Exhibit R-2, RDT&E BUDGET ITEM JUSTIFICATION					Date: February 2005			
APPROPRIATION/BUDGET ACTIVITY Defense Wide RDT&E (0400) Budget Activity Five					R-1 ITEM NOMENCLATURE Defense Acquisition Challenge Program (DACP) Program, PE 0604051D8Z			
COST *(In Millions)*	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	0.000*	25.116	28.975	29.238	29.619	30.400	31.111	31.791

*FY 2004 funding for this program was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Authorized by Title 10, 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 that have the potential to improve performance, affordability, manufacturability, or operational capability of current acquisition programs at the component, subcomponent, or system level.

In FY 2003/2004, DACP was a sub element in the Quick Reaction Special Projects Program (Program Element 0603826D8Z). In FY 2005, the Defense Appropriation Act directed the Department of Defense to transfer the Defense Acquisition Challenge Program (DACP) from Budget Activity 3 to Budget Activity 5. The DACP for FY 2005-2011 will execute under Program Element 0604051D8Z under Budget Activity 5.

As a result of the Defense Acquisition Challenge Program's rapid establishment in mid-FY 2003, the Comparative Testing Office and its Foreign Comparative Testing (FCT) Program were selected by OUSD(AT&L) as the infrastructure to support the DACP pilot business model. Currently, U.S. Special Forces Command, U.S. Army, U.S. Marine Corp, and the Navy's Naval Sea Systems Command, Naval Air Systems Command, and Naval Space and Naval Warfare Systems Command are supporting DACP with the current FCT service infrastructure. The U.S. Air Force is supporting DACP through Secretary of the Air Force for Acquisition (SAF/AQ).

B. Program Change Summary

	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget:	0.000*	0.000	0.000	0.000
Current FY 2006 President's Budget Submission:	0.000	25.116	28.975	29.238
Adjustments to Appropriated Value:	0.000	+25.116	+28.975	+29.238
Congressional Program Reductions:		-0.597		
Congressional Rescissions:				
Congressional Increases:		+25.713		
Reprogrammings:				
SBIR/STTR Transfers:				
Other Program Adjustments:			+28.975	+29.238

*** Note in FY 2004 DACP was funded as a sub-element under the QRSP Program Element 0603826D8Z**

C. (U) OTHER PROGRAM FUNDING Not Applicable.

D. (U) EXECUTION Not Applicable.

E. (U) PERFORMANCE METRICS

For FY 2005-2011, initiate the new start of approximately 15-20 projects per year.

Exhibit R-2a RDT&E Budget Item Justification							Date: February 2005	
APPROPRIATION/BUDGET ACTIVITY Defense Wide RDT&E (0400) Budget Activity Five				R-1 ITEM NOMENCLATURE Defense Acquisition Challenge Program (DACP) Program, PE 0604051D8Z				
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Proposal Solicitation Process

The DACP process is a two-phased annual process. During Phase I, interested parties, within and outside the DOD, are invited through a Broad Area Announcement (BAA) to submit summary proposals. Summary proposals are evaluated and prioritized based on merit and their potential to benefit a DoD Program of Record (POR). In Phase II, candidate summary proposals are matched to the POR that has the potential to benefit from the proposed technology. POR Program managers, in collaboration with the weapon prime where applicable, evaluate and either "accept" or "reject" the proposed technology. A "reject" is defined as the POR has determined that the technology can not benefit the POR. An "accept" is defined as the POR determines the technology has potential benefit and wishes to compete for funding. The POR then develops a final proposal to compete for DACP funding to test and evaluate the proposed technology. The final proposal contains a brief description of the issue and how the proposed technology resolves the issue, test and evaluation strategy, and procurement and transition strategy if the technology meets the PORs requirements. Final proposals are submitted into OSD DACP by the POR where the proposals are evaluated and prioritized, and selected for funding by the OSD DACP Program Manager.

The DACP pilot business model leverages off the successful FCT personnel and business processes, where possible, except OSD DACP will issue a Broad Agency Announcement (BAA) annually inviting interested parties to submit summary proposals.

Results of FY 2005 BAA Solicitation

The FY 2005 cycle began with a BAA release in mid-February 2004. More than 580 summary proposals were submitted by industry and government representatives in response to the BAA. Approximately 200 summary proposals were rejected during the administrative review for lack of proper documentation. Admin Review was completed in mid-July. Proposal Match to Program of Record was completed in September 2004. Final selection of 15 FY 2005 DACP new start projects was made in January 2005.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Enhanced Gunfire Detection System	USSOCOM	0.000*	0.115	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project will evaluate system enhancements (i.e., addition of sensors and processors) which have the potential to significantly improve the accuracy of the Gunfire Detection System (GDS) and locate a sniper prior to the sniper's first shot. This improved technology will be brought about through the integration of selected sensors (e.g., hyper-spectral imagers, unattended ground sensors, visible micro-sensors, infrared sensors, etc.) in the GDS and through the inclusion of automatic processing software.

Vendor(s): Metravib, France
Program Office of Record: USSOCOM PEO, Special Programs (SP)

FY 2005 Plans: Complete technical testing. Conduct operational testing and user evaluation. Compile test results and prepare documentation in support of a milestone decision. Award contract for production buys. Incorporate plans for a rotary wing version of gunfire detection system for testing in FY 2005-2006. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Enhanced Simulation for Training and Testing	Army	0.000*	0.643	0.497	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

The Enhanced Simulation Capabilities for Testing and Training Program will provide a software architecture that can bring network management to legacy DIS simulations. The DoD community has invested millions of dollars in DIS-based simulations for both the testing and training communities. Currently, however, these simulations cannot be used in large-scale scenarios with real-time requirements. The Conductor platform will enable these large-scale scenarios with real-time requirements simulations and also provide a central integration point with new standards, the central collection of simulation data for analysis and the ability for field units to participate in high quality simulation. By successfully leveraging COTS technology, the Conductor platform will save

considerable time and money by eliminating rewrites of existing simulations and providing a mission critical solution that is needed by DoD now.

Vendor: Circadence Corp, Colorado
Program Office of Record: Threat Systems Management Office

FY 2005 Plans: Two major tasks will be accomplished. First is the DIS listener that will allow the conductor platform to interact with DIS packets. Second is the driver application that will allow for the control of the DIS listener as well as automated data collection for testing purposes. Both of these efforts are broken into parallel task streams to simultaneously accomplish Graphical User Interface (GUI) design and development, data collection design and implementation, documentation, implementation and test integration.
FY 2006 Plans: Measurement of both network and simulation performance will be accomplished. The simulation will then be run with and without the conductor platform and measurements will be taken to report on data throughput, effective data throughput, network utilization, and network latency. In addition, application-level metrics such as frame rate and responsiveness will be developed to assess the impact on the simulation itself. A report on testing results as well as the development of a set of recommendations, derived from test results of any optimizations that might further improve the overall performance of the system will be generated.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Friction Stir Processing for Virginia Class Submarines	Navy	0.000*	0.689	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is assisting in the transition of a new manufacturing technology into the US Navy's propeller manufacturing infrastructure. In FY 2002, Friction Stir Processing (FSP) showed feasibility to significantly improve the surface condition of Ni Al bronze propeller castings by repairing inherent surface defects while also greatly improving the strength of the processed area. In FY 2003, an aggressive effort was initiated to refine processing parameters and tools for Ni Al bronze castings. This process is continuing, in parallel with the equipment design and manufacturing effort. Because the process is adaptable to the numeric controlled machining process, which is used extensively at the Naval Foundry and Propeller Center to finish the propeller castings, developing a prototype attachment that could both machine the surface of the propeller and repair it, without moving the propeller, will result in time and cost savings.

Vendor(s): TBD; likely candidates are General Tool Company, Cincinnati OH, and Friction Stir Link, Waukesha, WI who produce similar equipment
Program Office of Record: Virginia Class Submarine Program Office, PMS 450
.
FY 2005 Plans: Award the design contract for the FSP prototype attachment and prepare detailed specification for manufacturing the prototype unit.

FY 2006 Plans: Build and deliver the FSP attachment to the Naval Foundry and Propeller Center, Philadelphia for acceptance testing and introduction into the propeller manufacturing process.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Integrated Schedule/Process for Global Hawk Spiral Development	Air Force	0.000*	0.414	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

To date neither industry nor Government program offices have developed an effective means of implementing existing integrated scheduling techniques into the spiral development process. This project seeks to provide the Global Hawk program with an integrated schedule to be used daily with schedule risk tools and at all reviews, to optimize program management and reduce future program risk. If successful, this project will provide defense organizations a more robust and disciplined process to use in scheduling spiral development (multiple spirals) programs.

Vendor: Dayton Aerospace, Inc., Dayton, OH
Program Office of Record: Global Hawk Program Office

FY 2005 Plans: Provide recommendations for growth to full program IMS. Incorporate additional Global Hawk lessons learned into report. Complete final report and briefing.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Miniature – Controlled Receive Pattern Antenna (MCRPA)	Navy	0.000*	0.441	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

The Miniature–Controlled Reception Pattern Antenna (MCRPA) will provide anti-jamming (A/J) GPS capability to the Navy's platforms that have size and weight restrictions for antenna systems, such as the UH-1Y and AH-1Z helicopters and submarines. The small footprint, integrated antenna electronics, light weight, and low cost of MCRPA all make it a viable solution for the size and weight restrictive platforms than the only other production CRPA available to the Navy today, the GAS-1.

Vendor: Titan Corporations, Greenbelt, Maryland
Program Office of Record: PEO C4I, PMW/PMA-170 (formerly 156) Navy

FY 2005 Plans: Finalize MCRPA antenna design at conclusion of NAWC Patuxent River antenna testing.
Fabricate mechanically ruggedized prototype MCRPA A/J GPS System. This includes antenna assembly and AE. The unit will undergo mechanical and electrical testing before proceeding with fabrication of final deliverable units.
Fabricate and test final deliverable MCRPA A/J GPS System units. DACP funding ends in FY 2005, seeking new funding to conduct demonstration of antenna system. If successful, funding will be needed to in initiate production and install antenna system.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Mortar Plating System using Vacuum Arc Vapor Deposition (VAVD)Technology	Marine Corps	0.000*	0.259	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is evaluating a process for plating the interiors of worn 60mm and 81mm mortar tubes that are wearing faster than expected. Specifically, the project examines the use of Vacuum Arc Vapor Deposition (VAVD) technology. If this process is successful, the USMC will be able to plate material in worn areas and economically restore the infantry mortar tubes to a serviceable condition, providing a more cost-effective method in restoring mortar tubes to combat ready status.

Vendor: Alpen Technology Group, Inc., Brownsboro, AL
Program Office of Record: USMC Warfighting Laboratory, Quantico, VA 22134

FY 2005 Plans: Obtain no cost modification (90 days performance required from 30 December 04) to the Phase I contract was extended to ATG to re-test the VAVD on a second set of test coupons. NSWC Dahlgren has machined and provided a second set of test coupons to ATG. ATG is currently in the process of plating the samples. If re-test of plated test coupons fails, project will be canceled. If re-test of plated test coupons is successful, Phase II contracting begins. ATG will construct the mortar plating system. Mortar tubes will be acquired from MARCORSYSCOM as test articles. Mortar tubes will be plated with *Vacuum Arc Vapor* deposition technology; Initiate technical and operational tests (destructive and non-destructive tests).
FY 2006 Plans: Complete technical and operational tests. Procurement Decision 2nd quarter FY 2006.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
New Secure Version of Army Wireless Intercommunication System	Army	0.000*	0.517	0.218	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is the adaptation of an existing, certified wireless encryption device to an aircraft wireless intercom system to provide a close range secure communications capability for tactical rotary wing operations. This technology will decrease the risk of mission compromise and increase mission effectiveness and soldier safety. This technology is an excellent candidate for horizontal technology insertion with ground or mounted soldier small team communications devices and has joint service application potential.

Vendor: Telephonics Corporation, Communication Systems Division, Farmingdale, NY
Program Office of Record: Army PEO Soldier/PM Air Warrior

FY 2005 Plans: In the first quarter of FY05 we achieved NSA sponsorship. Plans for the remainder of FY 2005 include selecting the candidate encryption device and subcontractor, adapting the candidate device to the existing unencrypted wireless system, and building, testing, and delivering prototype encryption hardware.
FY 2006 Plans: Initiate the DoD Information Technology Security Accreditation Process with the NSA, with system certification planned for June 2006.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
"On Aircraft" Laser Additive Repair of Titanium Components	Air Force	0.000*	1.965	0.356	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is implementing the process of Laser Additive (on Aircraft) repair of damaged titanium B-2 airframe surfaces. This technology will improve mission readiness, currently compromised by cracks which develop on the aft deck. The proposed technology insertion program will improve the maintenance of mission readiness which is currently compromised by cracks which develop on the Aft Deck. The program will be enabled by the integration of a laser head and titanium feeding mechanism with a portable, adaptive, multifunctional machine tool pod incorporating a conformal inert gas shielding shroud and the development of a comprehensive process to fill cracks with micro-welded titanium alloy to restore the stealth integrity of the damaged surfaces.

Vendor: Triton Systems, Inc., Chelmsford, MA
Program Office of Record: B-2 Systems Program Office

FY 2005-2006 Plans: Results of the 6-4 Ti development will be presented to the Government in January 2005. If unsuccessful in developing a laser refurbishment for 6-4 Ti, the program will be terminated and remaining funding will be returned to OSD. Assuming successful completion of this milestone, the contractor will then develop and demonstrate the laser weld repair procedure on Ti 6-2-4-2. This demonstration will occur in late FY 2005/early FY 2006. If the contractor is unable to successfully demonstrate the laser weld repair on Ti 6-4, the program will be cancelled.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Precision Parachute Delivery System (PPDS)	USSOCOM	0.000*	0.172	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is evaluating the High Altitude-Low Opening/High Altitude-High Opening (HALO/HAHO) Navigation Aid which will allow Special Operations Forces (SOF) infiltration capabilities in all environmental situations. Currently teams have little ability to navigate to a target unless it is seen at exit. This system makes it possible to land precisely during adverse weather conditions, which greatly reduces the possibility of detection, i.e. clouds, rain, and snow. This program will give the SOF community the capability and

the confidence to accomplish the infiltration portion of their mission safely, accurately, and undetected in a wider range of environmental conditions.

Vendor: Prescott Products, Lockhart, Texas (Prime); European Aeronautical Defense and Space (Sub)
Program Office of Record: USSOCOM PEO, Special Programs (SP)

FY 2005 Plans: An Integration meeting is scheduled to finalize Helmet mounted display to the Gentex Parachutist Helmet 28 July 2005. System integration, hardware, software, graphical user interface (GUI) are expected to be finalized and first functional systems expected to be delivered at end of this quarter or beginning of next quarter. Yuma Military Free Fall schoolhouse and the Special Operations Airborne Test Board are expected to support testing and evaluation. Complete testing, data analysis, Milestone C.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Restore Effective Survival in Shock (RESUS)	Air Force	0.000*	1.723	0.373	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is a trial of bovine polymerized hemoglobin for the prehospital resuscitation of casualties in hemorrhagic shock. The item is a low volume and weight, room temperature stable substitute for blood transfusions. It is expected to significantly decrease combat casualty morbidity and mortality. Hemorrhage accounts for 60% of potentially salvageable combat casualties. Because 90% of these deaths occur prior to evacuation to a forward surgical theater, decreasing combat morbidity and mortality must focus on optimizing pre-evacuation resuscitation. Unlike older WWII and Vietnam resuscitation fluids, such as plasma, new products are effective as oxygen carriers and are highly likely to decrease hemorrhagic shock casualties, which remain at 30-100% depending on severity. The benefit of this program is that it will save lives of combat troops. Hemopure circulates directly in plasma when infused, increasing oxygen diffusion to the body's tissues and is compatible with all blood types, can be stored for 3 years without refrigeration, and is pathogen free. RESUS is a two-stage phase IIb/pivotal clinical trial project to compare the relative efficacy and safety of Hemopure with standard care products.

Vendor: BIOPURE Corporation, Cambridge, Massachusetts
Program Office of Record: 311 HSW, Human Systems Program Office, Brooks Air Force Base, Texas

FY 2005 Plans: Complete contractual agreements with State I trauma centers. Initiate contractual agreements with Stage II trauma centers. Complete study procedure manual. Complete lab interference challenge at Stage I trauma centers. Initiate lab interference challenge at Stage II trauma centers. NMRC plans to submit the RESUS IND 28 Jan 2005, anticipates an FDA allowance and initiation of the Community Consultation and Disclosure (CCD) part of the program by 1 March 2005, and subject enrollment in Stage I by late March 2005. Complete IND-enabling preclinical (animal) study. This animal study involves Traumatic Brain Injury with uncontrolled bleeding in a swine model and is required before the FDA will accept the IND from the Navy for HBOC-201 and allow the RESUS trial to begin.
FY 2006 Plans: Concomitant NMRC IRB and BUMED approval anticipated. As RESUS requires provisions for Exception from Informed Consent (EIC), in accordance with DOD Directive 3216.2, approval will be required from the "component head". Select vendor for the Data Management System for the clinical trial.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Spray Cool ™ Counter Targeting System (CTS)	Army	0.000*	0.239	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is evaluating a new technology insertion to enable spiral development of the Counter Targeting System (CTS). CTS utilizes an infra-red (IR) sensor at high frame rates to detect sniper, mortar, RPG, and large caliber weapons fires. This system will assist in near real-time targeting and situational awareness for direct support of combat troops in operations such as Iraq and Afghanistan. If successful, the Spray Cool technology will reduce CTS weight of 400+ pounds to less than 100 pounds. First test articles will be field tested in Iraq.

Vendor: Isothermal Systems Research (ISR), Inc., Clarkston, WA
Program Office of Record: Army Intelligence and Security Command

FY 2005 Plans: Receive miniaturized processors. (Jul 05). Integrate into network centric operations. Integrate into aerial vehicle configuration for wide area surveillance. Integrate into the CENTCOM Counter Strike Task Force system for combating terrorism in OIF.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
WDM Fiber Optic Global Position System Anti-Jam Antenna	Navy	0.000*	0.862	0.000	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

This project is evaluating Wave Division Multiplexing (WDM) technology with shipboard GPS Anti-Jam antenna assembly to determine if it can provide transmission of multiple RF signals through a single optic fiber. If successful, this project will enable relocation of the GPS antenna electronics from high on the mast to below decks where it is protected and readily accessible for maintenance.

Vendor(s): Gould Fiber Optics, Millersville, MD; Optiwork, Freemont, CA; JDS Uniphase Corp., San Jose, CA; Tempo Research, Camarillo, CA; Fiber-Span LCC, Piscataway, NJ
Program Office of Record: SPAWAR PEO Command, Control, Communications, Computers, and Intelligence and Space (PMW/A-170)

FY 2005 Plans: Prototype production representative units are expected for delivery for test and integration by mid February 2005. Extended 7-channel test efforts are in progress to evaluate the requirements to have GAS-WDM components be identical no matter what platform on which they are deployed. Therefore, the effects of chromatic dispersion will be examined in light of the cable length differences of deployed systems. Additional reliability analysis of the production representative antenna assemblies with some key performance parameters evaluated: GPS system jamming performance test, environmental qualification test for high risk areas (shock, vibration, temperature, solar radiation), and shipboard operational test to certify readiness for fleet implementation.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
X-Cor as a Replacement for Conventional Honeycomb	Army	0.000*	1.494	0.995	0.000

*FY 2004 funding for this project was provided under the Quick Reaction Special Projects (QRSP) Program PE 0603826D8Z.

X-Cor is a lightweight, damage tolerant core material that replaces conventional honeycomb in aerospace structures. A 10% weight reduction over the baseline honeycomb on Black Hawk is estimated. This is critical because weight reduction is quite significant to the program in two respects. First, it greatly increases helicopter performance, particularly in vertical lift/rise capability, which greatly increases aircraft survivability and capacity; and, second, this 10% reduction could amount to a 25% RDT&E cost avoidance over other weight reducing alternatives.

Vendor: Aztex, Inc, Waltham, MA
Program Office of Record: PM-Black Hawk

FY 2005 Plans: Complete qualification program and produce 4 ship-sets of finished detailed parts. Develop and secure approval of the quality plan and all the necessary production control documentation.
FY 2006 Plans: Ensure that process is fully defined and robust to support supply of shaped X-Cor™ sets up at full rate quantities required by Black Hawk.

FY2005 NEW START PROJECTS:

COST (in Millions)	Service	FY 2004	FY 2005	FY 2006	FY 2007
Affordable Net Shape Stiffener Forming Technology for F/A-18E/F	Navy	0.000	1.034	0.870	0.000

This program will improve the affordability of the US Navy F/A-18E/F Super Hornet Strike Fighter by automation of the forming process for composite hat stiffeners in the airframe structure. Implementation of the proposed technology would result in a significant recurring cost savings across the F/A-18E/F and the planned F/A-18G procurements. Creating a process that reduces the cost of composite stiffening elements also has a potential benefit for future aircraft programs such as J-UCAS where lower cost stiffeners will reduce the cost of skin-stringer construction. Skin-stringer construction is a very robust structure that would be more widely implemented were it cheaper to produce.

Vendor: Foster-Miller, Waltham, MA
Program Office of Record: PMA 265 F/A-18 E/F SuperHornet, Naval Air Systems Command, 42173 Buse Road, Patuxent River, MD 20670-1547

FY 2005 Plans: In FY 2005, the effort will focus on validation of the structural, manufacturing, materials and processes, and quality assurance requirements as well as cost/benefits assessments. The hat stiffener forming process will be developed and refined to support the identified requirements. Also to be addressed in FY 2005 is the development of the fillet forming process; the size and shape of which is critical to producing high quality and high strength hat stiffeners.
FY 2006 Plans: Focus on the integration of the developed process with existing processes for hat stiffener braiding and trimming. Process validation testing and evaluation will be conducted to ensure that the hat forming processes provide high quality stiffeners, and that these stiffeners are compatible with the stiffened panel production process. This will be followed by detailed business case development to support implementation of the process in first quarter of FY 2007.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Battery Free Remote Sensing	USSOCOM	0.000	1.045	0.000	0.000

This project will test and evaluate a solar based, energy storage system for use in Unattended Ground Sensors (UGS). Existing vendor technology will be extended to provide higher output power and improved energy storage in a package more consistent with the stringent size, weight and power requirements necessary for SOF operations.

Vendor(s): Ambient Control Systems, California
Program Office of Record: USSOCOM PEO, Information and Intelligence Systems (IIS)

FY 2005 Plans: Conduct project planning. Contract for and receive test articles. Conduct Analysis, study and Integration. Analyze vendor data.
FY 2006 Plans: Conduct Phase I Technical Testing. Conduct Phase II Operational Test and User Assessment. Milestone C Decision. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Composite Twisted Rudder	Navy	0.000	1.568	1.473	0.000

The US Navy has developed a “twisted” shape for DDG 51 Class New Construction surface combatant rudders to reduce cavitations erosion problems and improve fuel efficiency. The twisted rudder geometry is difficult to build and maintain using traditional welded steel construction. This project will build, qualify and install a shipset of composite rudders on DDG 51 Class Ship to demonstrate improved survivability and reduced acquisition and life cycle cost

Vendor(s): Structural Composite Inc., Melbourne, FL.
Program Of Record: US Navy, PEO-Ships, NAVSEA SEA05

FY 2005 Plans: Small-scale laminate characterization, this project will be performed on reinforcements ultimately selected for construction. Phase one structural analysis and process trials, along with product availability, will determine the exact

reinforcement architecture. Full thickness laminates may not be tested as the load required to break these samples is beyond the capability of in-house test equipment. However, fiber orientation will be faithfully reproduced in test laminates.
Component static & shock test, the static load test will be conducted to verify the composite rudder's ability to sustain the ultimate load defined in the DDG Ship Specification. The ultimate normal pressure load will be obtained from the U.S.Navy and applied on the skin surface.
FY 2006 Plans: Full-scale static & fatigue testing, a series of shock tests will be performed on the first article full-scale composite twisted rudder. This testing will be conducted to verify the structural integrity of the composite rudder and the dynamic response analysis. Full-scale shock test –inspection and vibration (SIDER) testing. At sea validation.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Enhanced Military Readiness, Safety, and Personal Bearing through Pseudofolliculitis Barbae (PFB) Treatment	Air Force	0.000	1.274	1.232	0.000

Pseudofolliculitis barbae (PFB), commonly known as "razor bumps," has been recognized by Congress and the Department of Defense (DoD) as a significant dermatologic disease in the US military and affects combat readiness, personal safety, unit cohesion, and individual morale. This project focuses efforts on providing a treatment option that targets the inflammatory reaction that occurs in individuals affected by PFB. It also focuses on providing an alternative treatment option compared to existing PFB treatment tools for this military relevant disease.

Vendor: Keesler AFB
Program Office of Record: Air Force /Surgeon General

FY 2005 Plans – Develop test plan. Conduct FDA review and approval of test plan. Conduct stability and compatibility testing for IAW-AP-01 (test article). Conduct 28 day Military Safety and Efficacy trial. Evaluate report for go-no go decision.
FY 2006 Plans – Conduct 90 day Military Efficacy testing and develop evaluation report. Procurement decision.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Field Interrogation Support Tool	USSOCOM	0.000	0.696	0.000	0.000

The Field Interrogation Support Tool (FIST) is a hand-held computerized voice stress analysis device which hosts technology for use in interpersonal operations. It makes use of proven software currently used in the Computer voice Stress Analzer™ and hosted in a COTS laptop for processing voice. This DAC will rewrite the software algorithms making it possible to re-host the software in a hand-held Personal Digital Assistant (PDA). Automated graphical display features currently require manual evaluation by a trained technician will also be provided but enhanced for field use and on the spot evaluation by personnel without specialized skills training. The new product will be repackaged into the hand-held device for SOF, however use by other services and government agencies involved in law enforcement are expected to purchase this product.

Vendor(s): Concurrent Technologies Corp. (Fl)
Program Office of Record: USSOCOM PEO, Information and Intelligence Systems (IIS)

FY 2005 Plans: Project funding received. Contract for and receive test articles. Analyze data. Conduct Phase I technical testing. Conduct Operational Test. Milestone C Decision. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
GBS Transponder Throughput Improvement Using DVB-S2	Air Force	0.000	0.833	0.118	0.000

DVB standards organization has created and approved a new specification in January 2004 called DVB-S2 due to a need for a more efficient bandwidth and power technology. Efficient Channel Coding (ECC), Inc. participated in this standards activity to help create the new standard. ECC is developing a Field-Programmable Gate Array (FPGA) followed by an Application-Specific Integrated Circuit (ASIC) that meets the DVB-S2 standard. DVB-S2 benefits from recent developments in channel coding and modulation and provides significantly increased capacity for maximum possible efficiency of error-correcting methods.

ECC will transition the Global Broadcast Service (GBS) waveforms from the current air interface that uses legacy DVB-S technology to a new standard, DVB-S2, with a resulting increase in GBS satellite transponder data throughput in the Ka and Ku bands of at least 30%.

Vendor(s): ECC, Inc.
Program Office of Record: AF/DISA

FY 2005 Plans – All tests will be done in three phases over satellites using DISA and or Norfolk satellite uplink facilities. Initiate Phase 1 (Satellite Loop-back Technical Testing). Perform satellite loopback testing using ECC supplied DVB-S2 prototype equipment. Analyze data to determine if project continues into Phase 2. Initiate Phase 2 (Operational testing). Validate the ECC provided DVB-S2 transmitter and receiver characteristics and general capabilities, evaluate the suitability as stand-alone components in a field environment, the capability to interface with legacy systems and an operational utility assessment by selected forces. Analyze data to determine if project continues into Phase 3.

FY 2006 Plans: Initiate Phase 3 (GBS Demonstration) A demonstration of operational effectiveness and suitability of the DVB-S2 waveform. The results of all testing will be used to obtain GBS system production certification and approval for the fielding and deployment of this system.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Improved Durability F100 Exhaust Nozzle Divergent Seals	Air Force	0.000	0.730	0.278	0.226

The F100 turbine engine, which powers the F-15 and F-16 fighter aircraft, has an axisymmetric translating exhaust nozzle. This nozzle utilizes 15 metallic divergent seals that have a high field replacement rate. The metallic seals at the five hot streak locations survive only 700 Total Accumulated Cycles (TACs), while the SPS Ceramic Matrix Composite (CMC) seals survived the full 4300 TACs. The DACP will evaluate the flight performance of a unique, extended life capable F100 divergent seal developed by Snecma Propulsion Solide (SPS) in France. The CMC Divergent Seal technology would be applied to the U.S. Air Force F-15 Eagle aircraft turbine engine exhaust nozzles on an attrition basis.

Vendor: Pratt & Whitney Prime Contractor for F100 Engine
Program Office of Record: Air Force Research Laboratory, Wright-Patterson AFB

FY 2005 Plans: Conduct field service evaluations at two locations (Mountain Home AFB and McEntire AFB). Eight seals will be available for the initial start of the field service evaluation in January 2005. Inspect seals every 2-4 weeks for signs of erosion, cracks, delaminations, excessive wear and loose attachments. At 350 TACs, conduct seal removal for tensile strength measurements.

FY 2006 Plans: Remove two CMC seals to conduct non-destructive as well as destructive evaluations. Machine CMC seals into tensile specimens and test for retained tensile strength. Analyze data from field service, non-destructive/destructive and tensile strength evaluations to determine if technology performance is satisfactory.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Infrared Thermal Friendly Force Identifier	USSOCOM	0.000	0.172	0.000	0.000

Current means of distinguishing dismounted operators as friend and foe are not sufficient to meet evolving battlefield situations. This project will determine final designs then test and evaluate a compact lightweight beacon will that allow differentiation of friendly forces versus foe when viewed through current infrared and thermal sensors. The beacon will be programmable and adjustable for use in multiple situations and easily attachable to various types of existing Special Operations Forces (SOF) individual equipment.

Vendor(s): LazerBrite (UT) and Surefire (CA)
Program Office of Record: USSOCOM PEO, Special Programs (SP)

FY 2005 Plans: Complete technical review and down-select. Acquire test articles for Phase I technical and safety testing. Perform Phase I final test and design. Acquire test articles for Phase II testing. Begin Phase II Technical and Operational Tests. Complete Phase II Technical and Operational tests. Milestone C Decision. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Low Frequency Synthetic Instrument Measurement and Stimulus System (SIMSS-LF)	Air Force	0.000	0.319	0.204	0.000

The Synthetic Instrument Measurement and Stimulus Low Frequency (SIMSS-LF) system supports improving aircraft avionics and Electronic Attack (EA) pod test capability required to expedite repair of critical assets during deployed and home base operations. This single synthetic instrument leverages the power of the latest technologies in Digital Signal Processing (DSP) techniques and simplified VXI-based hardware to measure electrical signals more accurately than the many special purpose measurement instruments it replaces.

Vendor: BAE SYSTEMS, Mission Solutions
Program Office of Record: F-16 System Program Office, WPAFB

FY 2005 Plans: Conduct Signal Characteristic Capture evaluation to measure proper signal characteristic capture (e.g., rise time), for accuracy, and for resolution by comparing the returned parameter values against the known injected signal from the National Institute of Standards and Technology (NIST) certified secondary standard. Conduct data gathering and analysis for each measurement type across its associated frequency bands and amplitude ranges will be performed. Data will be used to create tabulated list of parameters and results from the testing will be recorded and analyzed.
FY 2006 Plans: Conduct demonstration of selected, representative signal measurements to illustrate the LF Measurement Synthetic Instrument capabilities. Develop test and evaluation report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Maritime Diesel Engine Nickel Boron Coating	USSOCOM	0.000	0.719	0.000	0.000

This project will evaluate a process for Nickel Boron Coating to extend the service life of diesel engines and drive assembly. A lightweight high power density diesel engine is a highly desirable replacement for the current gasoline engines. Coating the propulsion system components with Nickel Boron is an effective way to increase the power to weight ratio and extend the propulsion systems lifecycle.

Vendor(s): Universal Chemical Technologies, Inc. (Fl)
Program Office of Record: USSOCOM PEO, Special Programs (SP)

FY 2005 Plans: Receive project funding. Complete test planning. Contract for and receive test articles. Begin Phase I test of uncoated test articles. Complete Phase I test of uncoated test articles. Conduct test of coated test articles. Milestone C Decision. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Miniature Day/Night Sight Integration	USSOCOM	0.000	0.770	0.000	0.000

The Miniature Day/Night Sight (MDNS) program enhances Special Operations Forces (SOF) weapons capabilities for carbines, rifles and machine guns. It includes weapons components/sub-systems for fire control, target acquisition, and aiming. This project will evaluate the improvement, miniaturization, ruggedization and integration of numerous existing/improved components/sub-systems to provide one fully integrated, modular and MDNS system for SOF weapons.

Vendor(s): Multiple US vendors
Program Office of Record: USSOCOM PEO, Special Programs (SP)

FY 2005 Plans: Receive project funding. Contract for and receive test articles. Conduct technical and operational tests. Milestone C Decision. Submit DACP Close-out Report.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Qualification of Conformal Fabrics	Air Force	0.000	0.919	0.995	0.000

Pepin Associates, Inc. will work with Boeing/Phantom Works to qualify a conformal fabric for use in composite aircraft structures. This fabric conforms to complex shapes thereby reducing fabrication cost and enabling the design of highly contoured composite structures common on advanced aircraft. Pepin/Boeing team conducted sufficient process risk reduction to warrant material qualification. Boeing will guide the effort to qualify this material in accordance with Boeing Standard Material Specification (BSMS) procedures.

Vendor: Pepin Associates, Inc./Boeing Phantom Works
Program Office of Record: J-UCAS, WPAFB

FY 2005 Plans: Establish test matrix to specify the property of the test and repeatability of the property over the test specimens. Select fiber and matrix. Fabricate test panels and machine specimens from panels.
FY 2006 Plans: Perform mechanical and thermal tests and data review.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Quiet Eyes Low Cost DIRCM Laser-Pointer-Tracker Demonstration	Air Force	0.000	3.102	2.860	0.000

The quiet eyes program will design, build, test and demonstrate a low cost DIRCM (Directed Infrared Countermeasures) micro-turret (Quiet Eyes) for Large Aircraft IR Countermeasures (LAIRCM) requirements. The micro-turret leverages the guidance unit (gimbaled sensor and electronics unit) from the AIM-9X missile to significantly improve the cost, size, weight and reliability over existing DIRCM turrets. Following a modification to the AIM-9X guidance unit, the micro-turret will be integrated with a multi-band mid wave IR laser to demonstrate required pointing accuracy, stability, gimbal rates, optical cross-talk, laser power, laser wavelengths and beam quality. Raytheon will demonstrate break-lock for representative threat missile seekers first in the laboratory and then during tower tests at Wright Patterson AFB, OH.

Vendor: Raytheon Missile Systems
Program Office of Record: ASC/GRI, Wright Patterson AFB, Ohio, 45433-7605

FY 2005 Plans: Modify the AIM-9X seeker to become a low-cost, high-performance DIRCM pointer/tracker (micro-turret) Add a laser transmitter path to the AIM-9X gimbal. Integrate modified gimbal with a multi-band IR laser.
FY 2006 Plans: Perform tower demonstration with multi-band IR laser to verify pointing accuracy, stability, gimbal rates, optical cross-talk, laser power and beam quality. Ground demonstrate break lock for representative threat missile seekers at up to 2km range.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Spraycool Technology Solutions for Close In Weapons System (CIWS) Power Amp	Navy	0.000	1.700	0.109	0.000

This effort will address several critical issues facing the power amplifier section of the Close-in Weapon System. This effort will convert the power amplifier section to a Spraycool solution to dissipate heat more efficiently and improve reliability. The improved reliability will also allow a greater range of choices for follow-on commercial-off-the-shelf circuit card replacement. Spray cooling is a very efficient process that enables the use of high density Circuit Card Assemblies (CCAs). It also provides other important

attributes contributing to harsh environment survivability. Maintaining the electronics at a constant temperature and the reduction in thermal cycling improves the meantime between failures of the Line Replaceable Unit (LRU).

Vendor(s): Isothermal Systems Research, Inc., Liberty Lake, WA
Program Of Record: US Navy, PEO-IWS

FY 2005 Plans: Spray cooling factory acceptance testing: This test includes acceptance testing in accordance with the vendors ISO quality standards to ensure proper performance and workmanship. The milestone that will signify completion of this phase is delivery of the completed system to NAVSEA. Environmental qualification testing: Environmental qualification testing will be performed on the spray cooling hardware and the servers both before and after conversion to spray cooling. The milestone that will signify the completion of this phase is a test report and presentation charts highlighting the results. Shipboard operational testing: This test will include the installation and integration of the spray cooling system and converted power amplifier drawer. The test will include operational exercises as directed by NAVSEA.

	Service	FY 2004	FY 2005	FY 2006	FY 2007
Superior Surface Treatment Techniques for Adherent Bore Coatings	Army	0.000	0.448	0.485	0.000

The ‘Superior Surface Treatment Technique for Adherent Bore Coatings’ project, will apply innovative industrial plasma engineering and surface treatment techniques to improve protective gun bore coatings against high temperature wear and erosion. The techniques are applicable to Future Combat System cannons, Legacy cannons (Abrams), and Navy advanced Gun System. The project represents excellent Benefit to Investment Ratio (BIR) from gun bore life extension savings and environmental savings from electrolytic Chromium replacement.

Vendor(s): Southwest Research Institute, San Antonio, TX

FY 2005 Plans: Conduct Phase 1 Test (Coupon Sample Demonstration) to include: improved electrochemical clean with new NaCl electrolytes, hydrogen plasma cleaning and nitriding for enhanced adhesion, ion-assisted cylindrical and in-situ magnetron deposition, and demonstrate superior adhesive coatings on gun steel coupons.
FY 2006 Plans: Conduct Phase 2 Test (Bore Section Deposition) to include: optimize new surface clean, interface preparation and coating deposition techniques, demonstrate superior adhesive coatings on FCS 120mm smooth bore and 155mm rifled bore sections by erosion firing simulator, analytical testing including Vented Erosion Simulator (VES) testing, live fire

performance testing of legacy/FCS test-asset barrel. Technology transition to legacy (Abrams) and FCS (e.g., FCS-MCS) gun systems.

FY2006 DACP Program Plans:

For FY 2006, the DACP program will continue to fund testing activities on 15 projects executing $11.606 million in FY 2006 funding. Remaining funding will be used to initiate new start DACP Projects selected from the FY 2006 DACP Proposal Process. The FY2006 DACP Proposal Process will begin with the release of the BAA scheduled for February 2005. Final selection of FY2006 New Start DACP Projects is planned for July 2005.