with Marine Corps support for integration to the Light Armored Vehicle (LAV) platform. Improvements: longer life, better performance, less stringent handling requirements, and lower cost. More reliable 5-6 times Mean Time Between Failure (MTBF) (No moving Parts). O&S Cost Avoidance: \$6.270 million (five years) / \$41.750 million (life). Procurement Cost Avoidance: \$2.270 million (five years) / \$15.000 (life). Research Development Test and Evaluation (RDTE) Cost Avoidance: \$1.300 million. Fielding Reduction: three plus years. Procurement Potential: 1400 units per year, 700 units first five years. Lifetime Potential is 33,400 rate sensors/ \$167.000 million.

FY 2008 Output: Conducted requirements Review for Bradley, M-1 Main Battle Tank, and LAV platforms; Design verification testing; Qualification plans and procedures for LAV and M1 vehicles; Test readiness review; and subassembly testing at White Sands Missile Range.

FY 2009 Planned Output: Conduct Integrated Project Team (IPT) meetings; Gun fire testing at government site; Engineering and Change Proposal (ECP)/Engineering and Change Review (ERR) development and release; Automated test equipment development and testing; M1 vehicle testing.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Improved Durability F100/F414 Exhaust Nozzle Divergent Seals (Air Force)	0.229		

Outcome: To demonstrate and document the flight characteristics of Ceramic Matrix Composite (CMC) Turbine Engine Exhaust Nozzle Divergent Seals. This documentation will occur through a Field Service Evaluation (FSE) flight program. The goal is to qualify the CMC divergent seals as preferred spares for the F100 engine family, as well as the F414 engine used in the US Navy F18 aircraft. The lead service is Air Force. The primary outputs and efficiencies to be demonstrated are: (1) realization of significant acquisition cost savings annually for component replacement and; (2) a significant decrease in maintenance downtime of critical combat aircraft.

FY 2008 Output: Continued F100 flight test of CMC Divergent Seals at McEntire Joint National Guard Base and Mountain Home Air Force Base. Continued activities to deliver an Engineering Change Proposal to officially document F100 CMC divergent seals as fully flight certified. Negotiated with vendor and Oklahoma City Aerospace Logistics Center to establish the CMC Divergent Seal as a preferred spare for the F100 engine. Supported effort to redesign a faulty metal connector, which was the cause of delays in completing Engineering Source Approval and Engineering Change Request documents. For the F414, a two-times life ground test was initiated and completed to determine durability improvements and to generate required data to allow the program to proceed to test. Completed plan for test on an F/A-18E/F fighter.

FY 2009 Planned Output: Continue test of CMC seals on F/S-18E/F. Evaluate CMC seals and submit final report. The CMC Divergent Seal project is scheduled for completion in 3Q FY 2009. The transition managers are the F100 Augmenter Program Manager and Naval Air Systems Command.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Improved Performance Environmental Control System (Army)	0.747		

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Outcome: This project will lower the risk of loss of life to wounded soldiers being transported from the point of injury to the casualty collection point by providing the Heavy Helicopter-60M Medical Evacuation (MEDEVAC) Helicopter with a fully mission capable Environmental Control System (ECS). It will provide the Army with a more robust and efficient heating and cooling environment within the HH-60M for the wounded soldiers. The ECS will be more efficient, affordable and reliable and weigh 30 lbs. less than the current ECS. The primary outputs and efficiencies of this program will be a fully qualified ECS for the HH-60M MEDEVAC aircraft. This includes: (1) qualification to the performance specification for the ECS, (2) qualification against the electromagnetic susceptibility requirements for the Army, (3) qualification against the environmental requirements of the Army, and (4) a full Interim Safety and Airworthiness Qualification statement for the ECS. Weight savings - 30 lbs., \$31.000 million in life cycle O&S costs savings, resolve obsolescence issues and increase cooling capacity.

FY 2008 Output: First test articles received in March 2008. Fit check of ECS accomplished on UH-60M Upgrade prototypes at West Palm Beach, FL, in March 2008. Test articles 1 and 2 began testing at Redstone Technical Test Center in September 2008. Sikorsky integration contract kick-off held July 2008.

FY 2009 Planned Output: Completion of component level testing March 2009. Integration Preliminary Design Review in January 2009. Installation Control Drawing Review in June 2009. Prototype integration of first ECS in August 2009.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Improvements to Suite of Integrated Radio Frequency Countermeasures Systems (SOCOM)	0.729		

Outcome: This is a qualification test of technology advances in gallium arsenide (GaAs) high-frequency Radio Frequency (RF) Amplifier chips. These chips are commercially available and reduce bare component cost as well as reduce test and tuning time for Microwave Component Assemblies (MCA's) within the AN/ALQ-211 Suite of Integrated Radio Countermeasures (SIRFC) system, thereby preventing obsolescence of RF micro-chip assemblies and reducing the threat of diminishing material sources of supply. Primary Outputs and Efficiencies: Validate that commercially available GaAs RF chip component insertions to replace the current MCA's provide easier tuning during manufacturing and depot repair operations; demonstrate capacity to detect and jam the most modern RF threats to Special Operations Aviation (SOA); and validate reduction in unit/operations and sustainment cost with no necessity for skilled labor. Research Development Test and Evaluation (RDT&E) cost avoidance is estimated to be \$1.000 million; manufacturing cost avoidance is \$8.200 million procurement cost avoidance is \$8.280 million. Completion date is anticipated 31 March 2009.

FY 2008 Output: Completed Phase I concept demonstration of MCA #1; and began Phase II Integration, Vendor Demonstration, and Validation Testing.

FY 2009 Planned Output: Complete Phase II Integration, Vendor Demonstration, and Validation Testing; Finalize Procurement & Fielding Decision documentation based on test and evaluation; Submit Project Closeout Report end of 2Q FY 2009.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Information Operations Range Battlespace Visualization (Army)	0.704		

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Outcome: This project will provide the Joint Forces Command Information Operations (IO) Range with an effective near-term capability to provide range battlespace visualization through the integration of the Command and Control (C2) system as a common range enterprise service. The addition of this capability to the IO Range will dramatically improve the efficiency and effectiveness of the range and enable operationally realistic, net-centric, distributed IO event executions. This project will increase warfighter confidence by assuring predictable outcomes of IO capabilities, help create a well-trained career workforce, increase understanding of the IO battlespace, and accelerate maturing IO into a reliable warfighting capability. The Army is the lead service for this project. The primary output and efficiency is significantly accelerating warfighter confidence in IO capabilities by enabling direct observation of the IO Range battlespace during joint testing, training and exercising events conducted on the IO Range. The capability to observe the IO Range battlespace will provide a key enabling capability contribution to maturing IO into a core warfighting capability. Operations and Service Cost Avoidance: \$2.0 million. Procurement Cost Avoidance: \$12.0 million. Research Development Test and Evaluation (RDT&E) Cost Avoidance: \$25.0 million. Fielding Reduction: three plus years. Procurement Potential: 10 units. Lifetime Potential is 25 units.

FY 2009 Planned Output: Conduct a formal test and evaluation of the Command and Control software as an IO Range battlespace visualization system. Perform limited range sensor integration, testing, and demonstration. Provide final evaluation report to Joint Forces Command and Army for procurement and fielding decision.

FY 2010 Planned Output: Procure, integrate, and field as a common IO Range battlespace visualization service in support of Service, Agency, and Combatant Commander testing, training and exercising across the distributed IO Range enabled environments.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Low Cost Land Warrior Cable Connector System (Army)	0.476			

Outcome: Current Land Warrior (LW) connectors are machined out of stainless steel. Many failures are being experienced in the field. The purpose of this project is to look for alternative cable/connectors that are more reliable and cost effective without degrading current performance. The primary outputs and efficiencies will reduce manufacturing time and cost for connectors down to \$0.015 million/shell and cut manufacturing and connector lead time significantly. Current Land Warrior connectors are made with connector shells that are machined out of stainless steel that requires more than 15 minutes of machining time, costing approximately \$0.025 million/shell. Each Land Warrior ensemble needs ten cables, twenty cable connector shells plus twenty receptacle body connector shells, (40 shells total) costing approximately \$0.001 million per ensemble. The cost per ensemble could be reduced to \$0.600 million as a result of this project. Savings of \$0.400 million per ensemble are expected.

FY 2008 Output: Funds were not received until mid FY 2008, causing a 9-month schedule slip. During FY 2008, evaluated additional cable failures and determined feasible alternatives to test. Machined stainless steel (baseline) connectors shell were built and tested for suitability for LW application in July 2008.

FY 2009 Planned Output: Metal Injection Molded connectors will be manufactured during FY 2009 and compared to baseline connectors. The testing of these cable assemblies is scheduled for January 2009. Upon successful completion of the test, the Government will receive prototypes and technical information to further produce cost effective and reliable cables/connectors.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Low Plasticity Burnishings to F-100 Engine Airfoils (Air Force)	0.379			

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Outcome: Demonstrate a metal stressing process on aircraft engine airfoils that will reduce Foreign Object Damage (FOD) to those components and thus reduce the substantial maintenance burden incurred due to unscheduled engine removals caused by foreign object damage. This can be accomplished, in a cost effective manner, by using the low plasticity burnishing (LPB) process to induce FOD mitigating deep compressive stresses in vulnerable engine blades. The estimated cost avoidance for the remaining service life of the selected engine system (F100-220 engine) is conservatively estimated at \$144 million. The lead service is Air Force. The primary outputs and efficiencies are: (1) the LPB-imparted stresses are sufficient to meet increased FOD tolerance requirements and do not impair performance or life of the blade, (2) no distortion of blade geometry and no cracking or other damage to blade, and (3) cost of the LPB process to be \$20 per blade, with a threshold of \$40.

FY 2008 Output: Continued refinement and delivery of solution; continued planning/design of on-floor capability at Air Logistics Center. The Low Plasticity Burnishing project was scheduled for completion 4QFY08 but because of delays in engine vendor test validation, project has been extended to 3Q FY 2009; existing FY 2008 funds were adequate to support this extension. The transition manager is jointly the Air Force Research Lab, Materials Directorate and the Oklahoma City Air Logistics Center (OC-ALC).

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Modular Advanced Composite Armor Kits for Sport Utility Vehicles (SUV) (SOCOM)	1.326		

Outcome: The project will test lightweight, advanced composite armor for SUVs and Special Operation Non-Standard Civilian Vehicles that can be easily installed and repaired in the field by non-technical personnel without the need for special tools or equipment. This technology will provide immediate force protection and increased survivability for Special Operation Forces prosecuting Overseas Contingency Operations. Primary Output and Efficiency: Demonstrate modular fit and design of armor kits that provide National Institute of Justice Level 3 protection from small arms and antipersonnel fragmentation mines. Research Development Test and Evaluation (RDT&E) cost avoidance is \$61.000 million; manufacturing cost avoidance is estimated to be \$3.750 million; production cost avoidance savings is anticipated to be \$3.300 million; and operations and support cost avoidance is \$.024 million. Completion date is anticipated 31 March 2009.

FY 2008 Output: Received test articles, conducted analysis and vehicle integration studies, completed evaluation and analysis of vendor data, completed Phase II technical/environmental testing and highly successful live-fire demonstration of vehicle w/blast protection; prepared test report. Project received additional funds for more kits and testing in-theater. Project Manager traveled to Theatre of Operations to demonstrate integration of Modular Armor Kits in vehicles and making measurements of other vehicle(s) to possibly equip with similar blast armor protection.

FY 2009 Planned Output: Complete Phase III form, fit, & function, safety and operational test and evaluation; finalize Milestone C procurement and fielding decision package based on test and evaluation; submit project closeout report 2Q FY 2009.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Obstacle Avoidance SONAR for SOF Underwater Recon Vehicle (SOCOM)	0.579		

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Outcome: The proposed technology challenge will qualify an Obstacle Avoidance Sonar (OAS) in the unmanned Semi-Autonomous Hydrographic Reconnaissance Vehicle that is used by Naval Special Warfare for clandestine collection of sonar images and other very shallow water intelligence. The proposed OAS, a pre-planned product improvement, will allow the vehicle to "see" objects in its path and avoid them as required. Primary Outputs and Efficiencies: Demonstrate the capability of viewing horizontal and vertical planes, processing information, and providing course, altitude, and speed correction to the vehicle's guidance system to avoid obstacles. The Research Development Test and Evaluation (RDT&E) and manufacturing cost avoidance is \$0.500 million; and operation and support cost avoidance is: \$1.000 million. Completion date is anticipated 4Q FY 2009.

FY 2008 Output: Contracted for test articles; completed Phase I Performance Technical Testing qualifying critical capability to allow mission completion while providing for operations below water surface and prevent collisions and loss or repair of equipment; began Phase II operational testing.

FY 2009 Planned Output: Complete Phase II Operational Testing; complete test reports; conduct evaluation of combined Global Positioning System (GPS) and Sonar in new nose cone; obtain Milestone C production decision; submit project closeout report and exercise production options as applicable.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
RF Synthetic Instrument Signal Processing Engine Enhancement (RF-SISPEE) (Air Force)	0.599		

Outcome: To expedite repair of critical aircraft avionics and electronic attack jamming pods, measurably contributing to aircrew and aircraft survivability and weapons platform availability. This single synthetic instrument leverages the power of the latest technologies in Digital Signal Processing (DSP) techniques and simplified hardware to measure electrical signals more accurately than the many special purpose measurement instruments it replaces. The reduction in hardware resulting from the replacement of traditional measurement instruments with a single DSP-based system will increase the reliability of the test equipment and reduce the maintenance and calibration downtime of test equipment. The RF-SISPEE hardware modular and reconfigurable, allow component upgrades to match technological improvements. The lead service is Air Force. The primary outputs and efficiencies to be demonstrated are timely and accurate diagnoses of electronic attack pod failures, thus contributing to aircrew and aircraft survival.

FY 2008 Output: Demonstrated the portability of existing DSP software to Signal Processing Engine and completed integration of spectral analysis, power analysis, and signal generation software/firmware. Completed all Phase I activities. Transition Manager is Ogden Air Logistics Center.

FY 2009 Planned Output: Finalize sub-contract for Phase II activities with vendor; commence and complete Phase II with corresponding final report.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Ruck-Sack Portable UAV Geo-Spatial Video Exploitation System for Falcon View (SOCOM)	0.614		

Outcome: This project is a qualification test of software capable of linking geo-spatially referenced (GPS referenced) video reconnaissance to the FalconView Mapping System: the principal Special Operations Forces mission planning system, used for threat analysis, route selection, assault and maneuver preparation. Primary Outputs and Efficiencies: Demonstrate enhanced situational awareness of the battlefield and provide a tactical advantage to commanders and their troops. The RDT&E cost avoidance is \$5.500 million; procurement cost avoidance is: \$0.427 million; operations and support cost avoidance is \$2.500 million. Completion date is anticipated 30 April 2009.

FY 2008 Output: Negotiated a procurement contract for test articles, obtained safety release, and conducted initial test planning and technical testing.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2009 Planned Output: Conduct analysis of vendor data; perform operational test user evaluation; complete test reports; obtain procurement decision; prepare project closeout report and exercise production options as applicable followed by project closeout 3Q FY2009.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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Solar Power Adaptor/Multi-Purpose Processing Unit (SPA/MPPU) (Navy)	0.509		
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Outcome: A successful project will provide the United States Marine Corps (USMC) with the ability to integrate a self-sustaining power source for an average four-day mission profile instead of carrying the equivalent batteries. The SPA/MPPU can collect enough power during the day to operate communications and recharge batteries to continue operation through the night. A two-year project under sponsorship of the project and Marine Corps Systems Command, Program Manager Expeditionary Power Systems. Projected completion of all testing events is Calendar Year (CY) 2009. The primary outputs and efficiencies in the project are: (1) Weight reduction (carry fewer throw-away batteries); (2) Cost savings (fewer batteries to procure); (3) Adaptable to power other devices / emerging requirements; and (4) Research Development Test and Evaluation (RDT&E), Procurement and Operations & Support Life-Cycle Cost Avoidances of \$0.500 million, \$3.000 million, and \$5.000 million with a Return on Investment of 30:1.

FY 2008 Output: Finalized Source Selection and Planning documentation during 2Q FY 2008. Completed Test Article Contract Award, received Phase I Bid Samples, and initiated Phase I Limited Technical Evaluation and Source Selection Process during 3Q. Completed Phase I Limited Technical Evaluation and Source Selection, awarded contract for Phase II Test Article, and finalized Test Planning for Phase II testing during 4Q.

FY 2009 Planned Output: Receive Test Articles and initiate Phase II Qualification Testing during 1Q. Complete Phase II Qualification and Field/User Evaluation and initiate the Data Analysis & Evaluation by end of 2Q. Receive Technical Test Report, Milestone C Decision and Close-out Report by end of 3Q.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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Super-Capacitor Power Source for Gun Launched Munitions (Army)	0.160		
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Outcome: To eliminate the need to "double set" the projectile at cold temperature due to slow battery rise time, eliminate the need to discard or fire the Excalibur projectile within fifteen days after the projectile has been initialized with Global Positioning System (GPS) data and allow the Excalibur to be field-initialized an indefinite number of times versus a maximum of twenty-times over a fifteen-day operating life period associated with the current battery. The lead service is Army. Efficiency: (1) high G artillery gun launch survivability; (2) 20 year storage life capability, (3) Data Hold Battery part replacement at approximately one third the unit cost, (4) Excalibur projectile integration, (5) Enhanced Portable Inductive Artillery Fuze Setter (EPIAFS) interoperability, (6) unlimited re-charging and projectile re-initialization cycles and (7) increased factory handling safety since supercapacitor power source approach eliminates a pyrotechnic battery primer. RDT&E Cost Savings: \$1.400 million. Operations and Support Cost Savings: \$1.100 million. Procurement Cost Savings: \$5.400 million. Fielding Reduction: 30 Fewer Rounds @ \$0.036 million ea. Procurement Potential: \$2.100 million. Return on investment (ROI) is 14 (\$0.8500 million / \$0.600 million).

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2008 Output: Conducted component level, high G, rail gun survivability tests at hot and cold temperature extremes. Developed an artillery gun launch survivable packaging concept for the power source. Conducted EPIAFS electrical power transfer characterization testing over temperature. Conducted trade studies leading to a selected electrical design approach. Conduct power source subassembly high G survivability rail gun testing and electrical performance validation testing. Modify Excalibur Guidance and Navigation Unit (GNU) subsystem design to incorporate the new power source and conduct GNU / EPIAFS interoperability testing. Spiral Output - technical and electrical design features have already been incorporated into the Excalibur projectile for future insertion of the supercapacitor power source. Also, demonstration of interoperability between modified GNU containing supercapacitor power source and EPIAFS.

FY 2009 Planned Output: Manufacture two special GNUs that incorporate the new power source for electrical performance verification testing. Conduct a final operational demonstration of high G survivability by testing special GNUs in the rail gun and by live gun qualification testing of Excalibur projectiles containing the new power sources. Begin transition by identifying the needed Excalibur Technical Data Package (TDP) and production test equipment changes required for insertion of supercapacitor power source into the production build in the FY 2009 or FY 2010 timeframe. Transition manager is Program Manager Excalibur.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Unmanned Surface Vehicle (USV) Mine Neutralization (Navy)	0.379		

Outcome: A successful project will provide the Navy an effective, efficient, low-risk method for providing mine neutralization initially from a Manned Surface and ultimately from a Unmanned Surface Vehicle (USV). The primary outputs and efficiencies to be demonstrated in the project are: (1) this fleet Mine Neutralization (MN) System is a Military-off-the-Shelf (MOTS) mature and reliable system for the relocation, identification and disposal of sea mines and other ordnance found at sea; and (2) avoid Research Development Test & Evaluation (RDT&E), procurement and manufacturing cost of more than \$12.300 million.

FY 2008 Output: Completed fabrication of USV-MN system components. Completed in-water testing and developed contractor demonstration report. Completed training and system testing. Completed end user evaluation and environmental test. Completed Archerfish integration demonstration.

FY 2009 Planned Output: Develop and issue a close out-report and an in-depth test and evaluation report with recommended transition plan will be delivered to Explosive Ordnance Disposal and Office of Naval Research by end of the 2Q of FY 2009.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Vaccine and Reagent Refrigeration System (VARRS) (Navy)	1.139		

Outcome: A successful project will provide the United States Marine Corps (USMC) a ruggedized Vaccine and Reagent Refrigeration System (VARRS), to replace deficient Health Service Support systems currently in the field. A two-year project under sponsorship of the project and Marine Corps Systems Command (MARCORSYSCOM), Chemical Biological Radiological Nuclear (CBRN) Medical. Projected completion of all testing events is CY 2009. The primary outputs and efficiencies in the project are: (1) Provide a fully ruggedized VARRS for storing and transporting life saving vaccines and reagents; (2) A 2000 percent increase in reliability over currently used commercial refrigeration systems; (3) The direct contribution to the survivability of patients; and (4) Research Development Test & Evaluation (RDT&E), Manufacturing, Procurement, and Operations & Support Life-Cycle Cost Avoidances of \$10.250 million, \$3.600 million, \$3.900 million and, \$5.784 million respectively with a Return on Investment of at least 26:1.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2008 Output: Initiated the Draft Statement of Work 1Q and received Vendor Test Data. Received DACP funds and submitted contract waiver request 2Q. Contract Waiver approved and submitted Request for Proposal at end of 3Q. During 4Q, continued working the contract effort in order to get awarded by end of 1Q FY 2009.

FY 2009 Planned Output: Complete Contract Award, initiate Test Planning along with fabrication of Test Articles during 1Q. Complete Fabrication of Test Articles and delivery, initiate Lab and Technical Testing by end of 2Q. Complete Technical Testing and Field User Evaluation by end of 3Q. Receive Technical Test Report, Milestone C Decision and Close-out Report by end of 4Q.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Armored Biological Integrated Detection System (BIDS) (Army)	0.582	2.449	

Outcome: This project is to qualify and integrate the S-788 Lightweight Multi-purpose Shelter version of BIDS currently on the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) onto the Armored Medium Tactical Vehicle (MTV) 5-Ton truck to provide increased biological defense on the battlefield. The best value sensor will upgrade the currently fielded Joint Biological Point Detection System (JBPDS) and Joint Portal Shield (JPS) assay-based identifiers to reduce biological warfare agent exposure by identifying bacteria, viruses, and toxins with 1-3 orders of magnitude increase in sensitivity within 15 minutes or less for the fielded sensors. The program is joint service with Army as the lead. The primary outputs and efficiencies to be demonstrated are as follows: (1) improved identification sensitivity performance in order to eliminate need for sensitivity waivers; (2) decreased operational and sustainment cost especially in the area of consumables, and (3) supports hardware commonality to include both JBPDS and JPS systems. Research Development Test & Evaluation (RDT&E) Cost Savings: \$14.000 million based on cost analogy from the original JBPDS from 1996 to when it entered Low Rate Initial Production (LRIP) in 2001. Operations and Support Cost Savings: \$4.000-6.000 million estimated, based on reduction of cost of consumables. Procurement Cost Savings: \$0-40 thousand per system. Fielding Reduction: 2 years. Procurement Potential: approximately 580 systems or \$24.000 million. Other Benefits: Joint Service and supports four Biological Detection Programs.

FY 2008 Output: A technology readiness evaluation (TRE) was conducted in FY 2007 of potential Commercial Off the Shelf (COTS) systems. Results of this TRE were presented in early 2QFY08. Initial FY 2008 funds were received in 2Q FY 2008. Contract was awarded to the top candidate sensor for integration into JPS systems and testing as an integrated system alongside a JPS baseline system against biological stimulant and interferent testing. Results indicate improved performance and logistics with the new sensor.

FY 2009 Planned Output: FY 2008 funds will continue to provide validation of the new sensor. Contract will be awarded to initiate background and operational testing at fielding sites of the newly integrated sensors in the JPS. In addition, developmental testing of the new sensor along with consumables will be initiated for transition into the JBPDS Build II contract as well as potential replacement sensor for field analytical lab. Transition manager is Joint Program Manager Biological Defense and completion date is expected December 2009.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Assessment of Lightweight Weapon Mount (Navy)	2.499	2.569	

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: A successful project will provide the Department of the Navy with a commercially off-the-shelf (COTS) three-axis stabilized weapons mount. Such mounts have been developed for the Motion Picture industry that stabilize heavy cameras on turbulent moving platforms. This technology has received preliminary testing by Navy SEALs in live fire tests at Niland with a .50 cal, mounted on a High Mobility Multi-purpose Wheeled Vehicle (HMMWV), and held rounds in a tight grouping during off road testing. The overall comment from the SEALs was that this technology should be fielded to Iraq as soon as possible. The primary outputs and efficiencies to be demonstrated in the project are: (1) Provide the warfighter more accurate and lightweight crew-served mounts that are more cost-effective than current remote stabilized mounts; and (2) avoid Research Development Test & Evaluation (RDT&E), Operations and Support (O&S) and manufacturing costs of over \$37.000 million.

FY 2008 Output: Developed and issued Market Survey. Developed Contract Requirements for procuring first test articles and other additional test items. Procured Test Ammunitions. Developed Test Plan.

FY 2009 Planned Output: Planned to receive test articles 2Q FY 2009. Conduct Technical Testing and Field User Evaluation. Prepare Weapon System Explosive Safety Review Board (WSESRB) review and certification. Modify test unit to meet requirements. Complete Tech Testing. Receive Technical Test Report and Close-out Report.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Collaborative Video Dissemination Service (Air Force)	0.879	0.949	

Outcome: Demonstrate and document a cost-effective, wide-area video exploitation and dissemination capability that improves the analytical value of unmanned aerial systems (UAS) video. Video backhaul systems provide a powerful, but manpower intensive, situational awareness capability to end users at supporting commands. The system as currently configured, however, does not provide the end user with the ability to record, analyze, fuse or otherwise manipulate the video streams, making the ingestion of the UAS intelligence extremely cumbersome. The Collaborative Video Dissemination Service (CVDS) will provide these capabilities. The lead Service is Air Force. The primary outputs and efficiencies to be demonstrated are: (1) transmission of National Geospatial-Intelligence Agency (NGA) compliant and properly formatted UAS telemetry information along with the UAS video that is backhauled for dissemination to deployed units and analysis centers, (2) a significant reduction in the manpower required to view and exploit the video by leveraging and sharing analyst notations from any of the exploitation sites, and (3) optimization of satellite bandwidth by opportunistically injecting staged content (video, imagery, intel) into the forward broadcast.

FY 2008 Output: Completed critical design review, hardware/software procurement, prototype integration and configuration, and test plan development. Initiated and completed test execution and validation and initiated activities to support prototype demonstration.

FY 2009 Planned Output: Complete prototype demonstration. Conduct post demonstration review. If review favorable, begin transition planning for field service evaluation and deployment. Complete close-out report. The transition manager is the Defense Information Systems Agency.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Enhanced Smart Triple Ejector Rack (Air Force)	2.079	1.149	

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: Demonstrate and document the flight characteristics and increased operational capability of a modified Triple Ejector Rack-9A (TER-9A). This modification will incorporate the MIL-STD-1760 Common Aircraft and Weapons Electrical Interface into the TER-9A, currently employed on the F-16 aircraft. This modification will increase F-16 smart weapons carriage from two Joint Direct Attack Munitions (JDAM) to six. The goal is to qualify the modified TER-9A for employment on Active and Air National Guard F-16 aircraft. The lead service is Air Force. The primary outputs and efficiencies to be demonstrated are: (1) a modification of the TER-9A to a smart weapons capability while keeping its conventional capability; (2) a resulting reduced logistics footprint in the form of less maintenance man hours to re-configure aircraft for mission changes, and (3) increased aircraft availability as more bombs per aircraft can ultimately reduce aircraft required for the mission.

FY 2008 Output: Completed contract modification and statement of work. Acquired US Government-furnished test articles and mod kits. Initiated test and evaluation of item.

FY 2009 Planned Output: Continue test and evaluation. Complete close-out report. Initiate low-rate initial production, initial fielding, and begin field service evaluation followed by full-rate production. The transition managers are the 646 Aeronautical Support Squadron and Air Combatant Command.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
External Auxillary Power Unit (U-EAPU) (Navy)	0.792	0.624	

Outcome: A successful project will provide the United States Marine Corps (USMC) with a U-EAPU that is capable of providing a sufficient secondary power source, effectively eliminating the reliance on using a vehicles primary engine or power system. The upgrades will increase operational effectiveness, lethality, survivability, and prevent incidents of fratricide. A two-year project under sponsorship of the Defense Acquisition Challenge Program (DACP) and Marine Corps Systems Command (MARCORSYSCOM), Program Manager Expeditionary Power Systems. Projected completion of all testing events is CY 2009. The primary outputs and efficiencies in the DACP are: (1) Supplemental power to a wide range of tactical vehicles to operate vehicle systems including communication suites, Improvised Explosive Device (IED) defeat equipment, fire control systems, M1A1 turret drive and Chemical Biological Radiological Nuclear (CBRN) protective systems; and (2) 50 percent reduction in noise intensity (acoustic signature), increased reliability and increased power output in similar sized units; (3) Research Development Test & Evaluation (RDT&E) and Operations & Support Life-Cycle Cost Avoidances of \$8.000 million and \$20.000 million with a Return on Investment of 37:1.

FY 2008 Output: Approved U-EAPU for the United States Marine Corps (USMC) M1A1, received the Research and Development funding, and initiated contract preparation during 2Q. Received Test Data at the end of 3Q.

FY 2009 Planned Output: Award Phase I Test Article Contract, Received Test Articles, and initiate Phase I test efforts during 1Q. Complete Phase I test, initiate down selection process and exercise contract options for Phase II by end of 2Qr. Receive Phase II Test Articles, initiate and complete Procurement testing and commence Field User Evaluation (FUE) by end of 3Q FY 2009. Complete FUE, Receive Technical Test Report, and provide Milestone C Decision along with the Close-out Report.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
F-15 Digital Head Up Display (Air Force)	0.779	2.089	

Outcome: Demonstrate and document the flight characteristics and increased operational utility and reliability of a digital Head-up Display (HUD) over the analog display currently employed in the F-15 C/D aircraft. The goal is to qualify the item as a preferred spare for the F-15. The lead service is Air Force. The primary outputs and efficiencies are: (1) realization of significant net acquisition cost savings for item replacement and (2) a significant decrease in downtime due to HUD maintenance resulting from the replacement of the analog HUD with the more easily maintained digital HUD.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY  
**RDTE, Defense Wide BA# 5**

PE NUMBER AND TITLE  
**0604051D8Z - Defense Acquisition Challenge Program (DACP)**

PROJECT  
**P051**

FY 2008 Output: Contract award delayed because of contract processing. Completed 90 percent of activities required to award contract.

FY 2009 Planned Output: Leverage findings from F18 Hornet digital HUD demonstration and qualification to facilitate the completion of software and hardware component integration and installation of the unit into aircraft. Prepare for qualification activities in FY 2009. Provide two upgraded units to be used for flight demonstration and verification. Prepare for flight worthiness qualification. Finalize flight worthiness test final report. The F-15 digital HUD project is scheduled for completion in June 2009. The transition managers are the F-15 C/D system program office, Wright Patterson Air Force Base (AFB), OH, and the F-15 HUD item manager, Warner Robins Air Logistics Center, Warner Robins AFB, GA.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
High Density Swaging Machine (Navy)	0.579	1.099	

Outcome: Aircraft are recovered aboard aircraft carriers by the tailhook engaging the arresting gear cable, which connects to an engine below decks to absorb 50 million foot-pounds of energy. Both the cable and engine are Critical Safety Items-failure could likely mean loss of aircraft and life. During each cable replacement, sailors must attach a terminal to the cable aboard ship. The current process requires sailors to pour molten zinc at 1000 degrees Fahrenheit into a socket on a moving ship, exposing the sailors to toxic materials and noxious gases. The primary outputs and efficiencies to be demonstrated in the project are: (1) the High-Density Swaging Machine replaces the current process by pressing the terminal onto the cable. It will produce 2200 Tons of pressing force in a package small enough to be viable aboard ship, eliminating a risk of injury and long-term health to personnel; and (2) avoid Research Development and Testing, and Operations and Support costs worth over \$5.600 million.

FY 2008 Output: Designed and fabricated new terminal. Verified the swaging procedure (i.e. required pressing force over sections of terminal) by testing with real arresting gear cable and an off-the-shelf swaging machine. Produced non-destructive inspection procedures for the swaged cable-terminal bond. Completed ship installation package.

FY 2009 Planned Output: Complete hardware design of the swaging machine. Build and test the swaging machine by testing cables and swaged cable-terminal bonds on shipboard-representative arresting gear at Navy Lakehurst. Complete logistics package.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Integrated Shipboard Network System (ISNS) Storage Challenge (Navy)	0.317	0.747	

Outcome: This project will test new commercial off-the-shelf solutions to address end-of-life issues with its current network storage product. The incumbent vendors next-generation product will exceed the heat and power envelope for the system resulting in potentially millions of dollars of unnecessary rack redesign/upgrades. The challenge the Navy faces is to provide the network storage while staying within the heating and power specifications for our Navy ships afloat. The primary output and efficiencies to be demonstrated in the project are: (1) interoperability with existing system (plug and play); (2) increased performance (additional storage capacity); (3) meeting size, weight and power constraints; and (4) avoiding Research Development (RDT&E) and procurement costs of over \$7.500 million.

FY 2009 Planned Output: Test planning commenced 1Q FY 2009. Test article contracts are anticipated for award 2Q FY 2009. Performance testing and environmental testing planned for 3Q FY 2009.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2010 Planned Output: The technical test report and project close-out report are anticipated 1Q FY 2010.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint Warfighter Biological Agent Sensor (Army)	0.579	1.349	

Outcome: Competitive test and evaluation of automated commercial-off-the-shelf Biological Agent identification sensor for performance and cost advantages to support the warfighter in high threat areas. The sensor will upgrade the currently fielded Joint Biological Point Detection System (JBPDS) and Joint Portal Shield (JPS) assay-based identifiers to reduce biological warfare agent exposure by identifying bacteria, viruses and toxins with 1-3 orders of magnitude increase in sensitivity within 15 minutes or less for the fielded sensors. The primary outputs and efficiencies to be demonstrated are as follows: (1) Improved identification sensitivity performance in order to eliminate need for sensitivity waivers; (2) Decreased operational and sustainment cost especially in the area of consumables, and (3) Supported hardware commonality to include both JBPDS and JPS systems. Efficiency: Research Development (RDT&E) Cost Savings: \$14.000 million based on cost analogy from the original JBPDS from 1996 to when it entered Low Rate Initial Production (LRIP) in 2001. Operation and Support Life-Cycle cost savings: \$4.000 - \$6.000 million estimated based on reduction of cost of consumables. Procurement Cost Savings: \$0-0.040 million per system. Fielding Reduction: 2 years. Procurement Potential: approximately 580 systems or \$24.000 million. Other Benefits: Joint Service and supports four biological detection programs.

FY 2008 Output: Results of technology readiness evaluation presented in early 2Q FY 2008. Top candidate system(s) procured and began extensive validation to include live biological agent testing and interferent testing.

FY 2009 Planned Output: Live biological agent testing and interferent testing will continue and will be integrated as the identifier into the JPS, JBPDS, and possibly JBTDS systems. Integration will include product verification testing such as hardware Military Standard (MIL STD) 810 type testing. The integrated system will undergo biological simulant testing to verify integration did not affect performance. Once safety and integration testing is completed, operational and maintenance procedures and documentations will be adjusted for warfighter usage.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Mobile IP Interface to TDL (Navy)	0.779	0.849	

Outcome: This project is to demonstrate dynamic integration of Tactical Data Links (TDLs) via the US Fleet's tactical Internet Protocol (IP) backbone, which is provided by the Automated Digital Network System (ADNS). The lead service is the Navy. Two-year project sponsored by Office Secretary of Defense with completion date of end of CY 2009. The primary outputs and efficiencies to be demonstrated are: (1) capability for TDL platforms to automatically maintain communications with other TDL platforms when one platform migrates to a different TDL net; (2) a Commercial Off the Shelf (COTS) based system and network design for this purpose that is compatible with ADNS; (3) increased access for IP users to COMMS with TDL users (4) reduced communications down time as TDL platforms change nets; (5) reduced management burden for TDL nets used in tactical operations; and (6) Avoiding Research Development (RDT&E) and Operations and Support (O&S) costs of over \$9.500 million.

FY 2008 Output: Test article contract was awarded mid-4Q FY2008. TDL lab personnel began development of test plans and the lab set-up for test conduct and demonstration of dynamic TDL/IP integration functionality in lab.

FY 2009 Planned Output: Conduct joint field trial testing. Finalize configuration and conops documentation based on test results. Spiral output is a system based on COTS hardware, Cisco Routers, servers, Mobile IP Software that is integrated with the ADNS system.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2010 Planned Output: Complete transition to ADNS and integration into the ADNS configuration. TIPI completion date is Dec 2010. Prepare Technical Test Report and close-out report 1Q FY 2010.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Omni-Directional Antenna for M156 MI-RAMS (Army)	0.829	0.899	

Outcome: A successful project will dramatically reduce time on target (mission survivability) and increase mission effectiveness through higher operational reliability in challenging target environments (underwater, urban, littoral, night operations, constrained target sets). Army Combat Engineers and Special Operations Forces (SOF) may emplace demolition charges and their Magneto Inductive Remote Activated Munitions System (MI-RAMS) receivers at any attitude or in any orientation (up, down, sideways) instead of vertically only. The lead service for this effort is the Army. The primary outputs and efficiencies to be demonstrated are as follows: (1) 3-Axis Antenna (All Orientation) Antenna for Army/SOF M39 and XM40 Magneto-Inductive Remote Activation Munition System (MI-RAMS); (2) Technical Data Package suitable for Full Rate Production and (3) Test data and user assessment to allow for a production decision.

FY 2008 Output: The contract award date was April 2008 for the manufacturing of the test hardware to support qualification tests. Conducted technical reviews in July 2008 and October 2008 between government and contractor to fully define electrical and operational/performance characteristics, review contractor progress. The test plan was reviewed by government and contractor personnel. The final test plan was completed and approved November 2008.

FY 2009 Planned Output: Funds will be used to support qualification testing of the items delivered in 3Q FY 2009 at Aberdeen, Maryland. Contractor personnel expertise will be utilized to support qualification and performance tests. To expedite testing and reduce test cost, user testing/evaluation will be conducted concurrently with the qualification tests. Field performance tests in unique environments such as tunnels and littoral zone will be done concurrently with qualification test. Based on performance test and user assessment, a Production Decision is anticipated during the 4Q FY 2009. The technical test report and project close-out report are anticipated at the end of 4Q FY 2009.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Sensor Fusion Clip-On Night Vision Device for SOF Combat Assault Rifle (SOCOM)	0.614	0.604	

Outcome: This competitive test project will evaluate a Sensor Fusion Clip-on Night Vision Device (CNVD) for the Special Operations Forces (SOF) Combat Assault Rifle (SCAR) that integrates the technologies of both thermal and image intensification into one sight. This will provide the SOF warfighter a greater advantage when operating in austere environments. Primary Outputs and Efficiencies: Demonstrate significant improvement in target acquisition in rain, mist, smoke, vegetation, fog, dust, and low light. The Research Development (RDT&E) cost avoidance is \$7.000 million, manufacturing cost avoidance is \$13.000 million; procurement cost avoidance is \$.480 million; operations and support cost avoidance is expected to be \$2.800 million. Completion date is anticipated 31 January 2010.

FY 2008 Output: Received funding and developed performance specifications; obtained safety release; and conducted initial technical testing.

FY 2009 Planned Output: Conduct operational test/ user evaluation; complete test reports; obtain procurement decision; prepare project closeout report and exercise production options as applicable.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Sinuous Spiral Antenna for the AN/ALQ-211 Electronic Warfare System (SOCOM)	0.619	0.869	
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Outcome: This project will be a qualification test and evaluation of a new detection antenna for the ALQ-211 Suite of Integrated Radio Frequency Countermeasures (SIRFC) currently being fielded on Special Operations aircraft. Primary Outputs and Efficiencies: Demonstrated that SIRFC can identify the location of radio frequency guided threats on the electronic warfare battlefield and significantly enhance the detection of poorly and ambiguously detected threats; provide polarization sensitivity allowing SIRFC to better correlate the received signal with its order of battle database, which leads to quicker identification and jamming; improve sensitivity provided by the sinuous spiral antenna ensuring threat detection in all aircraft attitudes; conversely, allows special operations aircraft to jam enemy radars in all aircraft attitudes; improve threat geo-location and enhances situational awareness. The Research Development Test and Evaluation (RDT&E) cost avoidance is \$10.000 million; procurement cost avoidance is: \$3.000 million. Completion date is anticipated 15 September 2009.

FY2008 Output: Conducted project planning and data review and analysis; began contract negotiations with expectation of contract award no later than 31 December 2008.

FY2009 Planned Output: Complete contract for test services; receive test articles; and conduct Phase I - concept demonstration; complete Phase II, implement, testing & validation; complete test reports; obtain Milestone C procurement decision; submit closeout report by 4Q FY 2009; and initiate production options as applicable.

<u><b>Accomplishments/Planned Program Title:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Stand Alone Patient Simulator (Army)	1.379	0.299	

Outcome: A successful project will provide the DOD with a rugged field medical training capability that is applicable from point of injury to theater evacuation. The proposed system tests will prove the efficacy of using Stand Alone Patient Simulator (SAPS) technologies in various medical training scenarios including care under fire, tactical field care, Casualty Evacuation (CASEVAC)/ Medical Evacuation (MEDEVAC), forward surgical teams, hospital care, and Air Force Critical Care Air Transport (CCAT) training. The primary outputs and efficiencies to be demonstrated in the project test are: (1) ruggedness in field training exercises; (2) clinical accuracy at various levels of care; (3) flight safety certification for rotary wing aircraft for care in the air training; (4) documentation to support the establishment of a wireless patient simulator acquisition program; (5) avoiding RDT&E costs of \$3.000 million.

FY 2008 Output: Initial field tests conducted at Fort Bragg, NC and at Camp Bullis, TX. Failures in bone ruggedness and in skin ruggedness were noted and testing was suspended to address the failures. New skin formulations were developed and engineering evaluation of new bone materials is underway. Coordination for further user evaluations is underway. Projected test sites are Fort Lewis, Camp Lejeune, Camp Pendleton, a Navy hospital ship, and other military treatment facilities in Germany.

FY 2009 Output Planned: Reconfiguration of the test articles with the new bones and skins. Delivery to the long term test sites. Coordination with the Air Force for fixed wing flight safety certifications for use of the SAPS with CCAT training flights. User tests at Fort Lewis, Camp Lejeune, Camp Pendleton, and a Navy hospital ship. Conduct long term tests (more than 2 weeks) at Camp Lejeune, Camp Pendleton, Camp Bullis, and possibly with units deployed to Baghdad. Final test report will support the establishment of a program of record for wireless patient simulators.

<u><b>Accomplishments/Planned Program Title:</b></u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Advanced IR Expendable Decoy (Air Force)		1.399	2.851

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: The evaluation and qualification of a new technology kinematic infrared (IR) decoy that protects Navy and Air Force aircraft (C-130, F-16, A-10) against current generation infrared guided missiles that have the discriminatory capability to reject conventional non-kinematic flares. Following the successful completion of the demonstration the final steps necessary for the full qualification of the flare and the preparation of a technical data package for procurement will be completed. The lead service is Air Force. The primary outputs and efficiencies to be demonstrated in this Defense Acquisition Challenge program are the successful demonstration of a newly-developed kinematic flare that protects medium signature aircraft against heat-seeking missiles that use kinematic techniques to discriminate against conventional non-kinematic flares. This flare is much more compact than existing kinematic flare designs. This compact design will allow more decoys to be carried per mission. The decoy also takes advantage of new decoy design technology which provides for better performance in a compact shape when compared to existing decoys.

FY 2009 Planned Output: Complete C-130 flight tests; finalize qualification test design for A-10 and F-16 flight tests; procure flares; complete computer modeling for C-130, A-10 and F-16; complete A-10 and F-16 flight tests; analyze data for qualification decision; make qualification decision; if qualified, finalize flare specification details.

FY 2010 Planned Output: Vendor begins manufacture of qualification flares (2066 required); complete all qualification and safety testing; analyze data in preparation for functional configuration audit; prepare technical orders; plan low-rate initial production; pass transition execution to Hill Air Force Base. The transition manager is 647 Aeronautical Systems Squadron, 77 Aeronautical Systems Group, Air Force Material Command.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Digital Solid State Combat Display (Navy)		0.949		

Outcome: A successful project will provide the Department of the Navy new digital solid-state displays. The new displays will improve the operational success of close-in weapon system operators to see the full range of enhancements the Phalanx Thermal Imager Sensor (PTI) can provide by helping discernment of targets. The primary outputs and efficiencies to be demonstrated are: (1) Provide significant improvement to the Close In Weapon System Total Cost of Ownership due to dramatic reliability and supportability improvements; (2) Deliver a ruggedized, lightweight, low power display that provides extremely high quality picture that is viewable in daylight conditions; and (3) avoid Research Development Test and Evaluation (RDT&E), Operations and Support (O&S) and procurement costs of over \$46.000 million.

FY 2009 Planned Output: Modify existing contract with Raytheon to add Combat Display Inc. (CDI) as a display supplier. Develop Test Plan and System Integration Process.

FY 2010 Planned Output: Test article systems integration. Complete systems testing and evaluation. Deliver test report and Close out.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Expeditionary Water Packaging System (EWPS) (Navy)		1.374	0.750	

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: A successful project will provide the United States Marine Corps with an expeditionary hydration solution that will address safety hazards associated with the distribution of unregulated bottled water to deployed forces, as well as the severe logistics burden incurred. The EWPS will supply the warfighter with a portable water packaging system for all phases of Marine Expeditionary Unit (MEU), Marine Expeditionary Battalion (MEB), and Marine Expeditionary Force (MEF) deployments. Projected completion of all testing events is CY 2010. The primary outputs and efficiencies to be demonstrated in the project are: (1) Provide the capability to package and distribute potable water for less than \$1.00 per liter; (2) Increase warfighter survivability by eliminating the threat of contamination to unregulated packaged water through sabotage or indirect means; (3) Increase operational flexibility of Marine forces deployed in expeditionary environments; and (4) avoid Procurement and Operations & Support Life-Cycle Cost of \$2.000 million, \$0.465 million, and \$65.000 million with a Return on Investment of 46:1.

FY 2009 Planned Output: Initiate contract preparation and award by end of 2Q. Complete contract award during 3Q. Receive Test Articles and initiate qualification testing by end of 4Q.

FY 2010 Planned Output: Continue testing and expect to complete Qualification testing and initiate Field User Evaluation (FUE) during 2Q. Complete FUE by end of 3Q. Receive Technical Test Report, Close-out Report, and Milestone C Decision by end of 4Q.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Handheld Total Fluid Condition Monitor (SOCOM)		0.849	

Outcome: This qualification test project will evaluate an affordable, easy to use, handheld monitor that provides real-time, on demand, point-of-use, fluid condition assessment for hydraulic & lubrication oils, equal to current technologies, while simultaneously increasing readiness & significantly reducing cost of testing. Vendor will provide test articles configured specifically for the Army's Special Operations aviation fleet. The FluidScan handheld oil analysis systems will be capable of meeting all oil evaluation and reporting requirements currently obtained via remote site testing. Primary Outputs and Efficiencies: Fluid scan usable by average soldier to obtain on-the-spot fluid condition assessment in less than 2 minutes; system meets environmental compliance; equivalence to oil analysis in Tech Manual 38-301-2 determining contamination based on viscosity, moisture/water content, flash point, acidity, dispersancy, insolubles/total solids and particles/debris per Technical Bulletin 43-0211. The Research Development Test and Evaluation (RDT&E) cost avoidance is \$8.500 million, procurement cost avoidance is \$4.000 million; operations and support cost avoidance is expected to be \$6.500 million. Completion date is anticipated 16 March 2010.

FY 2009 Planned Output: Conduct project planning, procure test articles, conduct Analysis/Study/Integration, analyze vendor test data, begin development testing and preparation of Technical Test Report.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Improved Viper Strike PGM (SOCOM)		1.325	0.556

Outcome: Viper Strike is an operationally fielded lightweight, precision guided munition (PGM) using Global Positioning Satellite (GPS) aided navigation and a semi-active laser (SAL) seeker to attack targets. This qualification test project will evaluate subsystems that reduce the cost and procurement lead times of the SAL and GPS sub-systems, while maintaining or improving operational attack capability of the Viper Strike munition. Primary Outputs and Efficiencies: Demonstrate ASAL form fit and function replacement to existing SAL seeker; validate equal or greater SAL operational capability; demonstrate GPS receiver form-fit-function replacement to the existing GPS receiver; validate equal or greater GPS operational capability. The RDT&E cost avoidance is \$100.000 million, manufacturing cost avoidance is \$6.000 million; procurement cost avoidance is \$.0360 million; operations and support cost avoidance is expected to be \$.900 million. Completion is anticipated 10 March 2010.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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FY 2009 Planned Output: Conduct project planning, procure/contract for test articles, receive test articles, conduct analysis/study/integration, analyze vendor data, conduct initial technical testing, obtain safety release, prepare tech test report; begin performance of operator/user assessment/test.

FY 2010 Planned Output: Complete operator/user assessment test, prepare operator/user assessment test report, complete documentation for Milestone C decision packet; and prepare project closeout report 2QFY10.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Intelligent Power Management and Distribution System (IPMDS) (Army)		1.145	0.920

Outcome: A successful project will provide the Army with an IPMDS for the use in mobile power grids that will reduce training and fuel consumption, while providing a more reliable power grid with less downtime to mission critical equipment. Reports from Warfighters returning from Iraq and Afghanistan have reported issues with load balancing which leads to shutdown of power and potential harm to equipment. In order to sustain power availability to the Tactical Operations Centers, the Army will test non-developmental items from Custom Manufacturing & Engineering of Saint Petersburg, Florida, Lex Products, Inc. of Stamford, Connecticut and Rolls-Royce of Cheshire England. The intent is to transition to US Army PM-MEP (Mobile Electric Power) in FY 2010. The primary output and efficiencies will be demonstrated in the test are: (1) automatic electrical load balancing across the three phases of the generator set, (2) increased safety with indication of improper grounding and improper setup and, (3) avoid potential added Research Development Test and Evaluation (RDT&E) costs of \$5.000 million and avoid Operations and Support (O&S) costs of \$10.000 million.

FY 2009 Planned Output: Contract award and contract management. Travel to contractors to witness contractor testing. Test Article delivery is anticipated during the 2Q FY 2010.

FY 2010 Planned Output: Test Article delivery is anticipated during the 2Q FY 2010. Initial electrical and safety testing will be completed during the 2Q FY 2010 at Fort Belvoir, Virginia. The operational testing will be conducted and completed during the 3Q FY 2010. A Milestone C Decision is anticipated at the beginning of the 4Q FY 2010. The Technical Test Report and Project Close-out Report are anticipated during the 4Q FY 2010.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
M1A1 Sniper Detection System (Navy)		0.849	0.392

Outcome: Provide the United States Marine Corps (USMC) with a Sniper Detection System (SDS) that will instantaneously detect and accurately locate an enemy sniper when a round has been fired. This new M1A1 capability will significantly improve the safety of tank crews and dismounted infantry. A two-year project under sponsorship of the project and Marine Corps Systems Command, Program Manager Tank Systems. Projected completion of all testing events is CY 2010. The primary outputs and efficiencies in the project are: (1) Drastically improve survivability and lethality of the M1A1 Tank; (2) Increase survivability and situational awareness of dismounted infantry; (3) Fulfill a crucial capability gap of the M1A1 Tank; and (4) avoid Research Development Test and Evaluation (RDT&E) cost of \$4.500 million with a Return on Investment of 13:1.

FY 2009 Planned Output: Initiate Contract Preparation during 1Q. Complete Contract Award and initiate Test Planning by end of 2Q. Commence the Fabrication of Test Articles during the 3Q. Complete Test Planning, initiate Lab Testing, and the Fabrication of the Test Articles by end of 4Q.

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>		
<p>FY 2010 Planned Output: Receive Test Articles, initiate M1A1 Integration &amp; User Interface, and complete Lab testing by end 1Q. Complete M1A1 Integration &amp; User Interface, initiate Tactical Testing and M1A1 SDS Operational Testing, during 2Q. Complete Tactical Testing and Receive Test Report by 3Q. Provide Milestone C Decision and Closeout Report by end of 4Q.</p>				
<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Next Gen Night Vision Imaging Technology (SOCOM)		0.849	0.882	
<p>Outcome: This comparative test project will evaluate cutting edge low-light camera technology for applications in next-generation Special Operations Forces (SOF) Ground Mobility Visual Augmentation Systems (GM-VAS). These image fusion components will be integrated into handheld, headworn and weapon mounted visual augmentation systems. The technology will exploit next-generation systems electronic images that will be processed for image enhancement, target identification and image fusion, which cannot be performed with analog image tubes. Primary Outputs and Efficiencies: Demonstrate improvement in resolution from the current state of 40 line pairs/millimeter(lp/mm) to a minimum of 50 lp/mm; reduce power consumption from 3 watts to 1.5 watts or less; increased low light sensitivity; increase the detection and identification ranges; provide for increased security. The Research Development Test and Evaluation (RDT&amp;E) cost avoidance is \$1.000 million, procurement cost avoidance is \$.500 million. Completion date is anticipated 30 November 2010.</p> <p>FY 2009 Planned Output: Conduct Project Planning with established Integrated Planning Team (IPT), Coordinate with contracting official to procure/contract for test articles.</p> <p>FY 2010 Planned Output: Receive Test Articles, conduct initial technical testing, analyze vendor data, conduct combined developmental and operational testing, prepare test report, prepare documentation for Milestone C production decision and submit project Closeout Report 4Q FY 2010.</p>				
<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Portable Electrical Power Supply for Aeromedical Evacuation ( PEPSAE) (Air Force)		0.864		
<p>Outcome: A stretcher mountable, lightweight hydrogen fuel cell for powering Aeromedical Evacuation (AE) equipment and AF medical team equipment. System will be capable of powering a suite of critical care medical equipment independent of aircraft power or external AC power, and radio systems used in AE ground support Unit Type Codes. The proposed system would incorporate a multi-functional power manager which would output fully regulated Direct Current (DC) power for use by the Critical Care Air Transport Team (CCATT) equipment. The system would additionally be able to have its output configured to power other applications as required. Additionally, the system will provide Alternating Current (AC) input, which would allow the PEPSAE to operate the CCATT equipment from grid power when available and make uninterrupted transition to hydrogen power when the grid power is no longer available. It will also incorporate a full power battery backup for up to 20 minutes. By operating on DC power, the four power supplies currently strapped to the stretcher to power each device can be eliminated, making a near neutral weight change for the equipment.</p> <p>FY 2009 Planned Output: A portable electrical power supply tested and qualified to meet the mobile power needs of Air Mobility Command AE and other AF mobile medical teams. The power system in this instance includes both the fuel cell based power module and the N-Stor360 hydrogen storage canisters.</p> <p>FY 2010 Planned Output: Program scheduled to be complete by 1Q FY 2010.</p>				
<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Shockwave Therapy for Traumatic Wounds and Burns of the Extremity (Army)		1.149	1.300	

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: To evaluate shockwave therapy to determine if it meets combat casualty care requirements for complex wound treatment. Non-healing wounds are a major medical problem, impairing the quality of life to soldiers with acute traumatic wounds. In order to access the feasibility and safety of shockwave therapy and determine if shockwave therapy significantly improves wound healing over current standards of care, we will conduct definitive field testing of the extracorporeal shock wave therapy device from Tissue Regeneration Technologies, Woodstock, Georgia. The primary outputs and efficiencies to be demonstrated in the field testing are: (1) accelerate tissue repair in wounds; (2) reduce infection-related amputations and deformity; (3) minimize number of surgical interventions; (4) reduce hospital time and cost; (5) facilitate early rehabilitation. The key benefit to the warfighter is a non-invasive, painless treatment method to reduce bacterial load in wounds and facilitate blood vessel in-growth and soft tissue healing. Cost avoidance Research Development Test and Evaluation (RDT&E) cost of \$3.300 million; estimated Return on Investment of \$10.100 million.

FY 2009 Output: Conduct pre-study visit for initial study sites. Obtain study site Review Board approvals. Procure shockwave therapy device. Conduct study personnel training on study procedures and equipment. Begin Phase III clinical trial field testing.

FY 2010 Planned Output: Phase III clinical trial field testing and user evaluation will continue at study sites. Continue data safety monitoring and data collection on study subjects participating in Phase III clinical trial field testing. Interim data analysis will be conducted during the 2Q FY 2010. A Milestone C Decision is anticipated at the end of the 3Q FY 2010. The technical test report and final report are anticipated during the 4Q FY 2010. Final procurement of test article (DermaGold 180 MultiWave device) is anticipated during the 4Q FY 2010 and 1Q FY 2011, if field tests prove successful in order to support multi-specialty utilization throughout DoD Military Treatment Facilities.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Special Operations Forces (SOF) Forward Trauma Management Set (SOCOM)		0.327	1.489

Outcome: This comparative test project will evaluate a deployable Level III surgical care and trauma life support that will stabilize and sustain casualties with life saving trauma care for Special Operations Forces (SOF) operating in remote areas where casualty evacuation is not available. The forward trauma management set is a modular, resuscitative surgical intervention that is operationally adaptable vice operationally specific. User assessment testing will be completed in three worldwide operational areas: Central Command (CENTCOM), Africa Command (AFRICOM), Pacific Command (PACOM). Primary Outputs and Efficiencies: Resuscitative surgical care and trauma life support equal to tactical combat casualty care guidelines within capability of assigned SOF medical and non-medical personnel; self-contained rapidly deployable by C-130/C-17 aircraft; sustainable in remote harsh environments. Research Development (R&D) Cost Avoidance is expected to be \$2.100 million and Procurement Cost Avoidance at \$3.100 million; operational and support cost avoidance is \$71.460 million. Completion date is anticipated 31 December 2011.

FY 2009 Planned Output: Conduct project planning, develop concept for operations, contract for test articles.

FY 2010 Planned Output: Receive test articles, conduct Analysis/Study/Integration, conduct initial technical testing.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
SOT IR/FR Uniform Repair Patch Kit (Army)		0.786	

# OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

<b>APPROPRIATION/ BUDGET ACTIVITY</b> <b>RDTE, Defense Wide BA# 5</b>	<b>PE NUMBER AND TITLE</b> <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>	<b>PROJECT</b> <b>P051</b>
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Outcome: This project will provide the Army with a means of increasing the reliability and durability of the Fire Resistant Army Combat Uniform (FR ACU). Since the Department of Defense has put emphasis on durability and reliability of uniforms, the product office has made considerable advancements in extending the wear life of uniforms, but as a consumable product rips and tears will occur. The materials will provide abrasion resistance, strength, and durability to achieve a 120 day Threshold operational durability. The Integrated Patch kit (IPK) has been developed to meet the key performance parameters (KPP) of Reliability and Durability for combat uniforms. The IPK is designed to be fire resistant and infrared compatible with the base uniform. The patches can be tailored to size and the pressure-sensitive adhesive is designed to be easily applied to the uniform with little effort while extending the wear life up to 180 days. The primary outputs and efficiencies: Increased durability and wear life of the combat uniform, integration into other combat uniforms, maintaining the integrity of the fire resistant ensemble. Research Development Test and Evaluation (RDT&E) Cost Avoidance: \$ 1.300 million. The current cost of the FR ACU is \$150; the IPK can extend the wear life of a uniform by 33-50 percent, potentially reducing the Bases of Issue from 4 to 3.

FY 2009 Planned Output: A commercial off-the-shelf technology (COTS) has been identified. COTS system undergoing extensive validation and safety testing to include system level burn testing and durability testing. After completion of testing items will be procured for a limited user evaluation in a simulated operational environment.

FY 2010 Planned Output: submitting a close-out report in 2Q FY 2010.

<b><u>Accomplishments/Planned Program Title:</u></b>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
FY 2010 Plans			19.722

FY 2010 Plan: The Defense Acquisition Challenge Program (DACP) will continue to fund testing activities on an estimated 8 continuing projects executing \$9.140 million. Remaining funding will be used to initiate new start DACP projects selected from the FY 2010 DACP proposal process. The FY 2010 final proposal selection process is scheduled for 4Q FY 2009.

**C. Other Program Funding Summary:** Not applicable for this item.

**D. Acquisition Strategy:**

The Acquisition Strategy for DAC is as outlined in Title 10. DAC is to provide opportunities for the increased introduction of innovative and cost-saving technology in acquisition programs of the Department of Defense. DAC funding is used to fund testing of commercial and non-developmental items that could result in improvements in performance, affordability, manufacturability, or operational capability of an existing acquisition program. It is expected that should testing be successful, procurement using the respective current program funding would be used for acquisition.

**E. Major Performers:**

Category	Name	Location	Type of Work and Description	Award Date
<b><u>Other:</u></b>				
	VARIOUS	VARIOUS	The majority of funding from this Program Element is forwarded directly to the Services and US Special Operations Command (USSOCOM) who manage all contracting and support requirements for the DACP projects identified above. Majority of FY 2010 funding is expected to be obligated and on contract by March 2010.	Mar 10

# OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT				
<b>5 - System Development and Demonstration (SDD)</b>			<b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>							<b>P051</b>				
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Various Projects	Various Projects		61863	28188	1-4Q	28409	1-4Q	28862	1-4Q					
Subtotal:			61863	28188		28409		28862						
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
<b>Project Total Cost:</b>			<b>61863</b>	<b>28188</b>		<b>28409</b>		<b>28862</b>						

# Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY  
**5 - System Development and Demonstration (SDD)**

PE NUMBER AND TITLE  
**0604051D8Z - Defense Acquisition Challenge Program (DACP)**

PROJECT  
**P051**

Event Name	FY 08				FY 09				FY 10																						
	1	2	3	4	1	2	3	4	1	2	3	4																			
<b>FY 2010 Planned Output</b>													<b>DACP Output</b>																		
(1) FY 2010 Project Selections													▲ <b>1</b> FY 2010 Projects Identified																		
(2) Funding Received (estimate)													▲ <b>2</b> Congressional Appropriation RDT&E																		
(3) Procure test items													▲ <b>3</b> Field Level Procurement of Test Articles																		
(4) DACP Project Test Plans Finalized													▲ <b>4</b> Test Plans Finalized and Implemented																		
(5) DACP Project Testing													▲ <b>5</b> Project Testing																		

# Schedule Profile (R4a Exhibit)

May 2009

BUDGET ACTIVITY <b>5 - System Development and Demonstration (SDD)</b>		PE NUMBER AND TITLE <b>0604051D8Z - Defense Acquisition Challenge Program (DACP)</b>					PROJECT <b>P051</b>	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>					
FY 2010 Planned Output			1Q - 4Q					
FY 2010 Project Selections		4Q						
Funding Received (estimate)			1Q					
Procure test items			2Q					
DACP Project Test Plans Finalized			3Q - 4Q					
DACP Project Testing			3Q - 4Q					
DACP Final Testing and Close-out Reports								

Final selection of FY 2010 DACP new start projects was determined in September 2009. Field level contracts will be rapidly obligated through March 2009. Test plan implementation and product testing will be in full execution through April 2010. Final tests and close-out reports will continue through January 2011.