OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**

Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost		106.362	108.159	109.514	114.145	115.653	109.494	110.932	112.492
P826	Quick Reaction Fund	28.131	29.561	29.751	32.043	32.060	30.278	30.675	31.106
P828	Rapid Reaction Fund	49.821	50.035	50.511	51.059	51.531	48.941	49.584	50.281
P829	Technology Transition Initiative (TTI)	28.410	28.563	29.252	31.043	32.062	30.275	30.673	31.105

A. Mission Description and Budget Item Justification: Quick Reaction Special Projects Program supports three separate projects that provide rapid funding to expedite new development and transition of new technologies to the warfighter. The projects that are part of the QRSP are the Quick Reaction Funding (QRF), Technology Transition Initiative (TTI), and the Rapid Reaction Fund (RRF). QRSP provides the flexibility to respond to emergent DoD issues and address technology surprises and needs within the years of execution outside the two-year budget cycle. The TTI program is mandated by Congress and receive high congressional interest. The DACP program transferred in FY2005 and outyears to PE 0604051D8Z to comply with congressional direction.

The Quick Reaction Fund (QRF) program is focused on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: accelerating promising research that will enable transformation; or will fill critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated. In FY 2006, over 100 proposals were reviewed and to date 12 projects were funded.

Authorized by Title 10 and Section 215 of the FY2003 Defense Authorization Act, the TTI Program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. Typically, these technologies are completed in the laboratories and shelved until procurement funding is made available by the respective Service to transition the item from S&T base into the acquisition community. The TTI Program facilitates the rapid transition of mature technologies from the S&T base into acquisition programs or directly to procurement. The TTI objectives are to successfully demonstrate new technologies in relevant environments and accelerate the introduction of new technologies into operational capabilities for the armed forces.

RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTF), recently re-designated, as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years.

In FY 2006, CTTTF/RRTO's objectives are to leverage the DoD science and technology base and those of the other Federal Departments; stimulate interagency coordination and cooperation; accelerate the fielding of capabilities and concepts to counter emerging threats; and provide feedback to the S&T community to guide long term developmental strategies. The task force works to anticipate adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force works to exploit technology developed outside of DoD in the commercial sector, in academia and internationally; as well as anticipate adversary's application of available and advanced technology. The average length of a

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Combating Terrorism Technology Task Force program falls within an 8-12 month range in order to more effectively aid the warfighter.

B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	108.942	107.782	112.343	116.315
Current BES/President's Budget (FY 2008/2009)	106.362	108.159	109.514	114.145
Total Adjustments	-2.580	0.377	-2.829	-2.170
Congressional Program Reductions		-0.627		
Congressional Rescissions				
Congressional Increases		1.000		
Reprogrammings	-3.400			
SBIR/STTR Transfer	-3.100			
Other	3.920	0.004	-2.829	-2.170

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						
08						

Comment: QRF/RRF: Program completion and success will be monitored against program schedule and deliverable stated in the proposals.

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TTI: In FY 2006, initiate the new start of 18 projects and conclude the activities on many continuing projects with the result of at least 12 technologies transitioning to the warfighter.
In FY 2007, initiate the new start of 19 projects and conclude the activities on many continuing projects with the result of at least 14 technologies transitioning to the warfighter.
In FY 2008, initiate the new start of projects and conclude the activities on many continuing projects with the results of several of the technologies transitioning to the warfighter.

RRF: In FY 2006/FY 2007/FY 2008, RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**	**P826**

Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P826	Quick Reaction Fund	28.131	29.561	29.751	32.043	32.060	30.278	30.675	31.106

A. Mission Description and Project Justification: The Quick Reaction Fund (QRF) provides flexibility to respond to emergent warfighter needs in the execution years. It takes advantage of technology breakthroughs in rapidly evolving technologies with expected completion within 6 to 12 months.
(U) Quick Reaction Fund - A data call was released on July 25, 2005 requesting proposals in response to emergent operational needs and to capitalize on technologies. To assist in prioritizing the proposals, the call letter requested the Service and Agency Science and Technology Executives and the DDR&E principles submit their top ten proposals. A notification on the DDR&E website was also posted so there was another avenue to submit proposals. Candidate proposals were focused in the areas that have the potential to addrress disruptive, catastrophic and irregular technologies. Each proposal addressed the description of the technology/concept, description of any demonstration testing required, description of technical, funding, and schedule risk, proposed executing Service/Agency and User. The proposals were reviewed for technical and warfighter relevance review. Projects awarded with FY 2006 funding include Backpack Medical Oxygen System (BMOS), English-Iraqi 2-Way Speech to Speech Translation System, Field Prototype for Standoff Detection of Fissile materials IED's and WMD's, Gunslinger Hostile Fire Detection and Counter Fire System, et.al. Below is more in-depth discussion of the projects funded. Because these programs are one time efforts, there are currently no plans to fund them in other years. However, for the overall QRF program, FY 2007 and 2008 plans are to continue to respond to critical operational needs and technology opportunities.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Dev and Qualification of Light-Weight ALON Transparent Armor:	0.400	0.000	0.000	0.000
FY 2006 Accomplishments: The primary objective of this initiative is to field light-weight transparent armor for use in up-armored ground vehicles like the High Mobility Multi-Wheeled Vehicle (HMMWV)for fragmentation protection against fragmenting and armor-piercing threats.				

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Backpack Medical Oxygen System (BMOS):	0.525	0.000	0.000	0.000
FY 2006 Accomplishments: Portable ballistically protected Liquid Oxygen (LOX) System that stores LOX and converts it to the gaseous state providing an uninterrupted supply of therapeutic oxygen for Air Force rescue personnel (PJs) to use on patients in the field. BMOS weighs slightly more than current oxygen generators carried by PJs, but has adjustable flow rates, providing approximately a ten-fold increase in oxygen supply; and, will not explode when hit with a round.				

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**	**P826**

CRISSTL Ball:	1.750	0.000	0.000	0.000

FY 2006 Accomplishments: This effort is developing a lightweight, compact sensor system that provides hemispherical area coverage to give improved war fighter situation awareness. Sensor information is relayed by a wireless link to an operator's console. Several system configurations are planned that incorporate either variations in packaging, or options in the sensor used. Sensor options provide optical, infrared or thermal scene generation. The fundamental goal is to improve situation awareness while limiting war fighter exposure to hostile fire.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
English-Iraqi 2-Way Speech to Speech Translation System:	1.195	0.000	0.000	0.000

Fy 2006 Accomplishments: This project will provide a portable two way English-Iraqi speech translation capability to operate in the Force Protection, Training, Civil Affairs and Medical domains. This capability is needed to augment the limited number of available translators in order for English speaking coalition forces to conduct Force Protection operations, limited tactical questions, training for Iraqi Armed and Police Forces, and to provide limited questioning on Civil Affairs (sewer, water, electricity). Hand portable English-Iraqi limited 2-Way speech translation systems will augment the limited number of linguists in the Area of Responsibility.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Field Prototype for Standoff Dectection of Fissile Materials:	1.870	0.000	0.000	0.000

FY 2006 Accomplishments: Develop, demonstrate and deliver a prototype field instrument for standoff detection of fissile and explosive material. Sensitive detection at a safe range will save military lives and equipment and lead to increased security for the US.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Gunslinger Hostile Fire Detection and Counter Fire System:	2.068	0.000	0.000	0.000

FY 2006 Accomplishments: Gunslinger Spiral 2 (GS-2) is a joint project (with participants from the Army, Navy, and Marine Corps) to develop an integrated system of multi-spectral sensors and a stabilized remote gun mount on a tactical ground vehicle with an operator interface intended for Marines. The system detects and locates hostile fire events, and provides the operators a means of responding to those events quickly, while the vehicle is on-the-move. QRF funds are being used to complete the integration, system testing, safety certification, operational testing, and to support the system during a near term deployment to Operation Iraqi Freedom (OIF).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Hardened Facility Attack Camera:	2.400	0.000	0.000	0.000

FY 2006 Accomplishments: The project will design, build, and demonstrate a camera to image the interior of hardened and deeply buried targets (HDBT) during an attack by a penetrator type weapon. The camera would be mounted on the penetrating weapon (typically a bomb), and provide an image of the interior of the structure or facility just prior to detonation of the warhead. The camera would transmit imagery through the bomb's own penetration hole to relay receivers on the attack aircraft or loitering UAVs deployed in the vicinity of the attack. This imagery will provide information about target interiors.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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iGPS Basic Functional Test Campaign:	0.510	0.000	0.000	0.000

FY 2006 Accomplishments: The objective of the iGPS Basic Functional Test Campaign is to enable the Government to (i) participate in determining test requirements, (ii) witness testing, and (iii) access the test data to be performed by the Boeing Company as "the Contractor," for the U.S. Air Force Research Laboratory (AFRL) under the Thrust Area I, Embedded Information Systems Technology Support (EISTS). The Contractor, functioning as an integrated product team with the Air Force Research Laboratory (AFRL) and DDR&E, shall be responsible for planning, coordinating, and executing all activities in this contract. The Contractor shall plan, schedule, and provide for the engineering, technical expertise, and resources necessary to successfully complete the tasks required for the EISTS program. Specific tasks within this delivery order address system performance studies, experimentation, and analysis.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Low Cost Precision Airdrop:	3.195	0.000	0.000	0.000

FY 2006 Accomplishments: A Joint Analysis Team (JAT) consisting of General Officers and SES representatives from all services and supported by an Integrated Product Team (IPT) of subject matter experts is examining a holistic approach to address the precision airdrop rapid fielding plans, and the link to formal programs of record/full fielding.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Low Profile VHF Antenna(s) with FSS:	0.575	0.000	0.000	0.000

FY 2006 Accomplishments: Current whip antennas installed on combatant craft break due to the harsh environment and can cause a hazard to the crew and passengers. In addition, whips on current craft add to their Radar Cross Selection (RCS) Signature. If it is a desire to lower the RCS on the craft or to produce a new craft with low RCS qualities, one of the major problems are whip antennas. The combatant craft community currently has Lo-RCS antennas for Ultra High Frequency (UHF) SatCom, UHF Line of Sight (LOS), Identification Friend of Foe (IFF), Global Positioning System (GPS), and domes for radars. There are no Lo-RCS VHF antennas for craft with a metal hull.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Merchant Marine Vehicle of Interest Analyzer (DYNET:MMVOIA):	0.350	0.000	0.000	0.000

FY 2006 Accomplishments: The need for improved intelligence analysis and decision tools is urgent and immediate to counter organized terrorism and insurgencies. Goals for this project include (1) facilitating improved course of action scenario evaluation with analytic and predictive capability that account for missing and erroneous data that is based on a capacity to test methods of strategic intervention against terror networks as they manifest themselves in the movement of personnel, resources, and information through merchant marine shipping routes; and, (2) Improvement in techniques to discover patterns of activity for prediction of terrorist operations in maritime environments. DYNET: MMVOIA will transition new discoveries and developments in terrorist network analysis into the military and intelligence communities in the U.S.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Personnel Halting and Stimulation Response (PHaSR):	0.300	0.000	0.000	0.000

FY 2006 Accomplishments: PHaSR is a revolutionary weapons system that will be the forerunner of a new wave of hand-held, single operator laser systems for point and perimeter defense functions. PHaSR is a self-contained lightweight, ruggedized, multiple use platform designed to deliver laser applications into the hands of the war fighter. The current system has two-wavelengths: one visible and one Mid-IR. The specific frequencies are classified. Both wavelengths use a diode laser as the pump source. The effects caused by these two lasers are classified. Testing has occurred in the laboratory that has

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demonstrated the desired human effects. Future testing will focus on higher power levels and increased efficiency.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Low Signature, Portable Fuel Cell Power Systems	3.535	0.000	0.000	0.000

FY 2006 Accomplishments: Will provide a 250-watt portable fuel cell power source that is virtually undetectable on the battlefield and is dramatically smaller, lighter and more efficient than alternative battery or generator systems. Initially two applications will be targeted; field battery chargers and silent auxiliary power units (APUs).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Portable Global Broadcast Service (GBS)	1.500	0.000	0.000	0.000

FY 2006 Accomplishments: This project will conduct testing and Operational Field Evaluation of an Air Force SBIR-produced Portable GBS Receive Suite to accelerate a non-standard acquisition of a potentially disruptive capability improvement to the war fighter. Evaluation of Portable GBS Receive Suite is a viable lightweight and lower cost alternative to other GBS Receive Suites currently available or whether their receive suite quantity requirements should change to acquire this new capability in addition to existing requirement.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Mag-Klot EX: Multifunctional Magnetic Hemostat	1.972	0.000	0.000	0.000

The leading cause of combat casualties for soldiers killed in action (KIA) and those that die of wounds (DOW) due to late complications, is uncontrolled hemorrhage. Rapid development of Mag-Klot EX will immediately decrease the number of military and civilian combat related KIA's and DOW's due to uncontrollable hemorrhage. In addition to helping to preserve life, this technology will significantly advance the scientific understanding of multifunctional, biomedical, materials.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Reprogrammings, Program Support, SBIR/STTR taxes	5.986	0.000	0.000	0.000

Comptroller realigned funds from FY06 to FY05 to support GWOT related efforts and funding required for program support.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 Plans:	0.000	29.561	0.000	0.000

QRF Proposals have been received and review panel has been designated to review and recommend proposal for funding. Selected proposals will be reported in the following QRSP Congressional Report.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 and FY 2009 Plans:	0.000	0.000	29.751	32.043

FY 2008 and FY 2009 data call for new start projects will be fielded in fourth quarter of FY 2007 and FY 2008.

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C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

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Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P828	Rapid Reaction Fund	49.821	50.035	50.511	51.059	51.531	48.941	49.584	50.281

A. Mission Description and Project Justification: The Quick Reaction Special Projects Program (Program Element 0603826D8Z) QRSP supports three separate projects that provide rapid funding to expedite the development and transition of new technologies to the warfighter: The projects that are part of the QRSP are the Quick Reaction Funding (QRF), Technology Transition Initiative (TTI), and Rapid Reaction Fund (RRF). The Defense Acquisition Challenge Program (DACP) was transferred in FY 2005 and out years to PE0604051D8Z.

RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTF), recently re-designated as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years. In FY 2005/2006, CTTTF/RRTO has leveraged the DoD science and technology base and those of the other Federal Departments; stimulated interagency coordination and cooperation; accelerated the fielding of capabilities and concepts to counter emerging threats; and provided feedback to the S&T community to guide long term developmental strategies. The task force anticipated adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force exploited technology developed outside of DoD in the commercial sector, in academia and internationally; as well as anticipated adversary's application of available and advanced technology. In FY2007 RRTO will build upon previous experience and pursue projects to: counter cover, concealment and deception in a counter insurgency environment; explore methods and approaches of persistent surveillance stimulation for counterinsurgency; develop alternate power sources for sensors and systems; and expand human, social and cultural knowledge. RRTO will actively pursue cross organization project teaming and sharing of information. The average length of a Rapid Reaction Technology Office project falls within an 8-12 month range in order to more effectively aid the warfighter.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Technology Applications Center	1.500	0.000	0.000	0.000

FY 2006 Accomplishments: This project will develop a capability to integrate disparate sensor data. Product integration will use metadata tagging to combine multiple sources of information and combine them in a single product that can be pulled by the consumer in a limited bandwidth environment.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
3D Antenna	0.900	0.000	0.000	0.000

FY 2006 Accomplishments: The ability to hide an ultra-miniature tag, the characteristics of highly reliable operations, and the addition of an airborne surveillance and search capability (in addition to optional satellite or other terrestrial techniques) can greatly enhance our counter-terrorist, counter-narcotics, and war fighting capabilities.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
MASTER Maritime Domain Awareness for Global War on terrorism (GWOT)	1.000	0.000	0.000	0.000

FY 2006 Accomplishments: The automatic generation and maintenance of ship tracks will greatly expand current capabilities. The new, emerging ADEPT-tag technology developed within National Technical Means (NTM) is combined with multi-intelligence data sources containing maritime related information to automatically generate ship tracks. Specific technologies and capabilities are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Wideband Processor (AWP)	2.500	0.000	0.000	0.000

FY 2006 Accomplishments: The AWP technology will provide the capability for new detection, location and processing of commercial telecommunications being used by asymmetrical threats. The AWP technology will provide a quick reaction system that will locate and target modern commercial telecommunications.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
COIN (Counter Insurgency) Tactical Survey	1.985	0.000	0.000	0.000

FY 2006 Accomplishments: Produce architecture to detect, track, and investigate personnel and activities through methodologies similar to those used to counter criminal activities. The tactical surveillance architecture will increase the granularity of situational awareness at all levels and will save blue force lives by identifying and neutralizing potential threats in real time.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Technology Applications Center	1.500	0.000	0.000	0.000

FY 2006 Accomplishments: This project will develop a capability to integrate disparate sensor data. Product integration will use metadata tagging to combine multiple sources of information and combine them in a single product that can be pulled by the consumer in a limited bandwidth environment.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Counter Insurgency Pattern Assessment (CIPA)	2.800	0.000	0.000	0.000

FY 2006 Accomplishments: The CIPA program uses multi-level geospatial analyses to identify behavioral patterns associated with insurgent or terrorist actions. The CIPA product predicts potential areas for future attacks and allows War fighters to effectively employ limited assets to focus on areas of likely attack.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
COIN (Counter Insurgency) RAND Study	2.500	0.000	0.000	0.000

FY 2006 Accomplishments: RAND will conduct comprehensive research into the nature of the current and future insurgency. Provide decision makers with recommendations on how to improve U.S. counter insurgency capabilities, including ways to enhance the ability of partner nations to combat insurgency.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Frogger PEAR	1.000	0.000	0.000	0.000

FY 2006 Accomplishments: This project will merge ongoing development of the Augmented Reality Visualization of the Common Operating Picture (ARVCOP) and the Modular Mission Planning Toolkit (MMPT) program. Supports mine warfare mission planning for multiple heterogeneous unmanned platforms and NSCT-1 delivery vessels. The effort will bring multiple sensor feeds into a common operating picture.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Frogger UAV	1.000	0.000	0.000	0.000

FY 2006 Accomplishments: This effort will develop a computer based training system for operators of small UAVs. A standardized, modular UAV training capability will provide a consistent operational capability by bring all UAV operators to a criterion based level of proficiency. UAV operators training to a criterion-based level of proficiency will provide an improved, standardized operational capability at lower cost and less risk with this system.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Geolocation Effort	1.680	0.000	0.000	0.000

FY 2006 Accomplishments: The project addresses a CENTCOM Joint Urgent Operational Needs Statement (JUONS) for detecting and locating a specific category of electronic devices in real time. The details of this project are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Halo Pele	0.900	0.000	0.000	0.000

FY 2006 Accomplishments: HALO Pele is a test designed to provide an engineering evaluation of a suite of technologically advanced sensors to support war fighter activities. HALO Pele Testing will perform high altitude (~50 kft) data collection operations on the NASA operated WB-57 aircraft over various Hawaii ground sites. An addition of a well characterized suite of new source and method sensor technologies to support the war fighter is provided.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Mapping Human Terrain - Human Terrain Information System	1.200	0.000	0.000	0.000

FY 2006 Accomplishments: To provide operational unit commanders, their staffs and combat forces with knowledge, training and tools needed to rapidly understand and exploit foreign cultures so that this understanding can be applied to enhance situational awareness and operational effectiveness. This effort will produce prototype tools, draft doctrinal publications, and initial training packages that in total allow the war fighter to better record and understand human terrain, and exploit this human terrain knowledge for operational and tactical victories.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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Moving Target Information Exploitation (MTIX)	0.650	0.000	0.000	0.000

FY 2006 Accomplishments: Develop and deploy a vehicle movement change detection tool using MTIX which will baseline patterns of object movement from persistently collected MTI. This proposed tool will permit the rapid detection and extraction of significant changes from within the data, as well as near-real-time posting of the changes on SIPRNET and JWICS web sites.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Experimental Range Complex	3.709	0.000	0.000	0.000

FY 2006 Accomplishments: Provide threat devices, tactics, techniques and procedures for use in testing of all systems developed under Quick Reaction Capability for Force Protection Needs in Support of OIF Military Forces.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Program Support	1.073	0.000	0.000	0.000

FY 2006 Accomplishments: Provide management and analysis of highly specialized defense research and engineering technologies. Support include technical, financial, administrative, and programmatic analysis of current and planned research and engineering projects for CTTTF.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Special Capabilities Office and Core Support	0.650	0.000	0.000	0.000

FY 2006 Accomplishments: Supply services and support in acquiring, designing, planning, and constructing a a government sponsored Special Compartmented Information Facility (SCIF) and Special Access Program (SAP) areas within a commercial facility and staffed with program security, AIS contracting, and administrative personnel.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Phoenix	4.000	0.000	0.000	0.000

FY 2006 Accomplishments: Demonstrate an innovative approach to support Intelligence Preparation of the Battlespace (IPB) for Information Operations (IO) by enabling the application of advanced, non-traditional model- driven and biographical data mining technologies to a mixture of social, cultural, and production-related data for weapons of mass destruction (WMD). A prototype of an advanced data mining system and analytic tactics, techniques, and procedures (TTP) to support planning for non-kinetic, effects-based operations will be provided. The details of this project are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Airborne Systems Participation at Buried Cache Detection Test	0.387	0.000	0.000	0.000

FY 2006 Accomplishments: The objective of the Buried Cache Detection Test is a proof of principle assessment of selected assets representing the three different components of a tiered concept (Overhead, Air-Breather and Ground) for detecting large buried weapons caches.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**	**P828**

Predictive Analysis Collaborative Capability (PACC)	1.500	0.000	0.000	0.000

FY 2006 Accomplishments: This project is linking historically accurate data and real-time indicators to predict and access enemy courses of actions, and geospatially reference multi-INT data repositories to the Distributed Common Ground Station (DCGS) Defense Integrated Backbone (DIB) web enabled Intelligence, Surveillance, and Reconnaissance (ISR) battle management architecture.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Project ARGUS	1.500	0.000	0.000	0.000

FY 2006 Accomplishments: Project Argus will integrate the contributions of advanced social network analysis (UCINet) and data mining technologies (entity tagging, entity disambiguation, link and node analysis) into an interactive, geo-temporal visualization environment (Oculus Geotime). Analysts and operational specialists will be able to understand and explore large volumes of data at once through a common operating picture of operational significance.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Project Red Light	0.900	0.000	0.000	0.000

FY 2006 Accomplishments: Enabling technology engineered for SOCOM to discretely geolocate and report target locations. This effort will provide evaluation of DoD/Intelligence Community needs, evaluation of capabilities for inclusion in the baseline, prototyping of new capabilities to meet user identified requirements to include testing/fielding of modified baseline. Details of the project are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Modem Phase II	0.450	0.000	0.000	0.000

FY 2006 Accomplishments: The QRC funding will allow for miniaturization of an existing commercial modem for integration into multiple sensors throughout the services while including users from numerous communities. The effort involves direct user participation and approval through design and prototyping, culminating in field testing of the prototype and final report. The results of the effort crosses all services and numerous government agencies utilizing commercial modems for over the horizon transmission.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Project Lighthouse Phase II	0.450	0.000	0.000	0.000

FY 2006 Accomplishments: Enabling technology engineered for SOCOM to discretely geolocate and report target locations. This effort will provide evaluation of the needs of DoD and the military community, evaluation of capabilities for inclusion in the baseline, prototyping of new capabilities to meet user identified requirements to include testing/fielding of modified baseline.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Scorpion II	0.500	0.000	0.000	0.000

FY 2006 Accomplishments: Truck-mounted, self contained Radio Frequency Generator with integrated directing antenna and aiming/pointing system. Counters remotely detonated IEDs. Pre-detonates or 'duds' the IED by scrambling the trigger electronics. A prototype system that can be operated autonomously in the field to evaluate the military utility of the technology as an effective means of defeating RCIEDs. Project will test a prototype system and capture data to assess the vulnerability of various targets at distances of interest. Details of the technology are classified.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Round Up	4.000	0.000	0.000	0.000

FY 2006 Accomplishments: An integration of existing projects for an end to end architecture, the tactical collection, processing and manual fusion activities in theater. Provide a truly end to end solution by fusing at the raw detection level data from very specialized processors with tactical collectors of not only SIGINT but also any data produced for detailed intelligence products supporting Intelligence Preparation of the Battlefield in near real time. The details of this project are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Natural Taggants	1.750	0.000	0.000	0.000

FY 2006 Accomplishments: A forensic database and GIS model will be developed to relate the stable isotope ratios found in human hair to ratios found in drinking waters and protein sources from regions across the world. This geolocation capability will allow terrorists to be back tracked chronologically to specific locations or geographic regions using hair samples. By reconstructing movements and providing information about where a person has been and for how long, terrorists may be linked together and/or to locations of intelligence value, such as encampments, recruitment and training sites, terrorist incidents, or common travel routes.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
TINA (Tactical Infrared Networked Awareness)	1.600	0.000	0.000	0.000

FY 2006 Accomplishments: TINA Improves situational awareness for operators and enables compact, high bandwidth means to harvest data quickly. TINA takes advantage of significant DoD investment in communications and visualization technologies to integrate the metro reflector long-range asymmetric communication technology with the TacViz™ tactical data visualization tool. The new system will provide an advanced reconnaissance asset that will allow operators to access, collect, and understand data from various remote sensors.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Visualizing Belief System (VIBES)	0.700	0.000	0.000	0.000

FY 2006 Accomplishments: Adapt and integrate state-of-the-art models of human beliefs and perceptions into software tools for use in planning and executing tactical missions in the complex environment. This effort will show the military utility of "operationalizing" models from cognitive science and human factors to assist commander/analysts' cultural understanding in complex environments.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Supernova Technique Development and Employment	0.300	0.000	0.000	0.000

FY 2006 Accomplishments: Develop and employ new and upgraded Supernova techniques from Compass Call aircraft in support of CENTCOM tasking The Supernova effort brings forward a capability to counter the IED threat. Details of this project are classified.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**	**P828**

Multiple Cooperative UAVs for Persistent ISR	0.150	0.000	0.000	0.000

FY 2006 Accomplishments: The goal of the proposed project is to develop a cooperative multiple UAV system that provides commanders with capabilities to continuously collect intelligence, conduct surveillance, and perform reconnaissance for mission planning and execution, friendly force protection, and exploitation of enemy weaknesses. The system will prove a flexible, real time, relatively low cost capability to better gather and exploit ISR data.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
The Structure and Dynamics of Insurgency	0.150	0.000	0.000	0.000

FY 2006 Accomplishments: This project builds a dynamic model of insurgency that clearly defines the variables, parameters, and relationships that shape the outcome of insurgent competitions. The model will be presented in general terms but have sufficient flexibility to allow analysts to move from the general to the specific. This project will provide a set of tools the policy and intelligence communities can use for addressing operational, tactical, and organizational issues.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Technology for Enhanced Exploitation of Multiple Sensors (TEEMS)	1.000	0.000	0.000	0.000

FY 2006 Accomplishments: Enhance a currently funded effort in analysis of multi-sensor data to enable faster generation and discovery of knowledge products and faster detection of suspicious activity, with lower false-alarm rates. This project will provide faster detection of suspicious activity, with lower false-alarm rates and improved target tracking and identification.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Project DAWP (Thumper)	0.120	0.000	0.000	0.000

FY 2006 Accomplishments: The intent of this project is to demonstrate Detonation Wave Array Projector (DWAP) technology effectiveness and operational feasibility. A new acoustic cannon, called DWAP, shows promise as a full-spectrum weapon capable of non-lethal or lethal effects over short to long ranges in a direct or indirect path. DWAP shows promise as a full-spectrum weapon capable of non-lethal or lethal effects over short to long ranges in a direct or indirect path.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Compact Fuel Cell Rapid Technology Insertion	0.425	0.000	0.000	0.000

FY 2006 Accomplishments: Build and deliver a high energy power source that replaces batteries and can be used to power electronics equipment on autonomous system. The system will provide flexible fuel capability that could reduce the weight of energy storage required by over 50% using matured compact fuel cells and reduce mission costs incurred using batteries.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Oregon Nanotechnology and Microelectronics Center (ONAMI)	0.800	0.000	0.000	0.000

FY 2006 Accomplishments: The ONAMI Center for nanotechnology for Thermal Management and Portable Power Generation will focus on developing nanotechnology that can enhance the performance of thermal management systems for electronics cooling, process cooling and the performance of small portable energy systems. This effort develops a nano center of expertise in Oregon.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Precision Underwater Mapping (IPUMA) Sonar for Small UUV's	1.000	0.000	0.000	0.000

FY 2006 Accomplishments: Develop two wide sector FLS5 systems with the capabilities to support the L-PUMA processing algorithms for front-end processing, target detection, single-ping remote profiling, and terrain 3-D mapping.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
PeConflict.org: Instability Assessment for Afghanistan	0.200	0.000	0.000	0.000

FY 2006 Accomplishments: This effort aims to augment a set of instability assessment tools and provide an extensive assessment and data set for Afghanistan from CY 2004 to the present. The model will identify specific problems and their relative priority to facilitate decision-making and support corrective actions by the Government of Afghanistan, the US-led Coalition, and the international community of nations who are all trying to resolve conflict and prevent future conflicts.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Understanding the Evolving Nature of Nuclear Proliferation	0.180	0.000	0.000	0.000

FY 2006 Accomplishments: An increasing number countries either have or are seeking nuclear weapons capability. To halt or reduce this dangerous and destabilizing trend, it is important to understand what motivates countries to seek nuclear weapons, as well as what technologies, expertise and facilities are being sought or developed. Committee on International Security and Arms Control (CISAC) will conduct a series of activities as part of its core agenda to develop a framework for analyzing nuclear proliferation.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Asymmetric Threat 7 Tactical Analysis Casebook/Post Blast Analysis Casebook (ATTAC/PBAC)	0.152	0.000	0.000	0.000

FY 2006 Accomplishments: Develops a computer software program that assists EOD technicians in the gathering of evidence and the subsequent documentation and reporting of bomb scene investigations. The fielding of post blast investigation software would greatly reduce inadvertent data omissions and the time required to properly document and report bomb scene investigations.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Biometric Knowledge Center (BKnC) - The Development of a Defense Biometrics Research Agenda	0.100	0.000	0.000	0.000

FY 2006 Accomplishments: The BKnC will perform Logistics to aid in the development of a Defense Biometrics Research Agenda to address S&T issues. This effort will address the need for national defense superiority which relies on the investment in biometrics S&T. Authentication and identification of humans using biometrics technology is the premier tool for improving security across the intelligence and defense arenas.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007/2008/2009 Plans:	0.960	50.035	50.511	51.059

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RRF investment decisions are made during the execution years in response to combatant commander, services and other organizations' requirements and new threats/new opportunities. Research and coordination with organizations and agencies throughout DoD have identified areas as those critical to developing future counterterrorism/counterinsurgency capabilities. These areas include: alternative power strategies, autonomous operations; electromagnetic spectrum management; "stimulation" technologies and strategies; socio-cultural topics; multi-sensor applications; intelligence capability enhancements; surveillance and reconnaissance; training and education; tagging, tracking and locating; communications and information sharing; "access denial" of insurgents to critical capabilities and needs; deterrence, dissuasion and information operations; identification, including indications and warnings of threats; detection of threats, both close in and standoff; defeat and consequence management; crisis response capabilities; and multi-level information sharing.

CTTTF/RRTO's FY07 objectives include: increased interagency funding and program integration through co-funded programs and regular information sharing, the integration of earlier fiscal year efforts into coordinated architectures with specific operational areas of focus, and transition and manufacturing strategies for programs underway or to be started.
A few of these areas are described in further detail below.

Counter Cover, Concealment and Deception in a Counter Insurgency Environment:
Realizing the ability to detect insurgent activity and hostile intent is a different problem set than what has been a typical surveillance and reconnaissance problem, CTTTF/RRTO has invested in technologies to help discern hostile activity in a cluttered environment. Technologies include: standoff trace explosives detection initiatives, predictive tools, open source analysis techniques, development of acoustic imaging capabilities, virtual reality overlays in a tactical environment, perimeter security capabilities and exploitation of novel signatures.

Alternative Power Sources for Sensors and Systems:
CTTTF/RRTO seeks to help the warfighter more effectively manage sensor employment. RRTO is sponsoring development of a hybrid fuel system to power sensors aboard a small unmanned aerial vehicle and an initiative to develop an alternate fuel source for a sensor package deployed from Naval ships.RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

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RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reaction Special Projects**	**P829**

Cost ($ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P829	Technology Transition Initiative (TTI)	28.410	28.563	29.252	31.043	32.062	30.275	30.673	31.105

A. Mission Description and Project Justification: The Quick Reaction Special Projects Program (Program Element 0603826D8Z) has three sub-elements: the Technology Transition Initiative (TTI), the Quick Reaction Fund (QRF) and the Rapid Reaction Fund (RRF). The fiscal controls above represent the investment of the QRSP Program funding for the TTI Program.

Authorized by Title 10 and Section 215 of the FY2003 Defense Authorization Act, the TTI Program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. Typically, these technologies are completed in the laboratories and shelved until procurement funding is made available by the respective Service to transition the item from S&T base into the acquisition community. The TTI Program facilitates the rapid transition of mature technologies from the S&T base into acquisition programs or directly to procurement. The TTI objectives are to successfully demonstrate new technologies in relevant environments and accelerate the introduction of new technologies into operational capabilities for the armed forces.

TTI projects are selected by the Technology Transition Manager in consultation with representatives of the Technology Transition Council (TTC). (The TTC is comprised of the Acquisition and S&T executives from each Service and Defense Agency and representatives from the JROC.) The call for TTI proposals is distributed to the DoD Services and Agencies through the Technology Transition Working Group (TTWG) members, designated by the TTC. The TTWG receives proposals from their Service/Defense Agency S&T base, conducts a prioritization based on Joint, Service or Agency capabilities needed and submits them to the OSD TTI Program Manager. The Technology Manager's senior staff consolidates the proposal submissions, evaluates the Service/Agency recommendations, reviews new start selection options based on available resources, and prepares a recommended new start selection list to the Technology Transition Manager for funding. The Technology Transition Manager, in coordination with the TTC, selects the highest priority proposals for funding.

The FY 2007 proposal call memo was signed out by the Technology Transition Manager on February 17, 2006, requesting the TTC members provide their prioritized inputs by April 17. These proposals were to focus on projects having "great impact for the warfighter", (i.e., potentially fewer projects with larger dollar values). The memo also indicated that OSD priorities were on projects that could reduce demands on manpower, increase lethality, and/or reduce our logistics footprint. This year, each Service/Agency was asked to limit their submittals to OSD to a total of ten/five respectively. A total of 95 proposals were submitted to the components, from which they necked down to 30 submitted formally to OSD. These 30 were evaluated against the following evaluation criteria: TTI funding must accelerate product transition, project is from DoD S&T base, cost sharing to leverage TTI funding, project duration less than 4 years, established exit criteria, potential for joint use, value to the warfighter, sufficient technology maturity, commitment to transition/acquisition. The evaluation team downselected to 16 proposals which were briefed to the selection panel. In July 2006, eleven proposed TTI efforts were approved by the Technology Transition Manager as new start projects to be implemented at the start of FY 2007.

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B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Automated Change Detection: (Army)	1.581	0.000	0.000	0.000

This TTI effort accelerates the transition of a Change Detection capability into current operations. The output of this effort is a new capability that will be used by the warfighter to address a critical need to rapidly identify and locate landmines and Improvised Explosive Devices (IEDs). Additional information is For Official Use Only (FOUO).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Lightweight Ceramic-Based Armor: (Air Force)	0.506	0.000	0.000	0.000

The availability of lightweight modern Small Arms Protective Insert (SAPI) body armor has been a critical issue in the Iraqi battle theater. The Air Force and Navy in-house R&D programs working in collaboration with Excera Materials Group of Columbus, Ohio (via Phase I and II SBIR's) have developed a novel ceramic strike face material for use in armor systems. The material has been used in conjunction with traditional polymer-based backing and is being evaluated for first article testing as an eSAPI rated armor product by the Army PM. Furthermore, the Army has issued purchase orders for ceramic strike faces that contain the first generation of these materials. Excera has developed a robust manufacturing process concurrently with the material. As a result they have a lightweight, high ballistic performance system that has several manufacturing advantages over traditional armor ceramics. Specifically, the material has a lower manufacturing cost and is easily shaped to meet complex human or vehicle contours. In addition, new forming techniques allow the rapid development of complex shaped armor that is not feasible with traditional ceramic material processing. The work proposed in this TTI project will allow for wider availability of this material across the various Agencies and increase its range of capability (i.e., increased ballistic threats) and application (i.e., advanced personnel, vehicle, etc.). Through funding provided under this TTI project, it is estimated to accelerate transition 24 months sooner than originally planned.

FY2006 Output: Continuation of the development of SAPI materials to meet new and emerging threats as outlined by the Army PM shop and the Marine Corps lead for personal protection. Continuation of work with SOCOM to outline Special Operations specific armor requirements. Delivery of appendage armor solutions to Force Protection Battlelab. Qualification of another industrial source of eSAPI plates for delivery of eSAPI to both the Army and Marine Corps. Production increase of SAPI plates (SAPI, iSAPI, eSAPI and sSAPI) to 10,000 plates per month. Development of lightweight tactical vehicle armor based on the SAPI material and design as per emerging DoD requirements. Development of new forming and manufacturing techniques to produce complex shaped armor for advanced ergonomic designs. Development of capacity to deliver 20,000 sets of appendage armor per month to Army, Marine Corps and Air Force. Development of armor system for Cobra Helicopter, and delivery of under signed IDIQ. Development of new ergonomic body armor shapes with the US Army Soldier System Center. Continuation of work with lightweight vehicle manufacturers to develop platform specific packages responding to the current threat levels.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Command Post of Future (CPOF) and Army Battle Command System (ABCS) Server Software Integration: (Joint w/Army/USMC)	2.319	0.000	0.000	0.000

The Command Post of the Future (CPOF) is a high priority, DARPA-developed technology program that provides a software suite of collaboration tools which is rapidly becoming a defacto capability of choice from Corps down through Battalion. CPOF formally transitioned to the Army Acquisition Community in mid-2006. CPOF successfully supported the 1st Cavalry Division in GWOT operations during OIF with a single 50 user network. This number has dramatically expanded with over 400 current OIF users across multiple networks. The current CPOF system consists of both clients and servers. In the near/mid-term OIF rotations, CPOF hardware will be fielded side-by-side with Army Battle Command System (ABCS) hardware. TTI Program funding will accelerate the merger and integration of CPOF server software and Army Battle Command server software by at least one year, driving an initial battle command server consolidation focused-activity that will expedite the elimination of additional hardware in the field.

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The primary outputs and efficiencies of this program are : 1) comparative analysis against final CPOF and ABCS Server software builds for consolidation; 2) initial consolidated battle command server fielded to OIF 06-08 to add capability with reduced life-cycle costs; 3) documented target system architecture operating environment with CPOF Federated Server configuration to ensure interoperability; 4) feasibility analysis for software coexistence and integration approaches using virtualization and 64-bit dual core hardware technologies to assess exploitation of technology advancements in consolidation strategy; 5) analysis of technical alternatives to develop architecture strategies for CPOF-JADOCS-BC Server solution to further reduce infrastructure dependencies; 6) documented unified server target software and hardware environments per NECC architecture framework standard to jointly leverage efficiencies from this program.

FY2006 Output: Completed comparative analysis against final CPOF and ABCS Server software builds. Prototyped and tested initial CPOF Federated Server configuration. Developed, tested, and delivered initial consolidated battle command server and fielded to OIF 06-08. Examined target system architecture operating environment. Explored software coexistence and integration approaches using virtualization and 64-bit dual core hardware technologies. Developed courses of action and conducted analysis of technical alternatives to develop architecture strategies for CPOF-BC Server solution. Defined and documented unified server target software and hardware environments. Prototyped software co-existence and integration approaches. Developed and tested initial CPOF-BC server software prototype identifying critical path technical risk areas.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Digital Planning Tools for Joint Ground Warfare: (Army)	0.632	0.000	0.000	0.000

CENTCOM submitted an Operational Needs statement (ONS) to G3 Army to enhance the Combined Arms Planning and Execution-monitoring System (CAPES) to support Military Operations in Urban Terrain (MOUT), Stability and Reconstruction Operations (SARO), and Diplomatic, Information, Military, and Economic (DIME)/Political, Military, Economic, Social, Information, and Infrastructure (PMESII) planning. The outcome of this program is to support the ability of Army and Marine units to develop digital plans for OIF/OEF that support asymmetrical, non-kinetic planning, in addition to the digital kinetic planning that is currently supported in CAPES. This two year project is being executed in collaboration with a number of operational units to include: III Corps, 101st AAD, and I MEF, and will be transitioned into the Joint Tactical COP Workstation by FYE '06.

The primary outputs and efficiencies of this program include: (1) percentage decrease in time to analyze incident trends for incorporation into operational plans, (2) percentage decrease in ability to generate movement plans (routes) that avoid likely hazardous situations (when avoidance of kinetic contact is desired), (3) decrease in ability to predict times and locations where incidents of insurgency is likely, (4) percentage increase in plan options that take non-kinetic PMESII effects into consideration.

FY 2006 Output - Completed prototype of MOUT, SARO, DIME/PMESII planning capabilities as described and requested by participating operational units. Prototype software was taken by I MEF and 101st AAD for their OIF rotation for field evaluation. Based on a program brief to JFCOM, this effort will be included in JFCOM PMESII Center of Excellence.

Transition to JTCW is on schedule for FYE 2006. Developed capabilities included: 1) Identification of trends in unit-reported historical incident data, Model non-military populations, their dispositions and relationships, addition of Military Operations Other Than War, (MOOTW) graphical control measures; addition of Stability and Support Operations (SASO) and Military Operations on Urban Terrain (MOUT) tasks; prediction and propagation of population disposition as a result of conducting military and non-military tasks; prediction of likelihood of future incidents based on population disposition. Provide multiple COA assessment with respect to their affect on the population. Incident Correlation graphs that are driven by Time of Day and Events. 2) Auto-creation of non military population demographic groups. Population demographic data is created based upon Tribe, Language, Ethnic, Religion and Nationality. Developed a SARO task editor for specifying the effect of a task on non-military population groups. Behavioral Graphs which allow the users to express changes in disposition of affected populations. Default behavioral graphs were created for the SASO tasks. Using the default graphs users can apply effects to tasks from a menu of behavioral patterns, and then modify the pattern. 3) Task Sketching capability. This allows task to be created without assigning units "unassigned task". Task can be associated to units, Graphical Control Measures (GCMs), or annotations. Users create an object (objective - population - Assembly area...) and associate a task to the object. The task can be scheduled

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immediately whether it is assigned to a unit or not. 4) Find the optimal route based on social information about the region of interest. Documented a proposal to find the N-best routes and impose a partial order on the results in order to provide alternate solutions to the commander. The goal is to optimize the cost in finding the best shortest route. 5) Developed data mining techniques to predict future incidents in a region by using past incidents that have occurred in the same region. 6) Refined the Optimal Route Estimation using Social Factors analysis to include reasoning for the following use cases: Find a route to the nearest hospital; find a route that avoids a specific area because it is known that some event is occurring in that area; find the least dangerous route; find a route that must go through a specific area; find a route that must avoid locations of a specific type (e.g., bridges); find a route based on contingencies. 7) Created a work flow for DIME-PMESII framework that allows a user to define a set of desired Strategic Goals. The PMESII system will consist of the following modules: Strategic Effects Editor - Define high-level desired PMESII effects and constraints from the strategic goals, Strategic Effects Task Planner - Plan possible ways to achieve the desired effects, in terms of operational tasks, Strategic Effects Scheduler - Prioritize effects plans with constraints, Effect Task Order - Select a scheduled plan and outputs.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Precision Underwater Mapping (I-PUMA) Sonar for Small UUVs: (Navy)	1.054	0.000	0.000	0.000

FY 2006 Accomplishments: This project will provide area search, mapping, and target identification capabilities in very shallow water, harbor, port, and ship berthing environments. This will be accomplished by engineering the submarine precision underwater mapping (PUMA) and 21" UUV Littoral-PUMA (L-PUMA) sensing technologies into a miniaturized integrated-PUMA (i-PUMA) that is capable of operating in these shallow areas on a 12" UUV. The engineering effort will develop an integrated sensor/processing design that minimizes the overall power requirements and unit cost, while providing an upgrade path for additional capabilities. In addition to integrating i-PUMA with a small UUV, this project will also develop object detection processing and vehicle processing suites to enable wide area search with change detection and target identification.

The primary efficiencies of the i-PUMA sensor suite include providing a substantial advance over currently available candidate technologies, breaking the current narrow-width, single-target aspect, sensing paradigm and permitting wide field of view, multi-aspect bottom mapping and object detection at high resolution. The sensor will enable a small easily deployable UUV to efficiently search large areas to a specified level of confidence.

FY 2006 Output: Completed ALS system design optimization and selected lower-risk 16" noise section. Fabrication of electronic and mechanical components underway and on schedule to be completed 2Q FY 2007. Initiated system software development and porting from PUMA program, which is 50% complete. Continuing object detection and discrimination algorithm development and mission path planner algorithm development. Completed UUV integration plan with nose mounted launch and recovery system. Complete sonar/array processing development, integration, and testing in Lake Travis. Complete object detection and discrimination processing. Completion of mission path planner development. Completion of UUV hardware/software integration and in-water testing/evaluation.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Special Ops Forces (SOF) Virtual Interpreter: (USSOCOM)	0.632	0.000	0.000	0.000

The SOF Virtual Interpreter (SVI) involves four different technologies: the Phraselator, the Foreign Language tutorial software, the voice to voice translator and the NIPRNET Connectivity. The Phraselator is a ruggedized, one-way, voice-to-voice, handheld translation device designed specifically for the US Military. Since the Phraselator's prototype launch in 2001, it has been used by American Soldiers worldwide more than any other translation device. The Phraselator is a field -proven force multiplier capable of gaining intelligence, providing life-saving direction and enabling civilian outreach efforts. A substantial new capability (not currently available in the Phraselator) is the ability for the Speaking-Multilingual Interactive Natural Dialog System (S-MINDS) software to record and translate a foreign language response back into English. A limited two-way capability allowing for the gathering of invaluable time sensitive intelligence information or in a medical emergency scenario it would assist in the assessment of a non-English speaking patient's severity of wounds or ailment. Additional capabilities such as communications and language tutorial software would enhance the user's abilities to reach back through the World-Wide-Web to obtain system upgrades and conduct language training from abroad. The goal of this effort is to evaluate and modify if necessary, twenty (20) SOF Virtual Interpreters (SVI)

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Systems technology modifications for use by USSOCOM forces and others to effect a rapid transition into acquisition.

FY2006 Output: One Way Translator : Communications "Plug" hardware and software developed and integrated on SOFVI; transitioned the government funded two-way voice-to-voice communications cap; added two Phraselator Input Languages to the SOFVI; integrated commercially available language dictionaries, language translation tools, language training, and sustainment tools, pictures, maps and, area and cultural information into the SOFVI; created database and host language training and sustainment tools on the module management site (MMS); delivered two fully integrated SOFVI devices for evaluation and fifteen additional SOFVI units for user evaluation and a production capability assessment; participated in Operational testing in 4Q FY 2006 by USASOC TIED. Limited Two Way Translator:- Successful demonstration of limited 2-way capability, Successful user interface improvement, On-going comparative evaluation by ARL, Participating in JFCOM effort,. combined DT/OT 4Q FY 2006 by ATEC. Prepared final report and conduct TTI Program Close Out brief.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Lightweight and Conformal Photovoltaic Solutions for the SOF Warrior: (USSOCOM)	1.549	0.000	0.000	0.000

Photovoltaic (PV) materials are essential ingredients of alternative energy systems slowly integrating into operational tool kits. This Technology Transition Initiative facilitates the production of PV technologies through continued leveraging and project acceleration within previously approved Natick Soldier Center (NSC) Army Technology Objectives (ATO) and Small Business Innovative Research (SBIR) efforts. The FY 2005-2008 ATO initiatives have been accelerated with development and production of several working prototypes in the TTI's first year. Several successful subprojects, identified below, have been conducted during the first funding phase, and additional working subsystem prototypes are in work. These build on the risk mitigation steps of the first year of work quantifying PV technologies for integration into SOF unique equipage. These SOF PV systems include but, not limited to, unattended ground sensors, tags, command and control equipment (handheld radios), weapons sights, unmanned/manned air, ground and maritime platforms, shelter overheads, etc. This technology offers the SOF operator versatility for use as a direct or recharging energy source to complement legacy generator and battery systems.

FY2006 Output:
AA Battery Solar Chargers- An operational, twelve month, evaluation of one thousand (1000) PowerFilm, Inc. (formerly Iowa Thin Film, Inc.) solar charger systems was conducted. System production was completed within forty five days of award; fielded to multiple SOF and service unique users in December 2005; the Natick Soldier Center's (NSC) Operational Forces Interface Group (OFIG) final evaluation report was completed in 2006.

Conforming Photovoltaics (PV) to Objects- Conformal Abilities of Flexible Substrate Based Photovoltaics (PV) to Irregular Shaped Objects (PowerFilm, Inc.) - This twelve month research and development effort took an innovative twist to mold the photovoltaic material internally to an irregular shape. Additional technology developments have resulted from the initial testing of plastic mold/potting materials, paints, and novel approaches for constructing, painting and etching a conformal PV object. Working prototypes received in September and demonstrated to PEO-IIS managers in October 2006.

Small, Concealable, Light Powered Electrical Supply (PowerFilm, Inc.) - A strip of Iowa Thin Film, Inc. PV material has been integrated with material and wire filament leads derived from their conformal work. The working prototype was received in September 2006 and demonstrated to PEO-IIS managers in October.

1' x 1' Mesh/PV Working Prototype (PowerFilm, Inc.) - The working PV sensor prototype was received September 2006. This risk reduction PV system is now the tool used to demonstrated to operators and transition managers to visualize larger systems.

Conformal Photovoltaics - Shelter PV Prototypes (PowerFilm, Inc.) - Twelve month phased development and production initiative to construct twenty-five PV harnesses for integration with camouflage material by the Natick Soldier Center. Initial four (4) prototype deliverables planned for May 2007.

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SOF Vehicle PV Prototype (PowerFilm, Inc.) - Planned nine month production of one PV harness for integration with camouflage material by the Natick Soldier Center and use with USSOCOM Small Business Innovative Research project, "Family of SOF Vehicles".

Joint Threat Warning System Foldable PV Systems (PowerFilm, Inc.) - This effort will accelerate the Natick Soldier Center sponsored ATO which is developing and integrating foldable PV systems with single headed charge controller units needed for recharging BB390 and BB2590. Production of one hundred thirty complete systems is planned over a fifteen month period.

PV Solar System for 75W Rechargeable Battery (PowerFilm, Inc.) - A three month viability study is planned to determine level of effort required to integrate and produce fifty working prototypes for SOF users. If feasible, prototype production is planned to be completed six months later assuming no schedule slippage with commercially available battery procurement. 1KW / Balance of Systems PV System - Twelve month effort is planned to develop, procure, and field necessary systems for evaluation by SOF users in support of bare basing or other shelter considerations supportive of alternative energy initiatives. Planned, twelve month, phased development and production initiative to construct unknown quantity and size of PV harnesses for integration with camouflage material by the Natick Soldier Center. Our development and production plans are predicated on capability based decisions made to support Reconnaissance and Surveillance, Mobility, and Joint Special Operations Task Force with alternative energy solutions.

PV Thread/Mesh Development (Konarka Technologies, Inc.) - Solid-state PV Thread - Deliver 100 feet of solid-state PV thread over six month period of performance. Working PV Fabric Prototype - Deliver a solid state PV fabric from 100 feet of PV thread previously developed. This thread would be woven into an existing fabric (expect camouflage fabric), for support, and demonstration of a device. Working Free Standing Mesh PV System - Deliver this working prototype over fifteen months. Device will be free standing- not woven into an existing fabric.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Seal Delivery Vehicle Advanced Reconnaissance System	0.237	0.000	0.000	0.000

The MK 8 MOD 1 SEAL Delivery Vehicle (SDV) is a manned submersible vehicle used to deliver Navy (Sea/Air/Land) SEALs and their equipment to mission areas. The vehicle is battery-powered and is equipped with propulsion, navigation, communication, and life support equipment. The vehicle ORD provided a documented requirement for a periscope which was unfulfilled during production (1998). A US/UK Cooperative R&D effort demonstrated a Periscope capability in 2003.

Outcome - Provide the Naval Special Warfare Community with capability that meets their mission requirement for an SDV Periscope. Obtain prototype SDV Advanced Reconnaissance Sensor Kits to: 1) Enhance SDV situational awareness and intelligence, surveillance and reconnaissance capabilities; 2) Maintain parity with UK capability; and 3) Bridge the gap between S&T funding and procurement.

Efficiencies: Project tracked with Earned Value Management. Minimum EVM throughout FY 2006 was a low of .86 CPI. End-of year CPI and SPI were both between 0.95 and 1.10. Signature tests were conducted coincident with tests for other NSW craft to leverage and share expenses

FY 2006 Output: Contracted for an enhanced EO Sensor in 2006 (delivery 2007) to meet desired NSW enhanced performance criteria. Commenced design for mast modifications and electronics integration to interface with the Modernized MK 8 MOD 1 SDV. Changed electronic design path to eliminate the Periscope Controller by interfacing with the SDV Onboard Mission Support Computer (SOMSC) supporting display on the pilot and navigator Command Display Units. Completion of SDV SOMSC integration to support use from Command Display Units. Receipt and testing of Phase II Electro Optic Sensor. Refinement of mast mounting design, and confirm with signature tests.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Husky Mounted IED and Anti-Tank Mine Detection System: (Army)	4.329	1.039	0.000	0.000

This project will provide a near-term, highly effective capability to US forces in Iraq and Afghanistan to detect anti-vehicle landmines and improvised explosive devices (IED's). Additional information is For Official Use Only (FOUO).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Red Blood Cell Extended Life (RBCXL) : (Army)	1.054	1.199	0.000	0.000

RBCXL addresses requirements validated in the Initial Capabilities Document (ICD) for Ground Contingency Medical Support System, approved by the Air Force in 2003 and documented in the Army's 2005 draft ICD for Theater Combat Casualty Care. The outcome of RBCXL is an FDA approved blood collection and storage system that provides capability to collect and store human red blood cells (RBCs) at an FDA-defined level of functionality and safety for at least 8-weeks, and potentially for up to 12 weeks. The 26 month project will be managed by the US Army Medical Materiel Development Activity (USAMMDA) in collaboration with Hemerus Medical, LLC, Saint Paul, MN with completion of manufacturing development and validation and completion of product testing and evaluation by September 2008. The primary outputs and efficiencies to be demonstrated during development include (1) demonstrated safety of system materials when tested in animals, (2) prolonged storage life of human red blood cells (RBCs), (3) enhanced RBC quality and function with in vitro (test tube) testing compared to current RBC storage at each time interval tested, and (4) safety and equal or enhanced RBC survival when infused into human volunteers.

FY 2006 Output - Finalized baseline development and testing plan, including pre-clinical animal testing and clinical testing necessary for USFDA licensure..

FY 2007 Planned Output - Complete animal testing protocol development and submitted protocols for scientific and ethical review Complete manufacturing development, testing, and validation. Complete pre-clinical animal toxicology studies. Complete clinical in vitro study. Complete clinical protocol development. Conduct formal meeting with USFDA in preparation for final clinical study. Submit formal application to USFDA to conduct clinical in vivo study. Submit clinical protocol for local and Army human use review. Conduct and complete clinical testing of RBCXL. Complete final study reports. Submit application to USFDA for licensure of RBCXL for commercial clinical use September 2008.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Unmanned Surface Vehicles for Littoral Combat Ship Missions: (Navy)	1.054	2.398	2.135	0.000

The Joint Requirements Oversight Council (JROC) validated the capability need for Unmanned Sea Surface Vehicles (USSVs) for Littoral Combat Ship (LCS) Missions. The outcome of this TTI program will provide enhanced capabilities, via the USSV, that will be a key enabler for LCS's ability to perform its three primary missions of Mine Countermeasures (MCM), Anti-Submarine Warfare (ASW) and Surface Warfare (SuW), as well as other missions such as Expanded Maritime Interception Operations (EMIO) and Electronic Warfare (EW). TTI Program funding will provide the final level of maturity to transition the USSV to PMS420 and acquisition for deployment on the LCS.

The output of the project will be to design and build an advanced USSV that is optimized for LCS missions. The lead service is the Navy.

FY2006 Output: USSV-MCM Payload: Preliminary Integration and Test of existing (non-optimal) mine influence system and USSV, lessons learned. Payload Definition: I.D. Final Mine Influenced System, Defined Requirements: The mine influence system installed on the new USSV was identified as the ONR Code 32 bare cable system. The requirements for weight, space, power and arrangements for the identified system were provided to the USSV design team. Procure/Acquire Mine Influence System. The mine influence system used on the new USSV was acquired. USSV Design/Build. The design for

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the new USSV is complete. Construction commenced in December 2006.

FY2007 Planned Output: Construction of the USSV will be completed in FY07. USSV Performance Test/Builder's Trials - USSV performance testing. Payload Integration - the payload identified in Task 2 will be installed aboard the USSV. Mine Influence/USSV At-Sea Test: the performance of the mine influence/USSV system will be tested on a range. Deliver to USSV and technical package to LCS Mission Module Program Office (PMS420). Spiral Output: this TTI program will accelerate development of the USSV so that it can be transitioned into LCS Flight 0 in 2007, which represents a two-year acceleration compared to the current PMS420 plan. USSV-Payload #2. Payload Definition: A second payload will be identified by PMS420 and detailed requirements for weight, space, power and arrangements for the identified system will be provided to the USSV design team. This payload will be either another mine influence payload or an antisubmarine warfare (ASW) payload. Both payloads are required by the LCS Mission Module Program Office. USSV Modifications: A USSV will be modified to accept the second payload. Payload Integration: the second payload will be installed on the USSV. This task will initiate in FY07.

FY2008 Planned Output: The second payload identified above will be installed on the USSV. This task will complete in FY08. Payload/USSV At-Sea Test: the performance of the Payload/USSV system will be characterized in at-sea tests. Deliver to LCS Mission Module Program Office (PMS420): the technical package describing the Payload/USSV system. The Transition Manager for this TTI Program is the LCS Mission Module Program Office (PMS420). Final demonstration dates are September 2007 and September 2008. TTI program completion date is 30 September 2008.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Operational Gliders for Battlespace Reconnaissance and USV Surveillance: (Navy)	2.002	2.278	0.854	0.000

The Chief of Naval Operations (N8) and Chief of Naval Oceanography (N84) validated the requirement for an operational glider for battlespace reconnaissance and included ocean gliders as part of the Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) Program of Record. The Technology Transition Initiative will accelerate the transition of ocean gliders to operational readiness.

The outcome of the "Operational Gliders for Battlespace Reconnaissance and USV Surveillance" program is the development of robust ocean gliders that are certified for operational deployment (six prototypes of improved and hardened gliders will be initially delivered) together with an operationally feasible (roll-on, roll-off) deployment and recovery system, a command and control system, and an approved manufacturing process. The completion of the operational glider prototypes, all other deliverables, demonstrations and documentations will be completed at the end of FY2008; the TTI Program funding accelerates the achievement of technical readiness by 36 months (FY2008 vs. FY2011).

The primary output and efficiency to be achieved in this project is operationally robust underwater gliders that obtain data to reduce the uncertainty in the performance prediction of the acoustic sensors by providing near real-time 3-D acoustic properties of the ocean, including sonic layer depth, ducting conditions and sound channel characteristics. Networks of gliders together with distributed networked bottom sensors reduce the occurrence of false contacts. Additional outputs and efficiencies include the following: (1) glider configuration such that they can accommodate optical sensors that facilitate non-acoustic Anti-Submarine Warfare (ASW) measurements; (2) an approved manufacturing capability so that acquisition of large numbers of gliders can facilitate the fleet establishing networks of 10-30 gliders. (These networks of gliders provide real-time environmental intelligence, surveillance and reconnaissance data in the operational area of interest. These data provide mission planning modules with the initial and evolving deep or shallow water environmental data); (3) gliders with the capability to provide long duration sampling (1 month to 3 months), and to provide real-time data at a far lower cost (present estimate is $4 per glider vertical profile vs. present cost of $1000 per profile via ship) with immediate delivery of data to operational fleet commands; (4) gliders that, once deployed, do not (now) and will not require support from fleet assets such as ships, aircraft, or submersible platforms; piloting and data flow will be remote but real-time with global coverage. The project will achieve roll-on-roll-off deployment from surface platforms and a common command and control system for all glider types.

FY 2006 Output - Design of Common Command and Control System, Battery Safety and Approvals Progress; Hardening of Glider; Demonstration and Concept of Operations (CONOPS) development. An initial review of battery and battery safety systems was conducted in February 2006. The project will evaluate and move toward adopting a standard cell of lithium rechargeable batteries for all three glider

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systems. A long-duration lithium cell has been constructed with accompanying modifications of the glider shell; this will be a special model for selected fleet operations and will go through the same approval process. A draft Command and Control System (CCS) has been designed. A preliminary analysis of the existing individual CCSs was completed (March 2006) and collated the methods used to communicate piloting instructions to the vehicles and to retrieve data collected during glider missions. A user interface was designed with input from the customers that have committed to flying and maintaining the gliders and software development that integrates all control software has begun. Both the Seaglider and Slocum gliders were modified to use removable, reconfigurable wings as part of the "hardening" of the platform. New adaptive sampling methods and concepts of operations were demonstrated in the FY06 RIMPAC exercise (multi-nation, multi-platform Anit-Submarine Warfare (ASW) exercise). During that exercise four Seagliders and two Slocum gliders were flown to supply ASW-support.
Spiral Output: the RIMPAC exercise provided an opportunity to test new piloting methods in exceptionally strong flow regimes; the piloting patterns will be incorporated into CONOPS and the CCS. The Capability Development Document for LBSF and I Program of Record has been prepared for Milestone B Decision.

FY 2007 Planned Outputs: Prototype gliders incorporating the new rechargeable battery systems and the new wings and antenna options will be constructed. The battery systems and the prototypes will undergo standard NAVSEA testing including implosion, explosion, stress testing, off-gas testing and design review. The revised wings, antennas and deployment and recovery systems will undergo at sea testing during Naval exercises as part of a build-test-build cycle that will lead to the optimized design. The deployment and recovery hardware will be constructed, and tested on-board several candidate naval vessels. Work towards an approved manufacturing and design process will begin. The Command and Control System software will be finalized and tested. The improved designs and the manufacturing process will be documented and a configuration control system will be implemented. The adaptive sampling algorithms within the common control environment will be evaluated during the at sea exercises.

FY 2008 Planned Outputs: Remaining prototypes will be constructed so that in mid- FY2008, there will be six prototypes of improved and hardened gliders available for use by the Navy. The approval and certification of the manufacturing process will continue and documentation and configuration control systems will be completed. The final prototypes, along with the deployment/recovery systems and command system will be tested at sea. Remaining modifications will be completed leading to an operational glider design and six hardened gliders. Approvals and certifications will be completed. The design criteria and tested prototypes are timed to be synchronous with the initiation of LBSF& I funding for acquisition. The Acquisition Program Manager is Thomas Piwowar, PMW 180; the Program manager for LBSF&I is CAPT Michael Huff, PEO C41 and Space, PMW 180 ISR and IO.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Blazed Array Sonar for Ship Hull Inspection: (Navy)	0.864	0.000	0.000	0.000

The Joint Requirements Oversight Council (JROC) validated the capability need for Blazed Array Sonar for Ship Hull Inspection. The outcome of Blazed Array Sonar for Ship Hull Inspection is to demonstrate an underwater hull inspection sensor using three-dimensional acoustic imaging techniques to enable identification of complex structures found on the bottom of a ship. This project, with completion of development and demonstration by end of CY 2007, will transition to PMS-EOD (Explosive Ordnance Disposal) and be integrated on to an EOD Unmanned Underwater Vehicle (UUV) Hull UUV Localization System (HULS) User Operational Evaluation System (UOES) by FY 2008.

The primary outputs and efficiencies to be demonstrated on an EOD-UUV Hull search platforms are (1) percent decrease in incorrectly called targets (false alarms), (2) percent decrease time for data analysis, (3) capability to image complex structures under the ship hull

FY 2006 Output - A hardware and user interface specification was used to develop the system architecture. The forward looker array design was completed in June 2006, and fabrication initiated. The electronics architecture was defined and the top level board designs produced. Complete fabrication and integration of the "Alpha" prototype on to a ROV/UUV, with subsequent performance testing and refinements. Process to be duplicated with a "Beta" Unit prototype. Upon successful demonstration of the Blazed Array System on an ROV/UUV the system will be transitioned onto the EOD-UUV HULS UOES. Spiral Output - the Blazed Array Sonar for ship hull inspection if successful will be spiraled to the field two years early.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Flameless Ration Heater (FRH) : (Army)	0.527	0.276	0.000	0.000

The product to be transitioned is an improved, non-hydrogen producing, Flameless Ration Heater designed to eliminate current issues in packaging, handling, transportation and disposal for all Services using the Meal, Ready-to-Eat (MRE). The current FRH, developed by the Army in the 1980s, is a water activated exothermic chemical heater made from magnesium which when activated emits flammable hydrogen gas that can build to measurable levels approaching lower explosive limits when stored in large quantities and confined spaces. Additionally, there are US Environmental Protection Agency restrictions pertaining to the disposal of unreacted heaters, categorized as hazardous waste in bulk issue, and Department of Transportation guidelines regarding transportation on commercial aircraft and ships. Recent technical advances made on two alternative non-hydrogen producing heaters show considerable promise for use within the current military system. Successful completion of this TTI initiative will overcome or greatly lessen these safety, environmental, transportation, storage and readiness issues.

The outcome of this program will be the incorporation of a safe, disposable and readily transportable heater into the Meal, Ready-to-Eat (MRE) ration.

FY 2006 Output : Completed initial efforts to advance the development of non-hydrogen producing, chemical ration heaters. Completed initial in-house testing and assessment of two alternative heater candidates - a phosphorous pentoxide/calcium oxide anhydride heater, and a self-contained potassium permanganate/glycerine heater - to include package design modification, physical package testing, thermal testing for heater performance, heat uniformity and shelf life.

The output is data that forms the basis of a Safety Assessment Report (SAR). The SAR was submitted to Developmental Test Center to obtain a Safety Release on both candidate heaters. Once safety release was obtained, large quantities of heaters were procured and assembled into MREs by contract assemblers. The MREs containing test heaters were tested by troops undergoing field training exercise at Fort Lewis, WA in 4Q FY 2006. Field test data will be used as an outcome measure of troops' acceptance of the candidate heaters in comparison with the current ration heater. Heaters were examined for regulatory compliance against DOT and EPA classification standards. The outcome of this assessment will be an awareness of any restrictions on the candidate heaters in terms of handling, shipment, storage, use or disposal and any impact these restrictions may have on the ration distribution life cycle. An initial Phase I producibility assessment contract was awarded in FY 2006 to improve the manufacturability of candidate heaters in a more automated and scalable manner than is presently used to fabricate prototypes. The outcome of this effort will ensure that alternative heaters are correctly designed for manufacture on conventional packaging machinery.

FY 2007 Planned Output: Complete the analysis of the Fort Lewis field test data to verify soldier acceptance of candidate heaters. An additional evaluation and focus group will be conducted at the Army Mountain Warfare School in Jericho, VT in 2Q07. Using soldier feedback, heater designs will be modified where possible to improve usage and acceptance. Accelerated shelf life testing of candidate heaters will be completed - heaters must have a three year shelf life to be included as a component of the MRE. Rough handling testing of candidate heaters will be completed. The outcome of this effort will be an improvement in package design modification to increase heater durability at cold temperatures. The Phase II producibility assessment contract will be awarded to ensure heaters with any design modifications are properly designed for manufacturability. A cost-benefit analysis will be conducted on candidate heaters. The results of this analysis will be considered as an efficiency measure in that added benefits of a safer, non-hydrogen producing heater may justify additional cost of the item if applicable. Results of developmental efforts and soldier acceptance will be presented to Service representatives in 3Q FY 2007 for decision on whether to continue efforts to include one or both candidate heaters in the MRE. As final output of this project, performance based specifications will be prepared for one or both candidate heaters for future procurement of the item through the Defense Logistics Agency (DLA). Final decision for the addition of alternate heaters to the MRE assembly document is scheduled to be made by a Joint Service decision board to be held in conjunction with the annual DoD Combat Feeding Research & Engineering Board meeting in 1Q FY08.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Modular Crowd Control Munition-Vehicle Mount System (MCCM-VMS): (Army)	0.706	0.000	0.000	0.000

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An MCCM-VMS capability was identified in current operations for an unfunded portion of a system with an approved Operational Requirements Document. The outcome of the MCCM-VMS TTI is to demonstrate the MCCM-VMS technology and transition it to the receiving PM. The PM will subsequently Type Classify, produce and field it as a materiel capability that will provide Soldiers and/or Servicemen with a vehicle mounted system capable of delivering non-lethal counter-personnel area effects. The outcome will include the capability for one Serviceman to control multiple MCCM's either mounted on specific vehicles or ground-emplaced for perimeter defense. The 12 month project under sponsorship of the Joint Non-Lethal Weapons Program (JNLWP), will be completed for transition to the Project Manager for Close Combat Systems (OPM-CCS) by the third quarter of FY 2007.

The primary output and efficiencies to be demonstrated in the MCCM-VMS TTI are (1) 6-fold increase (from 4 up to 24) in the number of MCCM's that can be operator controlled and fired from both vehicle mounted and ground-emplaced systems, (2) mounting configurations for MCCM-VMS on at least 3 separate types of military vehicles, (3) digital control by 1 operator of multiple MCCM's in designated firing sequences, (4) 7-fold increase (from 5 to 35) in number of repeat MCCM firings from one vehicle-mounted blast attenuation box.

FY 2006 Output - Final design, fabrication and demonstration of the Generation 2 VMS prototype with digital controller software, master control unit and junction boxes. Final VMS Blast Attenuation Box design for producibility and affordability through re-use. Establishment of vehicle mount configurations for High Mobility Multi-purpose Wheeled Vehicle (HMMWV), Family of Medium Tactical Vehicles (FMTV), and M113 Rapid Entry Vehicle (REV). Completion of draft technical manuals. Spiral Output - the prototype VMS Blast Attenuation Box was successful and immediately spiraled to the M113 Rapid Entry Vehicle for urgent fielding. Completion of fabrication of Gen 2 VMS prototype software and hardware for engineering qualification testing. Conduct engineering qualification tests. Finalize performance specification and complete engineering-level technical data package with supporting safety documentation. Transition to PM-CCS for their subsequent Type Classification, production, and fielding.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Shipboard Composite Combat Identification (SCCID): (Navy)	1.540	0.000	0.000	0.000

FY 2006 Accomplishments: The Joint Requirements Oversight Council (JROC) validated the capability need for SCCID. The outcome of SCCID is to develop a multi-source fusion and Combat Identification (CID) engine capability that provides Ship's Signal Exploitation Space (SSES) equipped ships with a multi-source fusion capability and a CID engine that can process both GENSER and Sensitive Compartmented Information (SCI) evidence to derive CID for Link-16 and Cooperative Engagement Capability (CEC)-based radar tracks. SCCID will provide the warfighter with rapid recommendations based on the fusing and correlation of organic and national SIGINT data. SCCID is a three-year project under the joint support and efforts of PMA-290 and the Office of Naval Research (ONR) with completion of development and demonstration by end of FY 2007 and transition to the US Navy by FY 2008.

The primary outputs and efficiencies to be demonstrated during Trident Warrior 2007 (TW07) Military Utility Assessment are (1) improve Battle Space awareness, (2) provide a means that will help prevent fratricide, (3) provide a means to prevent engagement on friendly or neutral tracks, and (3) reduce the operator manual efforts in analyzing the numerous track data inputs.

FY 2006 Output - Integration and testing of SCCID at the Systems Integration Laboratory (SIL) located at Space and Naval Warfare Systems Center (SPARWAR SYSCEN), San Diego. This includes: a) Radiant Mercury template development for a two way communications interface between CEC and SCCID; b) SCCID Open Architecture Computer Environment (OACE) and Net Centric Enterprise Solution for Interoperability (NESI) compliance; c) SCCID Defense Information Infrastructure (DII) Common Operating Environment (COE) compliance; d) SCCID Segmentation into the Cryptologic Unified Build (CUB); software package; e) SCCID and CEC Integration software development and test; f) Memorandum Of Agreement (MOA) SIL Tests g) Coherent scenario development. Crew training occured prior to installation of the SCCID for inclusion in TW07. Post at sea demonstration report written and distributed to the appropriate commands. Upon successful completion of the MOA SIL tests and transition to PMW-180 Program of Record (POR), the SCCID software installed and demonstrated during the TW07 Multi-System Integration (MSI) Limited Objective Experiment (LOE). SCCID's role in the TW07 MSI LOE will be as the final CID resolution engine to help deconflict CIDs being provided by multiple sources (MSI, CEC, Network Centric Collaborative Targeting (NCCT)). Fielding of SCCID as a segment of CUB. Following software upgrade testing and integration into SCCID, accomplished segmentation of software into CUB.

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Land/Littoral Battle Command Warfighter Interface: (Army)	0.843	2.518	0.000	0.000

The Command Post of the Future (CPOF) is a high priority, DARPA-developed technology program that provides a software suite of collaboration tools accessed through a superior intuitive human-computer interface (HCI), which is rapidly becoming a defacto capability of choice from Corps down through Battalion. CPOF formally transitioned to the Army Acquisition Community in mid-2006. The current CPOF system consists of both clients and servers. In the near/mid-term OIF rotations, CPOF will be fielded side-by-side with the Army's Acquisition Category (ACAT) 1 Maneuver Control System (MCS) and Marine Corps' Command and Control PC (C2PC). Current Army and Marine Corps ACAT systems have a significant initial and follow-on training requirement burden. This TTI project will significantly reduce this burden by transitioning CPOF, which has been proven to be intuitive, easier to use, and requiring significantly less initial and follow-on training, into the Joint Tactical Common Operating Picture (COP) Workstation (JTCW). JTCW is the current near/mid-term tactical level single common C2 solution mandated by the Joint Requirements Oversight Council (JROC) for land/littoral operations. JTCW represents the merger of numerous Army battle command functional area software applications onto the Marine Corps' C2PC baseline. This TTI project will accelerate the transition and application of CPOF-based HCI technology into the unified Army-Marine Corps JTCW system by approximately 18 months.

FY 2006 Output: Completed comprehensive usability engineering and human computer interface assessments on the latest version of the Command Post of the Future (CPOF) system. Initiated comprehensive usability engineering and human computer interface assessments on the latest version of Joint Tactical Common Operating Picture (COP) Workstation (JTCW) client and JTCW Army "Injectors." Initiated examination of the current interface between application software and human-computer interface (HCI) for the JTCW client.

FY 2007 Planned Output: Complete comprehensive usability engineering and human computer interface assessments on the latest version of JTCW client and JTCW Tri-Service "Injectors." Complete analysis and insure detailed understanding of the interface between application software and HCI for JTCW Client. Define and document the application program interfaces (UI Framework) for a CPOF-based single JTCW client presentation layer. Initiate definition and documentation of a HCI design guidance package for this CPOF-based client presentation layer. Initiate development of a common interface template prototype for this CPOF-based client presentation layer that can subsequently be used by battle command software development activities. Complete definition and documentation of a HCI design guidance package for this CPOF-based client presentation layer. Complete development of a common interface template prototype for this CPOF-based client presentation layer that can subsequently be used by battle command software development activities.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Sense and Avoid (SAA) for Small UAVs (SUAV): (Air Force)	0.949	0.719	0.214	0.000

Air Force has validated the need for a Sense and Avoid (SAA) capability for Small Unmanned Aircraft Systems (SUASs). The outcome of Small Sense and Avoid (SSAA) is to create a miniaturized version of Air Force Research Laboratories' (AFRL) Phase-I Advanced Technology Demonstration SAA system. The miniaturized system will be the hardware and software necessary to alert the ground-based pilot and/or an on-board avoidance maneuvering subsystem of any potential collisions. The system enhances the situational awareness of a SUAS in both the National Airspace System (NAS) and in operational environments, and will go a long way in meeting the Federal Aviation Administration's standards for granting UASs access to the NAS. Development and demonstration will be completed by end of FY 2008. Transition will be to both the Air Force Small UAS office and to the Army Project Manager for UASs in FY 2009.

The primary outputs and efficiencies to be demonstrated in this technology transition initiative are (1) a percent decrease in the hardware's size, weight, and power; (2) identification of and creation of software architecture able to integrate SAA data seamlessly with SUASs' ground control stations; (3) identification of and creation of a system that requires minimal modification to the unmanned aircraft; and (4) estimated 24 month advancement of a SAA system transitioning to the field.

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FY 2006 Output: Selected UAS platforms to be covered by this initiative (i.e. Shadow) and defined SSAA system performance requirements; designed SSAA system architecture; procured long-lead hardware components and subsystems. Adapted SAA software for SUAS implementation. Began SSAA prototype system fabrication.

FY 2007 Planned Output: Complete SSAA system prototype fabrication; conduct laboratory and UAS surrogate testing; plan and conduct miniaturized SSAA flight demonstration on Aerostar UAS. Begin transition of technology to Programs of Record (i.e. Shadow, others). The transition manager is the 303d Aeronautical Systems Wing.

FY 2008 Planned Output: Final demonstration date is June 2008. Analyze flight demonstration data and document results; develop pre-SDD system design; submit Final Report. Completion date of the project is September 2008.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Log Based Planning for OIF Authority Transition: (Army)	1.634	0.000	0.000	0.000

This program addresses an emerging requirement for logistics units resulting from Operation Iraqi Freedom (OIF) and the transition of authority to the Iraqi Security Forces (ISF). The outcome of this program is to provide a collection of logistics base planning tools that will allow US logistics units to provide support for both US and ISF forces in the context of transitioning authority to the ISF. Field evaluations of the software will be conducted with I MEF, and III Corps with transition into the Joint Tactical COP (Common Operational Picture) Workstation (JTCW).

The primary outputs and efficiencies include: (1) Percentage reduction in the time to develop combat service support plans (goal is 35% reduction), (2) Percentage reduction in transportation requirements to satisfy support requirements (goal is 10%), (3) Percentage reduction in time to configure and load equipment for re-supply missions (goal is 30%), (4) percentage reduction in size of logistics units (goal is 25%). The logistics support areas to be addressed in this effort are: Class 1 (Food/Water), Class 3 (Fuel), Class 4 (Construction materials), Class 5 (Ammunition), Class 7 (End Items), Class 8 (Medical), Class 9 (Maintenance Parts), Re-supply.

FY 2006 Output - Created a community of interest for collection of both Army and Marine requirements, and then worked to refine the requirements while the units were in theater. Prioritized requirements and created design for development of logistics planning tools. The Planning tools developed will be transitioned into the Joint Tactical COP Workstation (JTCW). These planning tools will promote operational efficiency by reducing the time to develop combat service support plans, specifically in the context of OIF and OEF. New planning capabilities will address logistics support of Iraqi Security Forces (ISF) as well as the needs of enemy prisoners of war, displaced civilians and general population. A generalized approach will ensure that the capabilities support future needs associated with Foreign Military Training and Stability and Reconstruction Operations. Specific logistics support capabilities will address all classes of supply including: fuel, water, food, temporary housing, maintenance, ammunition, transportation, security, and major end-items. These capabilities will be created through the development of models and algorithms supporting utilization, delivery, resource loaders, inventory management, and scheduling. The capabilities will be prototyped and field testing by III Corps and Marine units to include I MEF and II MEF. Once validated, the new planning tolls will be transitioned into JTCW.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Semantic Web II -- Transition to Additional Commands: (NGA)	0.632	0.719	0.000	0.000

The Technical Support Working Group (TSWG), on behalf of the Joint IED Defeat Organization and its US Army and Special Forces customers, validated the need for extending the capabilities of the Semantic Web Network. The outcome of this effort is to seamlessly deliver National and multi-service tactical intelligence via the Semantic Web Network to an experimental predictive analysis cell at Ft. Bragg, with eventual transition paths to Special Forces and US Army operational units in theater. Semantic Web Networking is an XML-based content routing system that enhances Command and Control by delivering more relevant and complete information from across Intel Community and Operational databases in real-time. The Functional Capability Area for this technology is Net-Centric Warfare, supporting

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Command and Control. Specific uses of the technology by the Marine Corps have been for Rapid Planning (R2P2) and Intelligence Preparation of the Battlefield (IPB). This is a two-year project with completion of development and demonstration by end of CY 2006, and transition to support3rd and 7th Special Forces Groups, Army 10th Mountain Battalion and a Marine Battalion by FY 2008.

The primary outputs and efficiencies to be demonstrated in this effort are significantly reduced search times for information required for operational planning (reduced from hours to seconds/minutes), and better information available for decisions - typically, information from more sources than would otherwise have been used, and fewer irrelevant documents such as sometimes returned by search engines in their results list.

FY 2006 Output - The initial Semantic Web Network/aXiom prototype capability was delivered to the Predictive Analysis cell in 4Q FY 2006. Extensions to this initial capability, to integrate additional required data sources and output information to the Caleb program's Asymmetric Software Kit (ASK) are required early in FY 2007. The criteria for success within this initial spiral are access to existing data sources through aXiom capability. In the second spiral, it is expected that the system will be extended to support a wider range of data sources as mutually agreed, and aXiom outputs will be integrated directly into the Asymmetric Software Kit.

FY 2007 Planned Output - Integration of the capability with the overall USASOC analysis capability will occur in late FY 2007 through early FY 2008. Begin transition to the Program of Record, Special Operations Advanced Technology Development.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Digital Multi-Spectral Night Vision Goggles: (SOCOM)	1.792	3.237	0.000	0.000

The USSOCOM Requirements Evaluation board approved the Special Operations Visual Augmentation System Binocular/Monocular Capability Development Document (Spiral 2) which validates the requirement for multi-spectral or hyper-spectral fusion of image intensification, colorized image intensification, thermal imaging, and other advanced imaging technologies as they reach operational maturity. The outcome of the Advanced Digital Multi-Spectral Night Vision Goggles (ADMNVG) project is the development of a goggle which will utilize digital technology to generate an image composed from multiple spectrums; I2-Image Intensification, LWIR-Long Wave Infrared, and SWIR-Short Wave Infrared providing a scene composed of multiple wave bands. The imagery generated from the ADMNVG sensor modules will be digitally fused and presented to the soldier via a high-resolution display. The goggle will also allow the soldier to share this imagery via available video communication links and display video from external sources to the soldier. The ADMNVG will continue to utilize the existing mounting hardware currently used by the soldier. The goggle will predominantly be worn on the soldier's helmet, but the utilization of a facemask will remain an option. The system will consist of two modules; the first module, the goggle, is composed of the sensors, the displays, the image processor, and controls, the second module is the battery pack, which will house two separate battery modules for operation of the device. The system will also be operational utilizing existing fielded power sources. This will be done to allow the soldier to operate the ADMNVG via vehicle power, via other larger batteries for extended periods of operation, and will allow the soldier to scavenge for power. The project is a two year effort starting in FY 2006 and transitioning to acquisition in FY 2008.

The primary output and efficiencies to be demonstrated are the development of a system which increases the soldier's ability to identify threats and targets with improved speed and accuracy thereby improving battlefield awareness in darkness and poor visibility while also reducing weight and power consumption beyond that of currently fielded systems.

FY 2006 Output - Continued development efforts to reduce overall system weight and power draw through advancements in the NIR camera and custom Application-Specific Integrated Circuit (ASIC). The NIR camera advancements are targeting a solid state camera that will both reduce the size and weight of the camera device while providing a camera that matches the performance of the current image tube technology found in fielded night vision goggles. The development of a custom ASIC will replace the current power hungry frame gate array technology. The design and development of an ASIC usually takes 18 to 36 months but will provide significant improvements in power draw and size.

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FY 2007 Planned Output - Complete the following efforts: fusion processor effort including development of hardened FPGA, ASIC, and algorithms; optics design and fabrication; fabrication of battery pack and establishment of power management methods and power sources; establishment of the ADMNVG configuration; and definition of deliverables. Complete the following: VIS/NIR, SWIR, and LWIR camera development and integration; goggle assembly and housing build; establishment of production tooling and processes; goggle delivery, test and evaluation with final report; and transition of the system to acquisition.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Warfighter Hearing Enhancement and Protection (Navy):	0.000	1.679	1.495	0.000

In FY 2006 Office of the Chief of Naval Operations (OPNAV) validated the need to improve aircraft carrier flight deck crew helmets, including better hearing protection and communication ability, by establishing the Flight Deck Cranial (FDC) program. The FDC is to surpass existing helmet performance in key areas related to safety standard compliance and life cycle efficiency per FY 2005 Deputy Assistant Secretary Navy (Safety) Business Case Analysis. FDC is sponsored by OPNAV N8 with planned transition to U.S. Navy operational commands in FY 2010. Transition PM is Naval Air Systems Command PMA202 Aircrew Systems.

An Evolutionary Acquisition Strategy and a Spiral Development approach will be used to deploy qualified hearing enhancement and protection equipment technologies: (1) replace existing subsystems during routine maintenance, (2) Engineering Change Proposal (or similar) to existing hearing / head protector, (3) system replacement to attrited system(s), and (4) standardized system acquisition. FDC system outputs and efficiencies include (1) ANSI speech intelligibility test demonstrates 20% gain or more, (2) ANSI hearing protection test demonstrates 3 dB gain or more, (3) greater than 50% use the hearing protection correctly (current estimate is 7%), (4) fit an estimated 95% of the U.S. Navy personnel population (size, shape, gender, race), (5) meets/exceeds ANSI head protection standard, (6) compatible with chem-bio and fire protection clothing.

FY 2007 Planned Output: Initiated custom earplug (without communication capability) fit trial on 200+ U.S Atlantic Fleet aviation personnel. Trial results are being used in design and process refinement. Integrate suite of S&T hearing protection and communication products in existing flight deck helmet. Complete systems-level performance and environmental laboratory testing and initiate operational trials. Spiral Output - approve qualified subsystems for fleet use by direct procurement.

FY 2008 Plan: Final Operational Demonstration of hearing enhancement and protection technologies will be March 2008. Develop Integrated Logistics Support Plan (Implementation, Configuration Control, Maintenance, Tech Manuals, Training Package, etc) to transition hearing protection and communication technologies for use in existing flight deck helmet. Spiral Output - approve existing flight deck helmet with improved hearing protection and communication technologies for fleet procurement. TTI Efforts Culminate in Follow-on POM-08 RDT&E and OPN Procurement.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Diagnostics Avionics Tester for On-aircraft Maintenance (Navy):	0.000	0.378	0.787	0.000

The F/A-18 Program Office has an immediate need for Support Equipment (SE) items that can reduce maintenance costs, and reduce ambiguities between systems and components at the on-aircraft maintenance level. The outcome of the "Diagnostics Avionics Tester for On-Aircraft Maintenance" Technology Transition Initiative (TTI) project will be to incorporate net-centric diagnostics technologies into the Tactical Reconnaissance (TAC RECCE) and Electro-Optical Infrared (EO/IR) F/A-18 Maintenance Programs by developing a prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework that can replace the AN/USM-681 Electro-Optics Pallet/Pod Tester (EOPT).

The exit criteria will be a successful demonstration of the prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework with a F/A-18 squadron equipped with the AN/ASQ-228 Advanced Targeting Forward Looking Infrared (ATFLIR) Pod and a F/A-18 squadron equipped with the AN/ASD-12 Shared Reconnaissance Pod (SHARP).

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The primary outputs and efficiencies to be demonstrated include the (1) percent increase in ATFLIR and SHARP operational availability; (2) cost reduction for maintenance and repair; (3) percent increase in fault detection and fault isolation rates; (4) run time reduction for F/A-18 Automated Test Equipment at the off-aircraft maintenance level; (5) percent reduction in false alarms/cannot-duplicate occurrences; and (6) percent reduction in logistics footprint for the new Support Equipment at the on-aircraft maintenance level.
One prototype and a Level 3 technical data package will be provided to the F/A-18 Program Office. The F/A-18 Program Office will procure production versions of the Diagnostics Avionics Tester and Net-Centric Diagnostics Framework beginning in FY 2008 with life cycle support implemented in the first year of procurement. Deliverables will be due in FY 2009 and FY 2010.

FY 2007 Plan: Procured militarized commercial-off-the-shelf (COTS) tablet PC to serve as the processor unit for the prototype Diagnostics Avionics Tester. Completed development of the avionics interface for the prototype Diagnostics Avionics Tester. Completed first software builds for the Net-Centric Diagnostics Framework, ATFLIR Computer Software Configuration Item (CSCI), and SHARP CSCI.

FY 2008 Plan: Diagnostics Avionics Tester and Net-Centric Diagnostics Framework have successfully completed all test efforts and are approved for flightline use. Successfully demonstrated the prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework at a F/A-18 squadron equipped with the AN/ASQ-228 ATFLIR Pod, and a F/A-18 squadron equipped with the AN/ASD-12 SHARP.
One prototype and a Level 3 technical data package (TDP) provided to the F/A-18 Program Office. The F/A-18 Program Office will begin incorporating net-centric diagnostics technologies into the TAC RECCE and EO/IR F/A-18 Maintenance Programs by procuring production versions of the Diagnostics Avionics Tester and Net-Centric Diagnostics Framework to replace the AN/USM-681 EOPT.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
N-Acetylcysteine (NAC) Clinical Trials for Hearing Loss Prevention (Navy):	0.000	1.199	1.068	0.000

The Joint Requirements Oversight Council (JROC) validated the capability need for the investigation into NAC for prevention of hearing loss. The outcome of the project is to facilitate the final transfer of this cutting edge pharmacological technology of antioxidant therapy for the prevention and reduction of hearing loss from the basic science laboratory into the operational environment. This two-year project is under sponsorship of Navy Medical Research Center, with completion of development and demonstration by end of FY 2008, transition to pharmacy by FY 2009.

The primary output for this study is a 40 to 50% reduction in average threshold shifts for NAC participants compared to placebo.

FY 2007 Plan - All clinical study preparation, documentation and site preparation and initiation.

FY 2008/2009 Plan - Study execution, data analysis, FDA approval. Begin transition with acquisition of national stock number through the Defense Medical Standardization Board. Complete transition via Tri-Care Management Authority for Pharmacy and integration into operational forces.

This project was previously referred to as "Prevention of Hearing Loss -- Hearing Pill"

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Battlespace Terrain and Reasoning Awareness Battle Command (BTRA-BC) (Army):	0.000	2.108	0.746	0.631

BTRA-BC intends to transition terrain, atmospheric and weather analytic Tactical Decision Aids (TDAs) in support of Command, Control, Communication, Computers, Intelligence Surveillance and Reconnaissance (C4ISR). TDA software for transition will operate at two levels: 1) TDAs that operate over large data sets to create actionable information of the effects of the terrain, atmosphere and weather on units, tactics, ground and air platforms, systems and sensors and the soldier and 2) TDAs that perform mission and task level analysis in support of the Military Decision Making Process (MDMP),

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planning, Course of Action Analysis (COA), asset management and execution monitoring.
Specific TDAs developing actionable information address topics of: 1) Observation and Fields of Fire, Cover and electro-optical concealment, Obstacles, Key Terrain and Avenues of Approach, 2) platform mobility and unit maneuver incorporating weather effects, 3) interactive graphs representing maneuver potential and battlefield geometry, 4) Positions of Advantage for varying military tasks, 5) Infra-red, Acoustic and Seismic sensor performance, 6) atmospheric and weather effects on UAV mobility and performance. TDAs addressing MDMP activities support: 1) Interactive, Mapquest-like mission constrained ground and air platform routing, 2) ISR asset management, 3) ground and air asset synchronization and 4) battlefield effects. All products are designed for visualization and input to other automated Battlefield Operating Systems (BOSs).

BTRA-BC will also transition a geo-Battle Management Language (geoBML) supporting semantic and syntactic interoperability between Army and Joint systems via the Joint Consultation, Command and Control Information Exchange Data Model (JC3IEDM) required by Army and USMC systems.. Each year, BTRA-BC will transition various data analysis and decision support tools to: 1) NGA's Commercial Joint Mapping Toolkit (C/JMTK), supporting 207 approved Joint C4ISR programs, 2) the Digital Topographic Support System (DTSS) supporting the Current force of the Army at Division and Brigade Combat Teams and 3) the Army's Future Combat System via C/JMTK.

FY 2007 Plan: BTRA-BC will transition seven (7) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model (JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record.
Outcomes:
1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP).
a. Increase of 3X in the number of Courses of Action (ground maneuver forces) that can be considered during mission planning
b. Predictive tactical advantages across both unfamiliar and familiar terrains improving force, sensor and asset management and synchronization given terrain and weather effects
2) Initial capability to share actionable, C4ISR relevant, geospatial information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM).
3) DISA/GIG compliant analytic software services.
Efficiencies:
1) Software reuse. Transitions via NGA's Commercial Joint Mapping Toolkit (C/JMTK) make the software tools available to over 207 approved Joint C4ISR programs and operational on military systems using either Windows, Solaris (Unix) or Linux operating systems
2) Common integration and use of tools and products. CJMTK will provide, for the 1st time, reference implementation guidance regarding software, services and resulting product interaction using the JC3IEDM.
3) Single approach to interoperability across Joint and Coalition Systems for geospatial Battle Command Information.
4) Early risk mitigation. Accelerated transition allows the Army's Future Combat System and Distributed Common Ground Segments (DCGS-A) and Digital Topographic Support System (DTSS) to evaluate and adopt design methods, procedures and processes in early spirals of development.

FY 2008 Plan: BTRA-BC will transition six (6) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model (JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record. Outcomes: (1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP); (2) Extended capability to share actionable, C4ISR relevant, geospatial and weather information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM); (3) DISA/GIG compliant analytic software services.

FY 2009 Plan: BTRA-BC will transition eight (8) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model

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(JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record. Outcomes: (1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP); (2) Extended capability to share actionable, C4ISR relevant, geospatial and weather information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM); (3) DISA/GIG compliant analytic software services.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
AIM-9X Electric Arm Fire Device (EAFD) (Navy):	0.000	2.123	0.463	0.000

The Joint Requirements Oversight Council (JROC) validated the early transition of "In-Line" Electric Arm Fire Device (EAFD) with Exploding Foil Deflagrating Initiator (EFDI) Technology into the AIM-9X Sidewinder Missile Air-to-Air Weapon System as a FY07 new start. The outcome of early EAFD transition is enhanced US Navy aircraft carrier flight deck operations, a significant reduction in USN/USAF logistic support costs, greater weapons system reliability and enhanced system safety. The two-year project is under the sponsorship of Naval Air Systems Command (NAVAIR) Program Executive Office for Weapons PEO(W) Program Management Activity (PMA-259) with transition to production in CY2008. The lead service is the Navy.

The primary outputs of this early transition program are as follows: 1) Eliminates the current burden on ordnance crews to manually arm/disarm AIM-9X Sidewinder missiles after every sortie; 2) Improves cold weather flight operations; 3) Improves Nuclear, Biological, Chemical Operations; 4) Eliminates logical reprogramming operations; 5) Improves 9X Weapon System Probability of Launch by 1%-3%; 6) Lowers weapon system radar cross section planar cross section on aircraft; 6) Enhances weapon system safety; 7) Enables 9X Sidewinder canister employment (i.e., USN Sea Serpent).

FY 2007 Plan - Complete qualification testing of Exploding Foil Deflagrating Initiator (EFDI) subassembly. Complete qualification of Electronic Arm Fire Device (EAFD) component. Begin integration and design verification testing of EAFD with the Block II Sidewinder air-to-air missile. Initiate design coordination with USG Safety Boards.

FY 2008 Plan - Complete integration and design verification testing of EAFD with Block II 9X Sidewinder. Complete ground based environmental qualification testing of EAFD with Block II 9X Sidewinder. Completion of qualification testing is scheduled for May 2008. Transition EAFD with EFDI technology into Block II 9X Sidewinder production with Engineering Change Proposal (ECP) approval. ECP approval is projected to occur between May 2008 and November 2008. Transition Manager is NAVAIR, PEO(W), PMA-259.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Automated ALRE Reading (AutoREAD) Sheets (Navy):	0.000	0.959	0.427	0.000

AutoREAD is an automation and process improvement project that uses personal data assistants (PDAs) to eliminate paper logkeeping and streamline the collection, analysis, and reporting of launch and recovery equipment preventative maintenance measurement data. Its purpose is to reduce Aircraft Launch and Recovery Equipment (ALRE) maintenance workload and gain improvements in equipment readiness, safety, engineering support, and fleet metrics. It creates an infrastructure for continuous ALRE reliability improvement into the future.

The primary outputs and efficiencies of this program are as follows: 1) Improvements in quality, accuracy and legibility of measurement data by 20%; 2) Process improvement from the use of integrated, electronic MRCs and Reading Sheets (1-2 hours per PMS maintenance action); 3) Process improvement from the use of electronic signatures on arresting gear (AG) Reading Sheets (1 hour savings per PMS maintenance action); 4) Reduce effort and cost required to track completion of PMS Maintenance Actions with associated Reading Sheet data

FY 2007 Plan: Develop software requirements specification, system design. Code and Test AutoREAD including Integration testing with ADMACS. Procure hardware for initial ship test. Successfully demonstrate AutoREAD application.

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FY 2008 Plan: Begin Land Based integration testing, ship board integration testing, and production deliveries. Complete transition of AutoREAD under ADMACS Block 2. The planned elements of AutREAD will be demonstrated as a component of ADMACS block 2 production deliveries.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Fires and Effects Trainer System (JFETS) (Army):	0.000	0.240	0.214	0.000

The Call For Fire Trainer (CFFT) Capabilities Production Document (CPD), into which JFETS will be integrated, is at the Joint Requirements Oversight Council (JROC) for staffing to determine the level of Joint interest. JFETS has been sustained through Congressional Plus-Up funds since FY 2003. In the CFFT Program Objective Memorandum (POM) submittal for FY 2008-2013, funding has been identified for JFETS. JFETS is a collective training system that provides an immersive simulated battlefield for training Joint Fires Observers at the Institutional level, and it will use immersive training technologies to train current and future applications of joint fires.

RDECOM will provide the following to facilitate the transition of JFETS into CFFT: JFETS Part Number, Description (baseline), System Specification Document, Software Product Specification, Software Design Document, Bill of Material, Software Installation Procedure Document, Drawings, components, connectivity (all configurations), Configuration Management System (CMS), Users manual.

FY 2007 Plan - The initial technical data package is scheduled to be delivered the 4th quarter of FY 2007, which will include the information mentioned above. Deliver the Close Air Support Module (CASM) and the After Action Report (AAR) application for integration into CFFT, Develop the Fires and Effects Command (FECM), the last JFETS module to be developed.

FY 2008 Plan - Final technical data package is scheduled to be delivered 4Q of FY 2008, which will include information associated with the development of the FECM. The final demonstration date and completion date will be during the 4Q of FY 2008. Continue with the full production of the CFFT for deployment in support of the Warfighter. . The JFETS system will be deliverable from FY 2009 through FY 2011.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Two Axis Stabilization of Submarine Imaging (Navy):	0.000	1.799	1.068	1.199

Submarines have a requirement to operate in congested coastal/littoral environments to conduct many of their new Global War on Terror (GWOT) missions. Submarine GWOT missions include the deployment of Special Operating Forces (SOF) and persistent Intelligence, Surveillance and Reconnaissance (ISR) and require increased Situational Awareness and Contact Avoidance (SACA). To support these requirements the Navy is developing imaging systems with a non-rotating, 360-degree continuous field capability of view for use on existing and future periscopes and masts. Extreme movement of the periscope can result in a loss of the visual horizon, which in turn can lead to the loss of the visual track of a target of interest or a contact that might pose a danger to the submarine during near surface operations. In addition, during other forms of near surface operations such as sustained ISR the maintenance of a detailed visual situational awareness is crucial for both the safety of the ship and personnel as well as for the successful accomplishment of the mission.
The outcome of this program is to provide a ruggedized, demonstrated, tested, integrated, 2-axis stabilization system for use onboard US submarines with existing and developmental optical systems. Existing periscope mechanical periscope image stabilization systems are not suitable for use with a 360 degree imaging sensor and the use of software algorithms only will result in a significant loss of data. The development and deployment of a 2-Axis Stabilization System is required to optimize the use of these new 360 degree imaging systems and provide a higher probability of success for these submarine missions. The lead service is the Navy; the sponsor is the Program Executive Officer (Submarines). The efficiencies desired from the Advanced Engineering Model (AEM) for this program include mechanically mitigating ± 15 degrees of ship motion in two axis . This will enable existing electronic stabilization techniques to provide additional stabilization while maintaining 95% of pixels on target.

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FY 2007 Plan: Develop the initial system. This includes the scaling of the system to a form, fit and function model mechanically compatible with submarine periscope masts. Support testing of developmental 360 degree imaging system by providing an interim, larger than final form factor, 2-axis stabilization system for dockside and at-sea testing.

FY 2008 Plan: Continue the development of the Advanced Development Model (ADM) with environmental testing, and demonstrations in a relevant environment.

FY 2009 Plan: Complete design fabrication and testing of a second ADM unit.. The scheduled completion date is April 2009, with a transition to procurement in FY 2010. The Transition Manager is PEO SUBS (PMS 435).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Thermal Battery for Precision Guided Munitions (Army):	1.960	1.882	0.000	0.000

The Army has established performance and cost goals for the Excalibur Precision Munition Thermal Batteries and while the Program of Record (POR) has met performance metrics, the manufacturing readiness within the industrial base lags technology readiness--thus impacting cost of thermal battery production. The outcome of the program is to transition a production-ready manufacturing process for Excalibur Thermal Batteries in advance of full-rate production that meets the cost metrics established by the POR. Transition will result in cost avoidance of $50/thermal battery, a 10% reduction in reject rate, and a 25% improvement in production rate. Transition is scheduled to occur in the 2nd QTR FY08. The transition manager will be the Program Management Office for Excalibur.

These manufacturing enhancements come as a direct result of a number of investments in small business innovative research programs (SBIR), manufacturing technology (ManTech) programs, and the S&T community.

FY 2006 Accomplishments: Delivery of affordable manufacturing technologies and thermal battery prototype hardware for evaluation testing. The evaluation testing purpose is demonstration of intermediate manufacturing readiness level development for availability for spiral insertion into Excalibur hardware. FY 2006 delivers automated welding processes and improved glass metal seal for insertion into the industrial base.

FY 2007 Plan: Final operational demonstration will be conducted to demonstrate that the manufacturing readiness meets the cost goals established by the program of record. Transition of production ready manufacturing processes to the program of record will begin in the 4th QTR of FY 2007.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 New Start TTI Projects:	0.000	0.000	18.805	0.000

FY 2008 Plan: Annual Call for TTI Proposals will be released in January/February 2007 for response by April 2007 and OSD review, prioritization and selection during the June/July 2007 timeframe. The FY 2008 TTI Program will support $19.224M (or approximately 15-20) in new start transition efforts.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2009 New Start TTI Projects:	0.000	0.000	0.000	29.213

FY 2007 Plan: The FY 2009 Annual Call for TTI Proposals will be released in January/February 2008 for response by April 2008 and OSD review, prioritization and selection during the June/July 2008 timeframe.

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The FY 2008 New Start selections are expected to have funding commitment tails in FY 2009 of approximately 40% (or $11.3M). The balance of FY 2009 funding will support the FY 2009 New Start selections.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Image Compression for Digital Precision Strike Suite (Navy)	0.000	0.342	0.459	0.000

The purpose of the Image Compression for Digital Precision Strike Suite project is to transition a matured compression software suite to Special Operations Forces (SOF) that will shorten the upload time for image and video data files. It provides a much needed capability to mitigate bandwith limited communications problems without compromising the image quality & information needed for subsequent analysis upstream.

The primary outputs of this program are as follows: A compression software suite with high quality image and high compression ratio for SOF radios that mitigate today's communication data link issues.

FY 2007 Planned Output - Implementation of the software suite on Precision Strike Suite - SOF laptops.

FY 2008 Planned Output - Testing and validation in field units.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Monolithic Microwave Integrated Circuit (MMIC) Enhancement for DD(X) DBR/SPY-3 Radar (Navy)	0.000	1.073	0.000	0.000

The primary objective of the Monolithic Microwave Integrated Circuit (MMIC) Yield and Efficiency Enhancement for DD(X) Dual Band Radar (DBR)/SPY-3 Radar project is to improve the fabrication process of the 0.5um Gallium Arsenide (GaAs) pseudomorphic High Electron Mobility Transistor (pHEMT). This transistor is a component of the MMIC card in the DD(X) SPY-3 phased array radar. This project will improve the efficiency of the production line and system performance for the DD(X) SPY-3 phased array radar.

The primary outputs of this program are as follows: 1) 10% - 20% MMIC Yield Improvement; 2) 10% Points Increase in MMIC Efficiency and Associated Improvement in Module and Array Efficiency

FY 2007 Planned Output - DSR MMIC production process dramatically improving MMIC production yield, performance and stability; Improved RF circuitry technology providing significant MMIC output power with same input power (power added efficiency).

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Self-Powered Tray Ration Heater (Army)	0.000	0.342	0.517	0.000

The objective of the Self-Powered Tray Ration Heater (TRH) project is to apply thermoelectric technology to a standard TRH to enable operation independent of vehicles and generators. The TRH was designed to heat 18 six-pound packages of shelf stable food (tray packs) for Company-sized groups of Warfighters. The TRH uses a commercial oil burner (configured to burn JP8) to heat 10-15 gallons of water to close to 200°F. This allows tray packs to be placed in the hot water for 30 minutes to bring them up to serving temperatures. Versions of the TRH are used by the Army in the Assault Kitchen (AK), the Marine Corps in the Tray Ration Heating System, and the Air Force in the Single Pallet Expeditionary Kitchen. A secondary objective of this program is to provide a universal STRH that all four services as well as FEMA can procure, operate and support. The current TRH requires approximately 200 watts of power for operation, which must be supplied by a HMMWV or generator. A self-powered capability

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improves overall reliability, availability, and maintainability characteristics, since a generator or vehicle power supply are inherently less reliable and require more maintenance than solid-state thermoelectric modules. Due to the limited number of HMMWVs available to Food Service, alternative mounting configurations with HMMWV trailers are needed. The self-power version of the TRH along with a Trailer mounted version of the AK will allow the HMMWV to be used for other missions when the AK is set up and feeding Warfighters. This project has applications to all DoD services and FEMA.

The primary outputs of this program are as follows: a standard TRH to enable operation independent of vehicles and generators.

FY 2007 Planned Output - Optimize design, in-house technical and operational tests, producibility study, and production of 10 test units.

FY 2008 Planned Output - Technical and operational tests in the field; update Technical Data Packages and Technical Manuals; develop joint requirement and procurement document; transfer to procurement.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Misc Adjustments	0.014	0.056	0.000	0.000

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.