

Requests submitted to the Subcommittee on Defense

The following projects were requested by organizations with operations in New Jersey that are leading research, advancing technology and improving efficiencies of the United States Military.

The Senate Appropriations Committee has applied rules requiring that congressionally directed spending projects for for-profit companies in the Department of Defense Appropriation bill be subject to the same rules and regulations for competition as apply to items submitted as part of the President's budget.

Plasma Treatment of Aramids to Enhance Force Protection

Absecon Mills, Inc.

Cologne, NJ

Funding will be used to develop and test non-industry design and manufacturing techniques for force protection technology through non-traditional weave designs of Aramid (Ballistic) fiber, coupled with new applications of microwave plasma treatments. Aramid fiber is one of the high performance fibers, widely used in protective applications, due to its high tenacity, low elongation and outstanding thermal properties. It is used in the manufacturing of soft body armor, as well as armor protection, such as ballistic helmets and ballistic armor laminate (panels), which represents a large sector of fiber consumption. This will benefit our armed forces with increased force protection, lighter weight and increased mobility.

Amount Requested: \$5,266,000

Self-Powered Sensor System for Munitions Control

Advanced Cerametrics Inc.

Lambertville, NJ

Advanced Cerametrics Inc. in collaboration with ARDEC, Picatinny Arsenal has developed a sensor system that does not require outside sources of power. All military services are turning to Condition-Based Maintenance to sharply reduce the cost of maintenance and to increase the useful life of weapons systems. These systems are often costly and fail with only batteries available for power. ACI's piezoelectric fiber composite transducers harvest mechanical energy and convert it into electrical energy. Piezoelectric fibers can eliminate the need for batteries. By harnessing energy through fiber transducers, this project will reduce cost and build more viable, reliable condition-based maintenance systems. Funding will be used to complete the process of designing, testing and qualifying self-powered piezoelectric sensors that will monitor the health of a wide range of Army weapons systems and control munitions.

Amount Requested: \$2,500,000

Breast and Prostate Cancer

Advaxis, Inc

North Brunswick, NJ

Funding will be used for production of clinical grade drug material for Phase 1 clinical trials of

breast and prostate cancer vaccines at the US Military Cancer Institute. Breast cancer is the second most common form of cancer in women and the leading cancer killer of women worldwide. Prostate cancer is the most commonly diagnosed cancer in men, accounting for 30 percent of all cancers in men. Advaxis has developed a way to infect specific cancer cells necessary to effect a therapeutic response and function from inside these cells as a molecular biochemical factory internally producing a highly effective antigen.

Amount Requested: \$5,000,000

Fighting for a More Perfect Union Exhibition

Afikim Foundation

New York, NY

In collaboration with the U.S. Army Center for Military History, the Afikim Foundation will develop, produce and place around the country in various Army museums, military facilities and community settings an exhibit on minorities' role in America's wars. From the American Revolution to Iraq and Afghanistan, the Afikim Foundation's Fighting for a More Perfect Union exhibit will weave together the many stories of different minorities into a compelling exhibit designed to educate, inform and inspire. From the Irish Brigade to the 54th Massachusetts to the Tuskegee Airmen to the 442nd Regimental Combat Team, the exhibit will feature the stories of minorities who served bravely, without reservation and, all too often, without proper recognition.

Amount Requested: \$2,000,000

Virtual Wound

American Medical Technologies

Eatontown, NJ

American Medical Technologies, as content and concept creator, and IPKeys of Eatontown, NJ, as technology designer, have collaborated to make a series of computer-based modules providing didactic and interactive wound training, called Virtual Wound™. This will enhance medical education through emerging technologies in modeling & simulation. The Virtual Wound™ blends science, technology, education and medicine to immerse the learner into a high fidelity virtual environment simulating common wounds.

Amount Requested: \$2,000,000

Precision Guidance Kit (PGK) Performance Enhancement

ATK Advanced Weapons Division

Picatunny Arsenal, NJ

The Army and Marine Corps have recognized needs for increased precision for ground combat units. This project will improve PGK accuracy in jammed environments and at short/high angle gun elevations. The Army's successful 155mm PGK program is providing more responsive, more precise, cost effective fires with a greatly reduced logistics burden. 155mm PGK will be Type Classified and fielded in FY10. The PGK guidance kit consists of a combined GPS guidance and control unit and fuze that fits into the fuze well of existing 155mm artillery munitions converting "dumb" rounds into precision munitions.

Amount Requested: \$4,500,000

Multi-mission Modular Weapon System (M3WS)

ATK Advanced Weapons Systems

Picatinny Arsenal, NJ

Funding will be used to conduct cost and technical risk reduction development and testing of the radar and launcher for the Army's combat vehicle lightweight hit avoidance weapon system. The funds support Army ARDEC and contractor engineering activities, testing and integration efforts of the M3WS system. Requirements for the system are embodied in a number of current force vehicles, as well as future combat vehicles, including the Ground Combat Vehicle.

Amount Requested: \$3,000,000

Advanced Fuze technology Development

ATK Advanced Weapons Systems

Picatinny Arsenal, NJ

The funding will be used to conduct design and engineering, as well as testing of fuzing functionality: detonation time delay programmability (easily modified for maximum performance), improved point detonate sensor, and enhanced degraded mode functionality & performance. It also will support improvements to fuzing producibility: greater reliability and packaging (lower cost). Finally, funds will support design and test of airburst accuracy: muzzle velocity correction and in-flight error correction to enable maximum effectiveness of airburst functionality at extended ranges, allowing greater stand-off distances and safety for the user.

Amount Requested: \$4,500,000

60mm Mortar Enhanced Lethality Projectile (ELP)

ATK Tactical Propulsion and Controls

Picatinny Arsenal, NJ

To allow the Army to initiate procurement of enhanced lethality 60mm mortar rounds beginning in FY11 concurrently with the Marine Corps' programmed buy. In response to lessons learned from combat operations in Afghanistan, the Army is seeking greater lethality for all high explosive (HE) mortar projectiles. The 60mm HE M1061 Enhanced Lethality Projectile (ELP) is twice as lethal as the current M720A1 HE projectile and it will replace it in Army and Marine Corps inventory.

Amount Requested: \$5,000,000

Manufacture of Tantalum Alloys for Advanced Army Warheads

Atlantic Technical Components, Inc

Roselle Park, NJ

The Army is specifically interested in demonstrating the capabilities of solid free-form fabrication methods (SFF), a green manufacturing technique, to produce tantalum alloys that meet warheads-grade material performance specs. Atlantic Technical Components will design, test and produce a very dense Tantalum alloy material using solid free-form fabrication (SFF) that will meet Army's technical performance specifications for advanced warheads.

Amount Requested: \$2,772,000

Demilitarization Technology R&D Initiative

Battelle

Picatinny Arsenal, NJ

The purpose of a Demil Technology Research and Development initiative is to modernize ARDEC's ability to develop, integrate, test and evaluate new and existing demil technologies for conventional ammunition, in flexible manufacturing configurations for transition to service ammunition depots, plants and centers. This will give ARDEC the means to provide engineering and program analysis needed to draw down the nation's growing demilitarization stockpile, which competes for storage resources with Joint Service ammunition war inventory. It will also arm our warfighters with the tools necessary to eliminate unneeded munitions in the cleanup of old battlefields.

Amount Requested: \$5,500,000

Phase 2 of Berth N-2 Reconstruction-MOTBY

Bayonne Local Redevelopment Authority

Bayonne, NJ

Funding will be used to install 930 linear feet of anchored steel sheet bulkhead and concrete bulkhead cap, together with 2,100 cubic yards of fill material, and the eroding Berth N2 shoreline will be stabilized with 10,100 square yards of aggregate base and asphalt base course. When completed, the Berth N-2 reconstruction project will double functional berthing capacity on the Bayonne side of the Port Jersey Channel for commercial vessels, or military/federal vessels in the event of a national emergency.

Amount Requested: \$4,000,000

Speed Hawk Risk Reduction Program

Breeze-Easton Corporation

Whippany, NJ

The Air Force and other Services are exploring how to extend the capability of H-60 helicopters for combat rescue, medevac and special ops missions, and are in the midst of a \$40 Billion recapitalization of existing helicopter fleets to extend service life beyond 2030. Each Service has identified critical shortfalls in speed, range, ceiling, survivability & reliability. The Speed Hawk VTDP compound helicopter technology can meet these shortfalls at half the cost of procuring a new helicopter. This technology can be incorporated while retaining 70% of the existing H-60 helicopter, providing significant savings in operations, training and support.

Amount Requested: \$5,000,000

Defense Manufacturing University Apprenticeship Program

Burlington County College

Pemberton, NJ

The Defense Manufacturing University (DMU) Program will train prospective engineering

workforce and prospective technician workforce of the Armament Research, Development and Engineering Center at Picatinny Arsenal. The DMU will be a unique approach to educating ARDEC's current staff and future employees. The DMU will develop and offer a curriculum that is designed to meet the unique requirements of military systems. The DMU will use in-house government facilities (prototype and rapid-fielding capabilities) to provide hands-on training for the engineering workforce. The program will also establish a technician training program with trade schools in order to address skills training.

Amount Requested: \$3,000,000

Persistent Surveillance Test Bed /Electronic Warfare Capstone Demonstration

CACI Technologies Inc.

Eatontown, NJ

Warfighters lack a capability to constantly monitor a wide area and quickly identify, locate, track and electronically target asymmetric persons of interest, modern communications, and non-communications threats within that area. Funding will be used to expand the PSTB/EW Capstone Demo facilities and capabilities, integrate airborne and ground-based sensors and EW assets, and experiment execution. This project supports the continuation of efforts to provide persistent surveillance, tracking, and EW targeting technologies, tactics, techniques, and procedures that help achieve the desired Warfighter outcome.

Amount Requested: \$8,055,300

Cancer Initiative for Research at the Dean and Betty Gallo Prostate Cancer Center

Cancer Institute of New Jersey

New Brunswick, NJ

The CINJ Gallo Prostate Cancer Center is poised to produce novel approaches to prevent and treat prostate cancer in military and civilian populations. Through its partnership with the Department of Defense, CINJ is using powerful mathematical and computational approaches to discover new markers of prostate cancer susceptibility and new targets for prevention. The requested funding will support research to validate these methods and facilitate rapid transfer of the findings to the clinic.

Amount Requested: \$7,043,479

High Strength Metal-Carbon Nanotube Composites

Carbomet, LLC

Newark, NJ

High strength steel-carbon nanotube composites will meet an urgent requirement for higher strength and lighter composite materials for weapons, vehicle structures and armor. This composite will increase military vehicle survivability and mobility and reduce fuel consumption. This funding will support research that will simultaneously synthesize and incorporate carbon nanotubes into iron. It is then intended to scale-up the chemical vapor infiltration process to make high-strength, lightweight steel parts for testing in military vehicle and armor applications.

Amount Requested: \$1,500,000

Rehab Center of Tomorrow
Christian Health Care Center
Wyckoff, NJ

This project is designed to address orthopedic and spinal cord injuries, traumatic brain injury, neuro-muscular complications, slow-healing wounds and other injuries using infrared and electrical stimulation, therapeutic ultrasound, shortwave diathermy, orthotic therapies, and other technologies designed to maximize healing and achievement of the highest level of limb function, with minimal life-long disability and patient need for, and reliance on, pain- and inflammation-relieving prescription drugs. This project directly addresses an identified Deployment Related Medical Research Program (DRMRP) research gap through development of a set of significantly more effective rehabilitation best practices which will achieve: faster, less painful recovery of the highest possible levels of function and prevention of life-long disabilities at considerably lower overall cost.

Amount Requested: \$1,700,000

Delaware Valley Continuing Education Initiative
Collegiate Consortium for Workforce and Economic Development
Camden, NJ

Funds will be used to provide job skills training and continuing education at area community colleges (including Camden County College) to Veterans, National Guard and Reserve personnel returning from Iraq and Afghanistan. To date, more than 300 veterans have received scholarships under this program. FY2011 funding would expand capacity at Camden County College and other Consortium member colleges and provide between 200-300 new scholarships for recent returning veterans.

Amount Requested: \$1,500,000

Mid-IR Laser Materials
Crystal Genesis,
Sparta, NJ

Crystal Genesis will develop composite crystalline materials to enable the construction of next generation high-power short pulse mid-infrared (MIR) lasers. Funding will be used to construct three custom crystal growth stations and develop a commercially viable crystal growth process, fabrication techniques, and optical coating process that provides enabling laser gain components for next generation laser technology. National security and future high-tech jobs require next generation systems developers have access to advanced enabling materials.

Amount Requested: \$1,100,000

Sealless Centrifugal Axial Motor Pump
Curtiss-Wright EPD
Phillipsburg, NJ

The funding will be used to combine and enhance existing technologies that have been developed for the Navy to create a class of leakless, critical function pumps for Navy ships and

submarines that would reduce weight, eliminate maintenance, reduce ship manning requirements and produce ship space & weight savings in excess of 50 percent. The resulting class of pumps will be able to survive shock events, thus enabling support of all ship mission requirements. The end products will also increase ship availability.

Amount Requested: \$4,500,000

Optical Harness Network

Defense Photonics Group, Inc.

South Plainfield, NJ

Funding will support continued technical advancement and full aircraft qualification of a unique, flexible, scalable Aerospace dual use fiber optic system. The new equipment revolutionizes fiber optic application on legacy and new aircraft designs. This program reduces carbon aerospace footprint (decreased weight), life cycle & operating costs (reliability, maintainability, availability, reparability) while increasing safety (EMI/EMP/Lighting resistant).

Amount Requested: \$2,000,000

Building a Unified Information Framework

Drakontas LLC

Camden, NJ

The U.S. Army ARDEC at Picatinny, New Jersey, is leading an effort combining and harmonizing a number of Homeland Defense and Homeland Security programs involving government, academia and industry with a project entitled Project National Shield (PNS). The intent of PNS is to establish the mission value of a network of virtual communication and collaboration capabilities fielded by the Department of Defense (DOD) that will provide technologies to support Small Unit Operations (SUO) as part of the DOD Civil Support mission. Drakontas will develop a shared interoperable data framework and unified messaging platform to facilitate rapid sharing of command and control information among military and civilian emergency response teams.

Amount Requested: \$4,100,000

Applied Communication and Information Networking (ACIN) Program

Drexel University

Camden, NJ

The core objective of ACIN is R&D and commercialization of technologies that will revolutionize military capabilities, and methods of operation. This objective is addressed by focusing on high value military systems which employ rapidly advancing Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance technologies and by providing innovative applications of these technologies. ACIN enables war-fighters to rapidly deploy state-of-the-practice technologies for war-fighting and Homeland Security. In FY 2011 ACIN will focus on solutions that are of major importance to DOD's strategic system needs in the following areas: ACIN will develop enhancements to the Battle Command-Warfighter Interface (BCW) for the Tactical Information Technologies for Assured Network Operations (TITAN) Army Technology Objective (ATO) and support for demonstration programs at Ft.

Leavenworth, Ft. Monmouth, Ft. Dix as well as coalition exercises. ACIN is supporting the development of enhanced Cyber-Security and Cyber-Warfare defense tools for current force and future force communications networks.

Amount Requested: \$7,000,000

Procurement of Virtual Interactive Combat Environment Training Systems for the New Jersey National Guard

Dynamic Animation Systems, Inc

Ft. Dix, NJ

Virtual Interactive Combat Environment (V.I.C.E.) is a Mounted and Dismounted Infantry training system. V.I.C.E. provides improved tactical decision-making through Tactics, Techniques and Procedures training for all New Jersey National Guard and Reserve leaders and soldiers preparing to deploy. The funds will procure V.I.C.E. training systems, including all hardware, software, media as well as installation and support. The additional systems are needed to increase the training throughput capacity to the required level at the Joint Training and Training Development Center (JT2DC) at Fort Dix and provide a Mobile V.I.C.E. capability to enable home station training at New Jersey National Guard Readiness Centers. The additional systems increase the training capabilities of the organization from 4 squads to 6 squads, or two full platoons in strength. With greater capacity, training can be increased to simultaneous team, squad, platoon, and even company level training with progressive scenarios and increased levels of collective training experience. With the additional systems, an increasingly robust opposing force can be fielded, which provides more realistic combat training for larger units.

Amount Requested: \$4,100,000

New Jersey Intelligence-Led Policing Portal (NJILP)

The Omega Group/East Police Department

East Orange, NJ

The US Army Armament Research, Development and Engineering Center (ARDEC) is currently managing an initiative combining and harmonizing a number of Homeland Defense and Homeland Security programs at the New Jersey Homeland Defense Center of Excellence (Picatinny Arsenal) entitled Project National Shield (PNS). These programs involve military, government, academia and industry participants. The PNS initiative focuses on the systemic challenges facing DoD in its Homeland Defense and Civil Support mission areas with the goal of improving unity of effort among joint military and civilian responders in such critical areas as command, control, communications, collaboration, intelligence-led public safety operations and building trusted relationships.

The NJILPSP project proposes to address this need by working with Northern New Jersey law enforcement, fire service and emergency management agencies to explore new real-time data analytics, visualization, presentation and collaboration approaches aimed at establishing multiple unified views into public safety operations data despite disparate systems from multiple agencies. This project proposes to support the integration of real-time video, motion detection, acoustic gunshot detection, tactical asset tracking (personnel, vehicles, equipment) and other disparate intelligence systems into an advanced web-based enterprise portal environment to

enhance information sharing, visualization, operational awareness and decision-making during all phases of intelligence-led operations in a joint mission scenario.

Amount Requested: \$2,500,000

Institute for the Advancement of Bloodless Medicine

Englewood Hospital and Medical Center

Englewood, NJ

The Institute for the Advancement of Bloodless Medicine will assist military and civilian physicians and other healthcare providers willing to implement improved blood management strategies in their practice. The participants of the model project are not only taught procedures in blood management, but also to teach, collect data, use available resources and to manage and lead their blood management efforts. After a 5-year period, a series of Department of Defense medical providers will be proficient in blood management and will be able to take a leadership in developing a blood management programs throughout military and within military and civilian hospitals. Through this initiative, patient-centered care in blood management will be available.

Amount Requested: \$1,866,000

National Guard Global Education Project

Fairleigh Dickinson University

Teaneck, NJ

Fairleigh Dickinson University will provide National Guardmembers with access to high quality online coursework in a flexible curriculum appropriate for individuals who hold down full-time jobs but also may be required to deploy on short notice for long periods of time. Funding will be used to develop additional online courses and ultimately an online Bachelor 's Degree because National Guardmembers have a pressing need for college level education courses in the NJ National Guard and nationwide. Among the nearly 6,000 people currently serving in the New Jersey Army National Guard, 2% have earned Bachelor 's degrees, 3% have earned Associate 's Degrees, and 60% have earned high school diplomas. The program also represents an important retention tool for the Guard.

Amount Requested: \$750,000

Advanced Bilge Water Treatment System

Filtration Solutions, Inc.

Hackettstown, NJ

The purpose of this project is to develop a filtration unit to resolve the current bilge water treatment problem encountered aboard Navy ships. The objective is to install a prototype unit onboard a selected Navy vessel for performance and operation evaluation as well as technology demonstration at the completion of the project. The marine pollution regulation requires the shipboard oil water separator (OWS) to achieve an overboard bilge water discharge of no greater than 15 ppm on Type C emulsion. The existing technology is ineffective due to either a lack of particle size control (which provides no protection to the membrane filter) or because it requires frequent back-washing for self-cleaning (which defeats the purpose of reducing wastewater) caused by strictly defined particle size control. A self-cleaning filter for effective bilge water

treatment technology takes advantage of the fluid dynamics of the feed flow to achieve self-cleaning on a well defined pore size filter resulting in effective protection for the membrane filter.

Amount Requested: \$3,000,000

Advanced Fuel Filtration (AFF) System

Filtration Solutions, Inc.

Hackettstown, NJ

The Advanced Fuel Filtration system is one-third the cost of the legacy centrifugal purifier. This equipment will save 25 million dollars per year for the Navy from maintenance and operation cost after it is fully implemented to the DDG-51 and CG-47 class ships. The goal is to complete a retrofit of the developed fuel filtration unit for the replacement of the current shipboard centrifugal purifier onboard a Navy ship by four specific tasks: develop a militarized fuel filtration unit to pass the required certification, develop a prognostic health management (PHM) system, develop a ship alteration package for the DDG class of ships and complete the installation onboard the selected ship. An advanced fuel filtration unit was developed through Navy SBIR projects (N99-086 and N00-039) to replace the shipboard centrifugal purifier.

Amount Requested: \$3,200,000

Advanced Reactive Hybrid Armor Material Technology

Frontier Performance Polymers Corporation

Dover, NJ

The funding will be used to create an advanced reactive hybrid armor system using hybridizing advanced reactive armor material technology, novel structural energetic materials and innovative non-reactive composite armor systems. Using a cost effective production process, rapid prototyping and rapid transition to production will provide an affordable and effective lightweight hybrid armor system to meet challenging demands faced in current and future unconventional warfare scenarios. Acceleration of this program will fulfill the need to rapidly advance the use of advanced hybrid armor material technology to protect the warfighter and light armored combat vehicles in a multitude of future warfare scenarios.

Amount Requested: \$3,500,000

Vaccine Development Program

Garden State Cancer Center

Belleville, NJ

Garden State Cancer Center's Vaccine Development Program supports development of countermeasures to protect the Nation from bioterrorism agents. Currently the program is focusing on the development of a vaccine against smallpox that does not require whole or live virus, thereby eliminating the danger of vaccine-associated side effects. Using new antibody technology, the program will be expanded to include not only the smallpox virus but other bioterrorism agents, namely *Clostridium botulinum*.

Amount Requested: \$4,330,000

Command Post of the Future (CPOF)

General Dynamics C4 Systems

Wall Township, NJ

Command Post of the Future (CPOF) is a software application used by commanders and staff for efficient decision-making, cross-functional planning, rehearsals, and execution of on-going operations. CPOF reduces complexity and saves lives by allowing commanders and their staff to collaborate from geographically dispersed headquarters via a shared operational picture, reducing the need to travel on dangerous roads. These systems are in continuous use by the Army and Marines from Corps to Battalion, as well as NATO's ISAF headquarters, presenting the best information available to the commander and staff to enable common understanding and quick action. The scope of the CPOF program includes software development, logistics product development, training, fielding, field support, and sustainment. Future Skies of Wall Township, NJ provides interoperability support for CPOF. Funding will help meet growing demand to field more CPOF systems, which is expected to double from FY10 to FY14.

Amount Requested: \$2,000,000

Enabling Production of SWIR Imaging Systems

Goodrich Corporation

Princeton, NJ

This program invests in manufacturing capabilities to reduce the unit cost of Short Wave Infrared (SWIR) cameras, items that can provide unique Intelligence, Surveillance, and Reconnaissance (ISR) capabilities to the warfighter and homeland security operators. Funding would be used to purchase equipment and establish manufacturing processes to more affordably produce SWIR imaging sensors, effectively reducing unit cost from \$40,000 to \$5,000.

Amount Requested: \$3,800,000

Bioterrorism & Battlefield Medical Solutions

Hackensack University Medical Center Foundation

Hackensack, NJ

Funding will allow Hackensack University Medical Center to build upon the 5-year partnership with the Defense Threat Reduction Agency (DTRA) by addressing gaps in associated medical research targeting therapies and prophylactic measures that DTRA's Therapeutic Medical Technologies Initiative (TMTI) considers effective against multiple pathogens including Class A (smallpox, influenza virus & Anthrax), Class B, and other highly infectious agents of interest to DOD for Force Protection and health. Researchers will develop new approaches for protection against pandemic influenza and other highly infectious agents on a more routine basis. Research being conducted should also have major spin-off value in terms of treating chronic diseases, including Alzheimer's, cancer, and post-traumatic brain injury.

Amount Requested: \$5,000,000

Canned Lube Pumps (CLP) for LHD-1 Class Ships

Hansome Energy Systems, Inc.

Linden, NJ

Funding will be used to procure and install Canned Lube Pumps on six of eight LHD-1 class amphibious ships. These pumps have been proven to reduce/eliminate maintenance and increase fuel efficiency on Navy LPD and LSD classes of amphibious ships, resulting in significant cost savings for the Navy. Each LHD-1 class ship requires four lubricating plant pumps, two per machinery plant. The Navy has indicated that the total savings over the life of the LSD-41/49 class (12 ships) from installing the CLP is over \$33.1 million and the return on investment to the Navy is 394%. The preliminary maintenance savings estimate for the life of seven LHD-1 class ships is \$16.8 million.

Amount Requested: \$4,000,000

Advanced Ground Electronic Warfare System (AGES)

Honeywell International

Morristown, NJ

Funding will be used to address the emerging needs of the mounted and dismounted warfighter. The Advanced Ground Electronic Warfare System (AGES) expands the Army's Electronic Warfare (EW) capabilities beyond Counter Radio-Controlled Improvised Explosive Devices (RCIED) to include electronic attack, countermeasures and Direction Finding on RCIED Red Force Communications and Command & Control. AGES will enhance situational awareness by enabling friendly communications while jamming enemy communications, non-communications and Improvised Explosive Device (IED) trigger signals and localizing the source of these signals. The program is specifically structured to spiral and adapt new emerging EW threats as well as integrate with existing Army fixed and mobile platforms and assets. It will network fixed, mounted and dismounted systems together to maximize use of assets to identify and prioritize threats, and determine which asset to defeat the threat. None of these options is available for the warfighter in today's combat environment.

Amount Requested: \$9,000,000

Chip Scale Atomic Clock (CSAC)

Honeywell International

Morristown, NJ

Chip Scale Atomic Clocks (CSAC) enable navigation in environments where the GPS signal is degraded, denied, or simply not available – for example in urban warfare situations, firefighting inside buildings, and underwater navigation. CSACs solve the problem of GPS signal acquisition in a jamming environment, enable communication systems to operate alongside IED jammers, and enable sustained accurate navigation in the absence of GPS. Precise timing is very critical in today's modern battlefield. In addition to navigation, timing allows communications and sensor systems to synchronize with each other, permitting systems to transmit and receive mission critical information without the probability of detection. An additional benefit is the significant reduction in required power consumption. Honeywell Aerospace Advanced Technology developed a CSAC module the size of a small box of matches with very low power consumption. They are developing these clocks for inclusion into F-15 fighter navigation boxes. By the end of 2010 the program goal is to demonstrate performance over the temperature range 0-55 C and measure survivability under vibrations typically encountered inside an F-15.

Amount Requested: \$4,000,000

Environmentally-Intelligent, Safety-Enhancing Concrete

Hycrete Inc

Carlstadt, NJ

Funding will be used for research and development of Hycrete's hydrophobic concrete for safer nuclear waste containment, to mitigate conduction of electrical current, to reduce health risk of mold/mildew, improve aging water infrastructure, and block radon or other toxic threats to buildings and personnel. The deterioration of DOD concrete structures is a world-wide problem, funding for this project will result in significant life-cycle savings for DOD facilities and support sustainable, environmentally-responsible infrastructure construction and repair. Hycrete's concrete admixtures improve technical performance of concrete and contribute to the mission readiness of our military by improving facility reliability, readiness and safety.

Amount Requested: \$4,200,000

Wireless HUMS for Condition Based Maintenance of Army Helicopters

ID Systems

Hackensack, NJ

Funding will be used to build and deliver an advanced Health and Usage Monitoring System for Army helicopters, enhancing protection for the warfighter through comprehensive implementation of Condition Based Maintenance practices. The implementation of improved maintenance techniques and procedures is central to the U.S. Army's Helicopter Modernization Plan for improving safety, reliability, & deployability of its helicopter fleet. There is a critical need for real-time, on-line monitoring to track helicopter health & usage and prevent incipient mechanical failure during military operations. The program is to build and deliver an advanced HUMS for Army helicopters to enable comprehensive implementation of CBM practices.

Amount Requested: \$3,000,000

Automated Critical Care System (ACCS)

Impact Instrumentation, Inc

West Caldwell, NJ

ACCS will reduce mortality in injured warfighters and increase the ability to move patients to definitive care. Automated control algorithms that integrate with small critical care platforms developed for DOD medical operations will result in a system that automatically monitors and manages patients suffering from life-threatening trauma that is usable in field hospitals and during transport with or without an attendant. ACCS will provide automated control of ventilation, fluid management, oxygen generation and smart help to guide patient care. Prospective clinical trials will validate these care algorithms to optimize the therapeutic intervention for traumatic brain injury, burns, blast injury and multiple trauma.

Amount Requested: \$4,700,000

Lightweight Munitions & Surveillance System (LMSS)

Imperial Machine & Tool Co.
Columbia, NJ

Funding would be used to continue development of Lightweight Munitions and Surveillance System (LMSS) for Unmanned Air Vehicle (UAV) technologies, with specific focus on the US Army Armament Research and Development Command (ARDEC) Hybrid Projectile program. The Hybrid Projectile program will produce low-cost guided munitions capable of reaching targets in a fraction of the flight time of a traditional UAV. These munitions will be more efficient and effective than current guided projectiles of the same caliber because they will have larger payloads and the ability to change targets or be recalled mid-flight. They will extend the lethality of the current ammunition without compromising the effectiveness of the gun system or the warfighter.

Amount Requested: \$4,800,000

Marine Mammal Detection System to Support Navy Training

Integrated Systems Solutions, Inc. (ISSI)
Lakehurst, NJ

This funding will support a U.S. Navy research and development project to demonstrate the feasibility of using an advanced sensor-carrying aircraft to provide airborne marine mammal detection and tracking in coastal training ranges used by the U.S. Navy fleet. The Marine Mammal Detection System (MMDS) will use a multi-sensor strategy to detect marine mammals from the air at long range and will include passive acoustic arrays, sea-searching radar, sub surface hyper-spectral imaging, as well as high-resolution optical and infrared cameras. The objective of the MMDS is to improve the method of detecting and tracking marine mammals to support Navy training exercises. The MMDS will assist the Navy with adhering to Marine Mammal Protection Act and improve the operational readiness of the Navy fleet.

Amount Requested: \$2,000,000

MH-6 Mission Enhanced Situational Awareness (MESA)

ITT Electronic Systems
Clifton, NJ

This project will provide modern electronic situational awareness receivers to MH-6 Special Ops Helicopters to increase survivability. Current MH-6 rotorcraft are equipped with minimal Situational Awareness (SA) capabilities and are required to utilize voice communications to facilitate the understanding of Combat Team and threat situational awareness. This has the potential to alert enemy forces to the presence of the combat team and compromise the mission and the safety of the team. This FY11 funding would be used to refine the existing receivers into a form factor suitable for the MH-6 and to conduct aircraft integration assessments on the MH-6.

Amount Requested: \$3,000,000

The Mobile Buddy
Kessler Foundation
West Orange, NJ

The Telemedicine and Advanced Technology Research Center (TATRC) of the US Army

Medical Research and Materiel Command is developing a program that involves upgrading personal cell phones for wounded warriors with unique software that would enable case managers and staff in care facilities to send targeted reminder messages to individuals regarding their specialized treatment plans. The Mobile Buddy is designed to develop a mobile networking application that embraces TATRC's current cell phone initiative. This networking application would extend it to the soldier's caregiver network and community to improve health outcomes through enhanced social resources, educational outreach, community re-integration, and targeted acquisition of employment related skills.

Amount Requested: \$3,000,000

Mobile Firefighter Training Initiative

Kidde Fire Trainers, Inc.

Montvale, NJ

Funding will be used for an innovative firefighter training demonstration project utilizing mobile fire simulators on Navy bases. Mobile firefighter simulators replicate the intense heat, flames, smoke, and chaos of real fire emergencies. This allows firefighters to learn the essential skills needed to respond to a wide range of hazards. This will show how deploying mobile training solutions can enhance the Navy Fire & Emergency Services training program, improve trainer safety, reduce training program costs, and improve overall fire training program effectiveness.

Amount Requested: \$5,000,000

Face in a Crowd

L-1 Identity Solutions

Jersey City, NJ

Current technology does not permit identification of individuals using facial recognition (FR) technology unless the person is facing the camera at a set focal length. Face in a Crowd develops technology that increases the military utility of FR by identifying people at a variety of angles and focal lengths. By automating the identification process, it removes the requirement for a soldier to approach individuals with an identification device thus permitting automated, remote screening of people in the combat zone. It automates the identification of individuals in a crowd by scanning faces and then using the FR information to identify them.

Amount Requested: \$3,000,000

SIGINT Payload for Expeditionary Unmanned Aircraft

L-3 Communication Systems

Camden, NJ

Special Operations Forces (SOF) units operate in scenarios requiring organic, tactical, reconfigurable, and transportable Intelligence, Surveillance, and Reconnaissance (ISR), on land and in maritime environments. Expeditionary Unmanned Aircraft System (EUAS) was initiated in September 2009 by the U.S. Special Operations Command (USSOCOM) to provide an enhanced ISR capability to these SOF units. EUAS provides the specific operational characteristics and capabilities of a small operating footprint system capable of carrying Multi-Intelligence (Multi-INT) payloads in the austere environment of SOF. In order to satisfy this

Multi-INT requirement, a SIGINT (signals intelligence) payload is required. FY11 funding is needed to provide a SIGINT payload that will be used in conjunction with the current EO/IR payload for enhanced intelligence operations.

Amount Requested: \$4,000,000

Guardian Communications System for Search and Rescue

L-3 Communication Systems

Camden, NJ

Funding will be used for the development and NSA certification of the Guardian Communications System for Search and Rescue Missions of the Air National Guard and Secure Communications by Coalition Partners. Use of this device will improve coordination and interoperation with U.S. military and civilian authorities who possess current Type 1 (Top Secret) devices. The United States will greatly benefit by providing interoperable, highly mobile secure communications to a broader array of users especially as the DoD looks to transition out of current theaters of engagement.

Amount Requested: \$3,500,000

Free Space Optical Communications

LGS Innovations

Florham Park, NJ

The DOD continues to have a critical need for highly capable, small size, low weight and power, secure communications to and from users and sensors. For systems installed at remote locations worldwide, factors such as security, available spectrum, and geo-political considerations become significant constraints. Advanced methods in wireless communications, RF and Free Space Optical, are necessary to satisfy these constraints and meet mission requirements. This research will provide DOD and the IC with a fully operational secure, miniaturized, RF optics propagation hybrid wireless communications system meeting the application specific volume, weight, and power constraints required for secure, covert defense and intelligence-related communications. This program leverages previously completed successful research and development to respond to new operational requirements.

Amount Requested: \$6,000,000

Planar Lightwave Circuit (PLC) Development for High Power Military Laser Applications

LGS Innovations, LLC

Florham Park, NJ

LGS Innovations will develop a revolutionary high power, high efficiency, electrically-driven laser technology that can be turned into a ruggedized system for use by all branches of the military. LGS will leverage its rich Bell Labs heritage in Planar Lightwave Circuits (PLCs) to develop a novel high power laser-on-a-chip to meet this need. This approach offers several compelling advantages over other technologies including dramatically reduced size and weight, higher efficiency, and longer operating life. The DoD has an operational need for deployable high power lasers with reduced power consumption and long life for military applications.

Completion of this project will directly benefit our armed forces with superior defenses against

multiple threats, including IEDs, surface-to-surface missiles, and UAVs.

Amount Requested: \$3,800,000

Vascular ECM-Based Grafts Research for Military Medicine

LifeCell Corporation

Somerville, NJ

Funding will be used to develop off-the-shelf transplantable vascular graft materials from porcine tissue for combat casualties prior to their evacuation from the combat zone. Such treatment will stop hemorrhage while enabling limb preservation and reducing the need for amputation. Phase 1 efforts will develop, test, and validate in vivo performance of a porcine-derived vascular graft that retains its complex infrastructure and mitigates the xenogeneic rejection response. Specifically, this effort will use the company's proven proprietary processing of porcine tissues to produce intact vascular graft.

Amount Requested: \$3,000,000

Aegis Multi-Mission Signal Processor

Lockheed Martin Maritime Sensors and Systems

Moorestown, NJ

Funding will provide for system engineering services to assess approaches that will enable affordable fielding of simultaneous Sea-based Ballistic Missile Defense (SBMD) and Enhanced air defense capabilities for up to three additional Modernized Cruisers. This would also reduce Navy Total Ownership Costs through the elimination of one cruiser configuration. Fielding additional MMSPs on Baseline 4 CGs responds to a vital National need to increase SBMD capable surface ships, while smartly leveraging Navy investments in back-fit and forward-fit strategies.

Amount Requested: \$5,000,000

Aegis Ballistic Missile Defense (BMD) Ascent Phase

Lockheed Martin MS2

Moorestown, NJ

While the Program of Record for Aegis BMD provides significant capability against ballistic missiles, continuous spiral improvements are required to counter emergent threats. Additional funding would accelerate Early Intercept capability in Aegis BMD, expanding threat battlespace. This will exploit the inherent Aegis BMD capability to track and engage threats during the early ascent phase of flight and allow for intercepts during the most vulnerable state of the ballistic missile trajectory.

Amount Requested: \$15,000,000

Advanced Fluid Controls for Shipboard Application

Marotta Controls

Montville, NJ

The requested funding will be used to continue the development of shipboard fluid controls using composite materials to reduce weight, corrosion and life-cycle costs; and to increase fuel efficiency, and incorporate Smart Technology to monitor the operation and performance of the

equipment. These composite valves and advanced fluid controls will have multiple applications for both pneumatic and hydraulic applications, significantly increasing the reliability of fire fighting systems to enhance safety and survivability.

Amount Requested: \$5,000,000

Man-pack Satellite Micro-Terminal

MaXentric Technologies, LLC

Fort Lee, NJ

MaXentric Technologies will manufacture a fully functional military grade Man-pack Satellite Micro-Terminal which will meet the Air Force 's goal of highly miniaturized satellite communication terminals that are capable of operating over satellites. It can be used by all branches of the military and will replace much larger, heavier, and more expensive portable satellite terminals.

Amount Requested: \$3,000,000

Multifunctional Stealth Coating- Advancement of Classified Material

MILSPRAY Military Technologies

Lakewood, NJ

The objective of this project is to advance the production of specific materials developed by MILSPRAY, components of which are considered classified, under a cooperative agreement with the U.S. Army Research Lab.

Amount Requested: \$2,900,000

Dynamic Information Visualization

Monmouth University

West Long Branch, NJ

The requested funds will be used to provide a web portal and data base system to display and share among tactical decision-makers dynamic chemical and biological sensor data in near real-time.

Amount Requested: \$4,000,000

Manufacturing Development of Transparent Spinel for E/O Domes and Windows

Morgan Technical Ceramics

Fairfield, NJ

The requested funds will be used to establish robust, cost-effective Spinel manufacturing processes to provide the government with cost-effective, high-quality Spinel electro-optical (E/O) domes and windows.

Amount Requested: \$3,980,000

Scalable Smart Reserve Cell Technologies

mPhase Technologies, Inc.

Fairfield, NJ

The requested funds will be used to refine and further develop Smart NanoBattery technology for use in powering “smart” munitions and other critical defense applications. This technology will integrate energy storage methodology with new architectures that have superior energy management characteristics, designed to provide munition electronics with power on demand. The architecture can be miniaturized or scaled up to meet diverse requirements.

Amount Requested: \$5,000,000

Development of a Compact Pulse Generator

NDI Engineering Company

Thorofare, NJ

The requested funds will be used to develop and demonstrate that a high power (60 Megawatt) and high energy density compact pulse generator is achievable. This funding will provide a major leap in increasing power and energy density capability for shipboard high energy systems.

Amount Requested: \$4,368,000

Development of Three Phase Cycloconverter

NDI Engineering Company

Thorofare, NJ

The requested funds will be used to develop high-frequency, variable-frequency and high-current power supplies or Cycloconverters that control the high-speed linear or synchronous motors. These motors are being proposed for a variety of military applications such as launch-assist of aircraft, decoys, missiles and unmanned aerial vehicle aircraft. Electric power has become increasingly critical for the U.S. Navy to improve operational safety for the sailors, reduce manning, and reduce costs through the use of modular components.

Amount Requested: \$1,041,900

Nanotechnology-Enabled Self-Healing Anti-Corrosion Coating Products for Protection of Weapon Systems

NEI Corporation/American NanoMyte

Somerset, NJ

The requested funds will be used to develop and demonstrate a novel class of self-healing pretreatment and polymer coatings that contain corrosion inhibiting nanoscale particles. The intent of these nanoparticle-enabled coating products is to exhibit damage responsive behavior similar to that of chromate-based pretreatments and polymer coatings with reduced environmental impact.

Amount Requested: \$2,500,000

Perimeter Security Systems

New Jersey Institute of Technology

Newark, NJ

The requested funding is for a 150-acre military compound to be used as a live test bed to

integrate, demonstrate and expand a novel layered defense model that deters, detects, delays and defends against unauthorized entry to better protect the warfighter and civilian personnel as well as the integrity of their operations overseas. It will provide a testing platform to conduct research and development of technology to enhance situational awareness that will help establish a layered defense model.

Amount Requested: \$5,000,000

Nano Advanced Cluster Energetics
New Jersey Institute of Technology
Newark, NJ

The Nano Advanced Cluster Energetics (NACE) Program has developed the only technology that can produce, process, and safely handle coated nano-energetic particulates. This funding would be used to develop the NACE as a scalable process, and use the coated nano-sized RDX particulates to form self assembled nano/microsized stoichiometric energetic cluster particulate products.

Amount Requested: \$5,000,000

Agent Defeat by Energetic Nano-Materials
New Jersey Institute of Technology
Newark, NJ

The funding will be used to further a fundamental research effort aimed at adding halogenated compounds to energetic nano-materials with the objective to allow U.S. military forces to disable and destroy chemical and biological weapons stockpiles without removing them from their bunkers or releasing the lethal agents thus reducing the risk of exposure

Amount Requested: \$2,000,000

New Jersey Technology Solutions Center Initiative
New Jersey Technology Solutions Center
Shrewsbury, NJ

The New Jersey Technology Solutions Center (NJTSC) will grow high skill, high wage jobs in the Central New Jersey region. These positions will be designed to take advantage of the highly skilled Fort Monmouth workforce that chooses not to move with the mission to Aberdeen, MD. The NJTSC will give the U.S. Army unparalleled reach-back capabilities to allow for continuity in warfighter support for the Global War on Terrorism. This highly skilled workforce will develop a technology center of excellence that will allow other federal, state and local agencies the opportunity to take advantage of these assets and capabilities.

Amount Requested: \$11,000,000

New Jersey Biosurveillance, Data Analysis, Resource Deployment Program
Newark Beth Israel Medical Center
Newark, NJ

The funding will be used for the acquisition and installation of the hardware (robotics, computers, and other equipment), the software (and subsequent tailoring to the Beth's specific needs and specifics). Additional funding will be needed for the training, communications and coordination efforts for ER and other hospital deployment.

Persistent Surveillance Wave PowerBuoy System

Ocean Power Technologies

Pennington, NJ

This requested funding will provide the Navy with a viable system for protecting critical infrastructure and military assets from surprise maritime attacks and will include a system that detects and locates surface and subsurface threats. Ocean Power Technologies, Inc. (OPT) and Rutgers University will develop port and harbor security solutions to enhance security for the U.S. Navy.

Amount Requested: \$3,800,000

Ohel Military Family Wellness Program

Ohel Children's Home and Family Services

Teaneck, NJ

The Ohel Military Family Wellness Initiative serves active duty soldiers, returning soldiers, and their families in the New York and New Jersey areas, and will provide outreach and treatment to address the mental and emotional disorders in military families. In addition, the program will conduct research and provide education about mental health and emotional conditions so that members of the military community can overcome stigma and prejudices regarding seeking mental health treatment.

Amount Requested: \$1,650,000

Ex-Rad Radiation Protection Program

Onconova Therapeutics

Lawrenceville, NJ

The requested funding will be used on clinical trials to assess the efficacy of radioprotectant therapy and the benefits received by patients, through the validation of safety parameters, and evaluation of targeted drug activity with the selective radioprotectant, Ex-RAD, as an adjunct to other treatment. The key objective of this project is to improve the outcome of radiotherapy in advanced prostate cancer patients. This initiative will advance the development of an enhanced treatment option to benefit prostate cancer patients and to ameliorate the harmful side-effects of radiation therapy.

Amount Requested: \$2,000,000

Military Family Strengthening and Support Program - Joint Base McGuire-Fort Dix

Parents Anonymous

Joint Base- McGuire, NJ

This project seeks to develop a demonstration project for military families around the Joint Base. This evidence-based program will offer a variety of services including weekly support groups for

parents, children and youth offering emotional support, benefits assistance and an all encompassing peer support network. The goal is to create a safe and nurturing environment through mutual support and shared leadership for family members dealing with re-unification and deployment.

Amount Requested: \$1,000,000

Recombinant Human Fibrinogen and Rhucin for Army Combat Casualty Care

Pharming Healthcare, Inc.

Jersey City, NJ

The requested funds will be used to develop therapeutic products to control bleeding and lethal inflammatory response for soldiers wounded in combat. Internal bleeding is the leading cause of preventable death in combat settings. Pharming Healthcare, Inc. is developing recombinant human fibrinogen that has great potential to control bleeding under emergency circumstances, as well as recombinant human C1 inhibitor (Rhucin) to impede lethal inflammation.

Amount Requested: \$4,600,000

Turais Wing and Bomb Bay Launched UAV

Piasecki Aircraft Corporation

Millville, NJ

The Turais Wing and Bomb Bay Launched (WBBL) UAV is designed to be locally launched by the on-board sensor operators and then utilized to assist the host platform in reconnaissance, surveillance, communications relay, and other missions. The requested funds will be used to complete integration of the propulsion system and conduct a flight demonstration from a manned host aircraft. This will be conducted at the Millville Airport in Millville, NJ.

Amount Requested: \$3,000,000

Force Protection Layered Defense

American Systems

Picatunny Arsenal, NJ

The project will integrate existing sensor and computer technology to detect an emerging threat before it is immediate. This will provide decision-makers time to take appropriate actions to mitigate or defeat the threat. The foundation of the approach is a series of complimentary, networked and integrated (off the shelf) technologically advanced sensors that filter and assess a threat and allow appropriate counter measures to be taken against the threat.

Amount Requested: \$1,000,000

Advanced Foamed Celluloid Technology

Polymer Processing Institute

Newark, NJ

Foamed celluloid is a new class of high performance combustible material offering warfighters a weight reducing and cost saving alternative for a wide range of Defense Department applications. In addition to superior insensitivity characteristics, munitions items made from

foamed celluloid also leave no debris on the ground which mitigates littering and hazard issues encountered on both the battlefield and the training grounds. The requested funds will be used to mass produce a variety of munitions with precision and part-to-part consistency in an energy saving, cost-effective fashion.

Amount Requested: \$3,000,000

Static Detonation Chamber

Picatinny Arsenal

Picatinny Arsenal, NJ

Picatinny generates up to 55,000 pounds of waste energetics (propellants and explosives) and energetic contaminated material per year. This waste stream consists of various munitions items, bulk propellants and explosives, often made in small sample batches for experimental purposes, as well as contaminated disposable laboratory implements. The ARDEC Demil & Environmental Technology Division (D&ETD) has identified a technology, the Static Detonation Chamber (SDC), that provides a safe, flexible, low-cost, environmentally sound alternative to current technology to address the shortcomings of Picatinny's energetics waste disposal system. Funding will be used to demonstrate the use of SDC technology for the disposal of Picatinny energetic waste and to adopt this technology for widespread DOD use.

Amount Requested: \$4,900,000

Powder Injection Molding for Advanced Munitions Applications

Polymer Technologies, Inc.

Clifton, NJ

The requested funding will be used to establish a technology and manufacturing upgrade in order to produce metal injection molded parts with significantly reduced costs. This effort will investigate the use of state-of-the-art powder injection molding technology to support an evolving critical defensive munition that the Army is developing to counterattack and destroy incoming rocket propelled grenades and similar munitions.

Amount Requested: \$2,000,000

Networked Intelligent Fluidized Bed Moat System

Procedyne

New Brunswick, NJ

Funding will be used to develop a fully Networked Intelligent Fluidized Bed Moat System (NIFBM) and demonstrate the applicability of the technology against unauthorized access. Fixed asset protection generally involves the integration of multiple security systems in a layered effect including crime prevention through environmental design, environmental security, infrastructure protection, building designs, interior/exterior layout, detection systems, structural barriers, access controls, communications, high-tech surveillance equipment, and increased patrols within security zones. Unfortunately, not all of the prescribed security measures are failsafe and there are little or no opportunities to stop a truly dedicated assailant without the application of lethal force. As a result, there is a need for an unobtrusive nonlethal active security system for base security.

Amount Requested: \$5,000,000

Software Lifecycle Affordability Management

PRICE Systems, LLC

Mount Laurel, NJ

The Software Lifecycle Affordability Management (SLAM) project will provide decision-makers a means to understand cost tradeoffs in relation to performance and the total cost to own. The ability to fully understand capabilities, risk, schedule, and cost in software system design and affordability is a critical capability to reduce wasteful spending of federal funds on military programs and eliminate the potential for a cost breach.

Amount Requested: \$5,000,000

Advanced Sensing Technologies for Demilitarization Applications

Primis Technologies, LLC

Princeton, NJ

The requested funds will be used to develop a Laser Analytical Device (LAD) that monitors/controls explosives production and weapons systems demilitarization. The LAD will ensure that static detonation chambers scheduled for domestic and global deployment meet the environmental requirements of local governing authorities.

Amount Requested: \$2,000,000

Manufacturing the Transmit/Receive Module for Geo-desic Phase Array Antenna for Air Force Satellite Control Network

Princeton Microwave Technology, Inc.

Mercerville, NJ

The requested funds will be used for the manufacturing of modules for a phased array antenna that will provide multi-beam satellite communications for increased intelligence capabilities.

Amount Requested: \$4,120,000

Autonomous Optical Sensing and Replanning System for Spacecraft

Princeton Satellite Systems

Plainsboro, NJ

This project will provide critical navigation technology and situational awareness for Defense Department satellites. The sensor is autonomous and does not rely on GPS, enabling satellite attitude and navigation determination without ground or GPS contact. The requested funds will be used to build a flight-ready model of the sensor.

Amount Requested: \$7,000,000

Solid State W Band Development: Non-Lethal Systems

Raytheon Corporation

Tucson, AZ – work performed at Picatinny Arsenal, NJ

Active Denial (AD) Systems have successfully demonstrated the ability to stop, deter, and turn

back people without causing them harm. In order to make this technology tactically viable to mobile forces, the current technology must be replaced by smaller, lighter, lower cost systems that allow AD technology to be integrated with ground combat vehicles. The key enabler for this is a versatile high power solid state W-band Electronically Steered Arrays. The development of a high power solid state W-band Array will provide a more durable, compact, and tactically survivable system that will increase operational readiness and reduce life cycle costs.

Amount Requested: \$2,500,000

Magnesium Alloy Powders For Lightweight Structural, Energetic & Other Applications

Reade Manufacturing Company

Manchester, NJ

The requested funding will be used to hire engineers and equipment to test new magnesium alloy powders and evaluate their performance. The powders will be used to produce extremely lightweight, high strength armaments for military vehicles. These parts will greatly improve vehicle agility and fuel economy. The newly developed magnesium powders will also be used for next generation anti-aircraft countermeasure flares which will enhance performance and increase protection for the pilot, crew and aircraft.

Amount Requested: \$3,200,000

Special Projects Aircraft Communications Upgrade

RF Products, Inc.

Camden, NJ

The requested funding will be used for engineering, design, test and production of hardware/software upgrades to the Aircraft Radio and RF Distribution (RFD) systems. The upgrade will help improve communication systems used on Air Force planes.

Amount Requested: \$3,000,000

Mass Casualty First Responders Disaster Surge Technology Program

Robert Wood Johnson University Hospital

New Brunswick, NJ

The Mass Casualty First Responders Disaster Surge Technology Program will use radio-frequency identification (RFID) technology to improve the effectiveness, efficiency and safety during disasters and/or mass casualty events and in routine hospital operations. This will be accomplished through improvement in the coordination, processing and management of patients, equipment, supplies, and response personnel. The project involves system design and implementation, technology selection and installation, optimal response plan development, systematic training and exercising and system testing and fine-tuning through functional and/or full-scale exercises of simulated mass casualty disaster.

Amount Requested: \$3,000,000

Multifunctional Nanomaterials for Homeland Defense, Counter-Terrorism, and Energy Applications

*Rutgers, The State University of New Jersey
New Brunswick, NJ*

The primary mission of this proposal is to establish a research and development partnership between Rutgers University and Picatinny Arsenal (U.S. Army ARDEC) to develop critical nano-based technologies for Homeland Defense, Counter-Terrorism, and Dual-Use (Energy) Applications. This partnership will perform research on the development of a lightweight and transparent armor, refractory materials, high-power lasers sensors and energetic materials.

Amount Requested: \$5,000,000

Combat Ration Supplements for Improved Physical and Cognitive Performance Using Nanodelivery Systems to Improve Bioavailability

*Rutgers, The State University of New Jersey
New Brunswick, NJ*

The objective of this research is to develop the next generation of military foods and beverages to provide the warfighter with rations containing natural, safe and effective nutraceutical extracts. The extracts increase physical and cognitive performance while sparing the use of non steroidal anti-inflammatory drugs (NSAIDs), which have adverse side effects on the warfighter. The relationship between strenuous physical activity, mental stress, inflammation and immune system response is well established and provides the scientific rationale for this research program.

Amount Requested: \$1,000,000

Standard Ground Station - Enhancement Program

*Sarnoff Corporation
Princeton, NJ*

The requested funding will be used to support the Base Expeditionary Targeting and Surveillance System Combined (BETSS-C), which addresses the needs posed by irregular warfare. The system overlays data from multiple imaging and radar sensors on 3-dimensional terrain models to provide real-time, multi-sensor situational awareness, enhancing troop survivability and making targeting quicker and more accurate.

Amount Requested: \$4,000,000

Low-Light Low-Power CMOS Sensor (L2 CMOS) Program

*Sarnoff Corporation
Princeton, NJ*

The requested funding will be used to support the Low-Light Low-Power CMOS Sensor (L2CMOS) Program, which will produce prototypes of a low light level Complementary Metal-Oxide Semiconductor (CMOS) sensor to meet the specialized needs of the warfighter. L2CMOS will use an ultra-thin silicon-on-insulator (UTSOI) manufacturing technology, developed for low cost cell phone imager production, and a customized process. These innovations will help decrease the price of the sensors and increase their efficiency.

Amount Requested: \$4,000,000

Tactical Metal Fabrication (TacFab)

SeaBox Inc

East Riverton, NJ

The goal of TacFab is to provide a mobile production capability for warfighters in the field to fabricate and cast spare metal parts necessary for quick repairs. The project is currently under development and the requested funding will be used to demonstrate a tactically mobile rapid metal fabrication capability to provide spare and replacement parts for our warfighters in theater, and also as a stand-alone metal casting resource provided to domestic Army depots and industrial facilities.

Amount Requested: \$5,200,000

Li-ion Advanced Munitions Power Solutions (LAMPS) for Armaments & Control Systems

SKC Powertech, Inc.

Mt. Olive, NJ

The requested funding will be used to develop safe high energy extended storage polymer Li-ion power sources for advanced munitions and weapon systems. These newly developed power solutions will be used in-theater and provide enhanced mission capabilities over multiple systems.

Amount Requested: \$4,000,000

Gunner Situational Awareness Armor Kit

SMH International

Mount Laurel, NJ

The requested funding will be used to build a full-scale prototype Gunner Situational Awareness Armor Kit and to field it for qualification testing. The program plan also includes the facilitation of a composites manufacturing plant to be located in New Jersey. This plant will be a composite development and manufacturing plant with the specific focus of supply to the Department of Defense.

Amount Requested: \$5,000,000

Aviation Data Management and Control System for Amphibious Ships

Specialty Systems, Inc.

Toms River, NJ

The requested funding will be used to implement a system that provides integration and management for Mission Execution, Tactical Aircraft Control, Ship to Shore Movement and Interfaces with other shipboard systems. This initiative will apply state-of-the-art technology to L-class amphibious ships to minimize the manual labor required to maximize operating effectiveness of the ship in satisfying both strike and humanitarian missions.

Amount Requested: \$3,500,000

Traumatic Brain Injury Consortium Treatment Initiative

*St. Joseph's Regional Medical Center
Paterson, NJ*

The requested funding will be used to establish a clinical research and treatment center for wounded service members and veterans suffering from traumatic brain injury (TBI). This will help reduce long term care costs for the DOD and VA while providing important care to these individuals suffering from TBI.

Amount Requested: \$7,200,000

Center for Microplasma Science and Technology (CMST)

St. Peter's College

Jersey City, NJ

The requested funding will be used for the St. Peter's Center for Microplasma Science & Technology for research and educational programmatic activities in the evolving field of microplasmas. The establishment of the Center at St. Peter's College will help create a national center of operations to organize national microplasma research efforts for defense and military applications.

Amount Requested: \$1,500,000

One Air Force/One Network - New Jersey Air National Guard

Telos Corporation

Atlantic City, NJ

The requested funding will be used to complete the New Jersey Air National Guard communication infrastructure upgrade. This project would complete the Atlantic City site survey, network design, development, procurement, integration, installation and testing of necessary components to help establish network compatibility and interoperability across Air Guard, Air Reserve, and Air Force Active Duty bases.

Amount Requested: \$2,000,000

Stryker Modernization (S-Mod) Power Generation & Management Rapid Prototyping Initiative

The Dewey Electronics Corporation

Oakland, NJ

The requested funding will be used to complete development and testing of a high-performance prototype 30kW power generation system for combat vehicles. The Army is seeking improvements to the Stryker combat vehicle which needs an advanced electrical power generation and management system. This improved power generator would provide increased efficiency and power for the vehicle which can reduce the costs of producing and maintaining the vehicles.

Amount Requested: \$2,200,000

Multi-Stage Consolidated Electrochemical High Pressure Hydrogen Compressor

TreadStone Technologies, Inc.

Princeton, NJ

The requested funding will be used to integrate and demonstrate an electrochemical hydrogen compressor for hydrogen fuel distribution and delivery at military installations. The military is currently testing hydrogen-based fuel cell power systems for a variety of applications ranging from small power modules (generators) to vehicles and for shipboard operations. The objective of the proposed project is to combine and integrate innovations into a single, consolidated unit for high-efficiency hydrogen separation and compression.

Amount Requested: \$1,500,000

Low Cost Fuel Cell Power Systems for Unattended Ground Sensors

TreadStone Technologies, Inc.

Princeton, NJ

The requested funding will be used to develop a low cost fuel cell power system for Unattended Ground Sensors (UGS) and tactical radios. UGS systems and encrypted tactical radios allow soldiers, sailors, airmen and marines to relay data, information and intelligence throughout any combat theater of operations. Unattended ground sensors are useful for an array of applications including perimeter defense, surveillance, target acquisition and early warning for chemical, biological, radiological and nuclear threats.

Amount Requested: \$2,500,000

Programmatic Support

United Service Organization

Arlington, VA

The United Service Organization (USO) has been the bridge between the American people and our men and women in uniform since before World War II. The USO delivers its programs and services at more than 130 locations around the world. Military personnel and family members visited USO centers more than 5.3 million times last year. Services include free Internet and e-mail access, libraries and reading rooms, housing assistance, family crisis counseling, support groups, game rooms and nursery facilities. In recent years, the USO opened centers in Kuwait, Qatar and Afghanistan to support service members participating in Operations Enduring and Iraqi Freedom. To meet the ongoing challenges posed by these conflicts, the USO is adding facilities and expanding programs to address the immediate requirements of America's troops and their families.

The University Center for Disaster Preparedness and Emergency Response (UCDPER)

University Center for Disaster Preparedness and Emergency Response

New Brunswick, NJ

The University Center for Disaster Preparedness and Emergency Response is a collaboration of UMDNJ, Robert Wood Johnson Medical School, Rutgers, and RWJ University Hospital. The funding will be used for research, education, community outreach, and clinical advances in preparedness/response to all-hazards, emergencies, disasters, and terrorism. The Center utilizes its expertise in medicine and health care, pharmacology and drug development, environmental

and exposure science, mathematics and engineering to establish strategies and plans to help New Jersey and the region prepare and respond to emergencies.

Amount Requested: \$5,500,000

Energy Efficient Flexible Lighting for Military and Commercial Applications

Universal Display Corporation

Ewing, NJ

The requested funding will be used to develop light-weight, thin-form factor, high efficiency flexible phosphorescent OLED lighting to provide the U.S. Army with energy saving lighting. This can be widely produced and deployed with portable applications and low power requirements. Funding will be used to make prototypes to demonstrate the technology, and further improve technology performance (efficiency and lifetime), as well as lower the cost of the flexible thin film encapsulation. This effort will be in collaboration with Princeton University and will help reduce costs for the Department of Defense and support clean energy development.

Amount Requested: \$2,000,000

The Valley Hospital Medical Errors Reduction Initiative: Stage V

Valley Hospital

Ridgewood, NJ

The Valley Hospital is launching the next stage of its Medical Errors Reduction Initiative with the Department of Defense by implementing a system that will improve patient care by allowing for real time monitoring and management of all hospital operations with a focus on enhancing patient safety and outcomes. Valley is currently involved in the third stage of this project which involves a critical research study to determine how best to facilitate medical staff interaction with information technologies to prevent patient harm and encourage widespread use of the technology.

Amount Requested: \$1,000,000

Women Veterans and Servicemembers Joint Health Resource Center

Virtua

Marlton, NJ

The requested funding will be used to establish a collaborative VA-DoD Women Veterans and Servicemembers Joint Health Resource Center in partnership with Joint Base McGuire-Dix-Lakehurst. This program will study and identify the demographics, risk factors, incidence, medical and psychosocial needs of this community and establish a nurse navigator program to direct women to appropriate health care resources. The Women Veterans and Servicemembers Joint Health Resource Center will dedicate specific, local care providers and resources to provide access to treatment with the goal of reducing the long-term social and economic burden on the Military Health System.

Amount Requested: \$3,000,000

Ultra Wide-Band (UWB) Communications Network for Battlefield Sensor Intelligence Gathering

Westgate Consulting Group, Inc.

Wall, NJ

The requested funding will be used to develop the advanced sensor tracking algorithms integrated with Ultra Wide-Band communications technologies. This will help provide advanced technology that will support service members by providing them with improved intelligence capabilities.

Amount Requested: \$700,000

Large Area, APVT Materials Development for High Power Devices

Wide Bandgap Materials Group, II-VI Incorporated

Pine Brook, NJ

The requested funding will be used for additional research dedicated to developing 150mm Silicon carbide substrates. Advanced Physical Vapor Transport (APVT) crystal growth, along with next generation wafer fabrication, and polishing technologies will be utilized to address material quality, reliability, size, and cost issues associated with high power devices critical to multiple DoD weapons and sensor systems. The use of silicon carbide (SiC) technology would result in longer range, increased mobility, and more compact system opportunities and is proposed for development of new radar systems, particularly in the UHF through S-band frequency ranges.

Amount Requested: \$3,000,000