Defense Authorizations Request (Non-Milcon)

Project: ARNG Mobile Corrosion and Protection Abatement Program
Request: $3.6 million
Suggested Recipient: Carwell Products, Inc
Suggested Location of Performance: Nationwide

The ARNG has a critical need for corrosion control, in that, the Guard's vehicles and equipment is older, they have a large number of unprotected assets and manning levels are not sufficient to provide extensive maintenance support for corrosion abatement. This adversely impacts the Guard's ability to support a proper vehicle maintenance program.

Project: Autonomous Unmanned Surface Vehicle (AUSV)
Request: $5.0 million
Suggested Recipient: Harbor Wing Technologies
Suggested Location of Performance: Pearl Harbor, Hawaii

To continue and accelerate development and delivery of a new-technology wind-powered Autonomous Unmanned Surface Vessel (AUSV) as a cost-effective, high-endurance reconnaissance and surveillance system providing situational awareness to on-shore or shipboard commanders in support of numerous military ISR requirements, including maritime domain awareness, deep-ocean patrol, anti-terror force protection, Underwater Unexploded Ordnance identification and recovery, netted Unmanned Vehicle Sentry and FORCENet architectures, and compliance with environmental laws to enable sonar use, shock tests and other exercises on Navy test and training ranges.

Project: Communications Support Environment-State
Request: $10 million
Suggested Recipient: Hawaii Air National Guard
Suggested Location of Performance: Honolulu, Hawaii

The program will develop and demonstrate a CSE-State Capability to provide National Guard Joint Forces Headquarters-States (NG JFHQ-States) with an integrated CSE to coordinate with primary interagency partners and command and control military forces during all stages of state emergencies. This CSE-State program will develop a capability that could serve as a model for other states to develop and deploy their own CSE capability.

Project: Compact UAV Ranging and Targeting
Request: $4 million
Suggested Recipient: BAE Systems
Suggested Location of Performance: Pearl Harbor, Hawaii

The Navy's JCTD (for multi-mission operations on unmanned and small manned platforms) funded the design and first article build of the compact laser designator and

eye-safe laser range finder. That system is now ready for limited environmental test, but it is not resourced to complete the development through live fire demonstration and certification. This additional funding will continue development and testing of the Compact UAV Ranging and Targeting System (CURTS).

Project: Covert Sensing and Tagging System (CSTS)
Request: $3.2 million
Suggested Recipient: Progeny Systems Corporation
Suggested Location of Performance: Pearl Harbor, HI

CSTS is a continuation of SBIR AF05-304 Phase III that focuses on the development of a covert, low-cost, and expendable unattended sensor system to exploit target radiated acoustic energy in any tactical environment, providing reliable surveillance with near real-time reporting. As a stand-alone sensor or integrated payload to the Aerial Canopy MASINT System (ACMS), this sensor system is particularly suited to address the unsupported requirements for acoustic intelligence, surveillance, and reconnaissance (ISR) requirements in heavily forested jungle environments. This new technology is needed to provide a more effective means of monitoring watercraft target activity in support of Global War on Terrorism surveillance, Force Protection, and interdiction missions. This effort is strongly supported by OSD SO/LIC and the NAVAIR 4.5X Special Reconnaissance Office.

Traditional unattended ground sensors (UGS) are unsuitable for use in the dense foliage, thick absorbent ground cover, dynamic ambient noise environment, and steep terrain characteristic of tropical rain forests. CSTS compact size supports covert employment, and reliable automated detection and classification processing allows for improved situational awareness with lower manpower requirements. This new technology is needed to provide a more effective means of remote sensing and "tagging" of watercraft activity in support of Global War on Terrorism surveillance, Force Protection, and interdiction missions, as well as other Interagency Maritime and Harbor Surveillance applications for DHS and the US Coast Guard. The use of conventional unattended ground sensors (UGS) typically require hand emplacement, which limits the scope of covert monitoring and can expose US forces to unacceptable risk and potential mission compromise.

Project: Detection, Tracking, and Identification for ISRTE of Mobile and Asymmetric Targets
Request: $6.5 million
Suggested Recipient: Pukoa Scientific
Suggested Location of Performance: Honolulu, Hawaii

Nearly all of today's threats are against asymmetric or moving targets. Existing precision guided munitions (PGM) rely on the Global Positioning System (GPS) and are designed to strike fixed targets. Prosecution of asymmetric and moving targets will require a sensor system and its corresponding targeting information to be immediately conveyed to any available engagement system.

The Naval Research Laboratory (NRL) has a critical requirement for advanced detection and tracking features with capabilities significantly beyond those currently deployed. For example, NRL has demonstrated a passive sea-side acoustic detection system to detect, track and identify asymmetric threats such as terrorist swimmers. The lack of a real-time processor has left many open questions about the overall performance of the system such as the background induced false alarm rate.

The purpose of this program is to develop components to support multiple, simultaneous detections, tracking, identification and targeting of asymmetric and mobile threats in Intelligence, Surveillance, Reconnaissance, Targeting and Engagement (ISRTE) operations. Additional FY10 funding will continue to accelerate the development of the algorithms for the engagement of asymmetric and moving threats in a more complex environment with the goal of examining the feasibility of developing algorithms for insertion into the engagement systems.

Project: FLASH Hyper-Dimensional Imaging for Near Space Surveillance and Ballistic Missile Defense
Request: $6 million
Suggested Recipient: HunuPhotonics
Suggested Location of Performance: Honolulu, Hawaii

The FLASH Hyper-Dimensional Imaging System technology will provide the capability for immediate, real time object characterization and for threat assessment of a missile intercept and to significantly enhance space situational awareness. The FLASH technology utilizes "hyper-dimensional digital snapshots" to capture high resolution spatial, thermal, temporal, and spectral data across multiple spectral data bandwidths. It supports data capture across 100 channels four wavelength bandwidths simultaneously. Enhancements include: >10X faster evaluation of kill assessments; >10X improvement in combined spatial and spectral resolution;>50X increase in quantity of event data captured. Importantly, the FLASH system can be miniaturized for space and missile-based platforms to provide additional capabilities.

Project: Immersive Group Simulation Virtual Training System for Hawaii National Guard
Request: $5.5 million
Suggested Recipient: Atlantis Cyberspace
Suggested Location of Performance: Honolulu, HI

The system will provide additional training opportunities for the Hawaii Army National Guard (HIARNG) by using virtual reality to supplement live training exercises. With the expanding role of Hawaii Army NG, and its routine deployment in support of the Global War of Terror, the Guard requires a fully immersive virtual training system with capabilities to interface and integrate with existing legacy systems. Unique to the IGS-VTS is a training device that not only demonstrates the ability to provide the industry's best training solution for dismounted operations but can simultaneously exercise in

mounted operations in convoy, movement to contact and tactical rehearsals, as well as serve as the virtual link to the integration of Constructive, Virtual, and Live training operations.

Project: Internet Based Installation Environmental Info Management System
Request: $8 million
Suggested Recipient: Enviance
Suggested Location of Performance: Nationwide (including Schofield Barracks, Hawaii)

The implementation of Enviance's installation EMIS will resolve many of the challenges associated with ever-increasing needs to reduce energy use, prevent pollution, and minimize the Army's contribution to greenhouse gas emissions while balancing the need to train the Warfighter and pursue the Army mission. Cost-effective automation of the workflow of environmental compliance will save the Army millions of dollars annually, improve the quality of performance, and dramatically enhance the Army's ability to prevent environmental obligations from negatively impacting mission. Implementation of a commercial off-the-shelf that has already been deployed around the world as an established as Industry best practice, and that has been successfully demonstrated in many diverse installations in the Army, will avoid the time and cost risk associated with any effort to "build" a "custom" system. In addition to saving millions of dollars, the centralized nature of a system like the Enviance installation EMIS would provide the Army for the first time with a single standardized approach to compliance Army wide. This standardized approach will drive costs down, quality up and, for the first time, provide the Army command with cost-effective environmental roll up reporting critical to optimizing cost savings and quality improvement in the environmental compliance activities.

Project: Managing and Extending DOD Asset Lifestyles (MEDAL)
Request: $6 million
Suggested Recipient: Referentia Systems
Suggested Location of Performance: Honolulu, Hawaii

Prevention and mitigation of corrosion of military infrastructure and equipment requires that DoD designate a responsible official or organization and develop a long-term corrosion strategy to include: Expansion of emphasis on corrosion prevention and mitigation; Uniform application of requirements and criteria for the testing and certification of new corrosion prevention technologies within common materiel, infrastructure, or operational groupings; Implementation of programs to collect and share information on corrosion within the DoD; Establishment of a coordinated R&D program with transition plans. With decreasing budgets, Department of Defense PEOs must pursue enabling technologies and innovative concepts to improve fleet reliability, increase mission capability rates, and decrease life cycle costs. The economic consequences of failing to concentrate on sustainability, manufacturability, and constraints brought on by corrosion during the acquisition process are enormous. There currently is no system-of-systems solution with an evolvable science-based foundation being developed to address sustainability and cost reductions. The proposed concept will

explore reducing total life cycle costs for Hawaii-based C17s and UxS using a comprehensive approach including asset health management thru sustainability and remanufacturing; advancing the state-of-the-art in corrosion research and abatement; curriculum enhancements and education FY10 congressionally directed funding will be used to develop customers requirements in support of stated goals and objectives of the Office of Naval Research (ONR), OSD Corrosion Control and Oversight Office, the SPAWAR SC-SD Joint Unmanned Systems Enterprise, the AFRL RB Air Vehicles program, and DoD LCC Management policies. The proposed program will advance the state-of-the art in sustainment and remanufacturing, asset health and logistics management, and materials aging and corrosion abatement through a comprehensive and multi-disciplined tooth-to-tail approach. The proposed program will develop the necessary technologies to extend the useful life of facilities and equipment, yield a reduction in maintenance manpower, and contribute to DoDs knowledge base to improve MCR while decreasing LCC.

Project: Multiple-Target-Tracking Optical Sensor-Array Technology (MOST)
Request: $10 million
Suggested Recipient: Oceanit
Suggested Location of Performance: Honolulu, Hawaii

MOST addresses critical missile defense capability gaps. It directly supports terrestrial and airborne deployment plans that are currently being developed by MDA, designed to address holes in the current US capability. This will ultimately reduce US dependence on space-based sensors, potentially providing a path for reducing the number of deployed satellites and the overall expense of the program while simultaneously increasing flexibility. MOST technology can be deployed as networked, low-cost (relative to radar) sensor systems. Deployments can be land-based or sea-based, providing flexibility to ensure that sensors can be placed where they are needed. Mobile deployment on Navy ships could also provide effective defense against sea-skimming cruise missiles, which is difficult for radar. Optical systems must be an integral part of the BMDS sensor suite.

Project: National Education Center
Request: $6 million
Suggested Recipient: Go For Broke National Education Center
Suggested Location of Performance: Torrance, California

These funds are for the Go For Broke National Education Center, a state-of-the-art education center that provides national-level leadership to preserve and instill in future generations of young Americans the unique lessons of unwavering loyalty, patriotic service to Nation, personal strength and determination as embodied in those Americans of Japanese ancestry, who honorably and courageously served our Nation during a time of great peril, fear, mistrust, and suspicion.

Project: National Undersea Mobility Technology Integration Center (NUM-TIC)
Request: $6 million
Suggested Recipient: Alaka'i Consulting

Suggested Location of Performance: Honolulu, HI

USSOCOM has a top unfunded priority requirement for FLTWARCOM to support USSOCOM undersea mobility platforms, autonomous underwater systems, and undersea warfare weapons systems. Central to this requirement is the establishment of a portable tracking and measurement range to evaluate system performance in littoral environments. The NUM-TIC will address the undersea mobility platform support requirement and will stand up a portable acoustic testing instrumentation capability to test and evaluate SOF platforms and systems in actual or surrogate environmental conditions. Pearl City already has the necessary pier facilities to load SOCOM undersea platforms on host submarines. Moreover, the C-17s at the nearby Hickam Air Force Base will be used to move vehicles and equipment throughout the Pacific. The establishment of the NUM-TIC at Pearl City will thus not only address a major USSOCOM requirement but will also result in substantial leveraging of prior invested resources and a major overall cost saving.

Project: Pacific Data Conversion and Technology Program
Request: $8 million
Suggested Recipient: Hawaiian Homestead Technologies
Suggested Location of Performance: Honolulu, HI

The DoD has initiated the establishment of technology outreach centers to support the transition and integration of advanced technologies into military and homeland security operations. The technology outreach centers provide the mechanism for both DoD and first responders to evaluate emerging technologies such as robotics in operationally relevant scenarios to assess performance, impact on tactics, techniques and procedures, and to provide feedback to developers on recommended improvements. The technology outreach centers provide evaluation ranges, experiment development and execution, data collection/logging, and digital archiving of experimentation reports for future use by operational and development entities across academia, industry, and government. FY09 appropriations funded the initial development of the Hawaii technology outreach center and continuation of digital data conversion activities for a wide range of previously conducted research and experimentation. The technology outreach center will also support technical job training for the local community such as the Hawaii National Guard Youth Challenge Academy Robotics Training Curriculum.

Project: Pacific Island Unexploded Ordinance Detection using Air and Ground Methodologies
Request: $3.0 million
Suggested Recipient: University of Hawaii
Suggested Location of Performance: Honolulu, Hawaii

UXO detection on Pacific Islands is an acute problem because of increasing use of decreasingly available test and training ranges, combined with over sixty year of intensive use of these ranges resulting in high UXO presence. Population increases and reprioritization are causing some ranges to be retired and transferred to civilian hands,

reducing availability of test and training ranges. As a result, use of the remaining ranges is more intensive. Detection of UXO is critical to the transfer of property and the efficient continued use of existing ranges. Significant community outreach by Strategic Solutions has resulted in increased awareness and interest in UXO related issues.

The University of Hawaii at Manoa, in partnership with Environet, Inc., Referentia Systems, Inc., Strategic Solutions, Inc., and the Night Vision and Electronic Sensors Directorate (NVESD), Ft. Belvoir, VA, will explore state-of-the-art technologies, which have the potential to advance detection of underground UXO.

Project: Personal Infrared Lighted Rescue Streamer Program
Request: $2.5 million
Suggested Recipient: Rescue Technologies
Suggested Location of Performance: Aiea, Hawaii

The Personal Infrared Lighted Rescue Streamer (PILRS) program will leverage the past success and deployment of rescue streamers to develop a multi-functional, personal carry, land and sea signaling device. FY2010 funding is being requested to design, develop, test and evaluate a PILRS product based on the requirements and specs of the Navy and Army's search and rescue, signaling, vectoring and extraction mission scenarios.

Project: Readiness and Environmental Protection Initiative
Request: $35 million
Suggested Recipient: Military Installations Nationwide
Suggested Location of Performance: Nationwide

Encroachment on military installations, ranges, and airspace as a result of urban growth and loss of habitat is a major threat to DoD's ability to conduct activities vital to sustaining military readiness. In 2002, Congress authorized the DoD to form partnerships with state and local governments and non-profit conservation groups, to create buffers in the vicinity of military bases to prevent incompatible development and preserve habitat. (10 USC §2684a) A 2007 RAND study concluded that the resulting Readiness and Environmental Protection Initiative (REPI) has been effective, but needs sharply increased funding of at least $150 million per year. In Sec. 2828 of the FY2008 National Defense Authorization Act, the Congress found that REPI was effective in protecting readiness that opportunities for action were transient, and encouraged the DoD to take full advantage of the program. Since FY 2006, the Congress has consistently authorized and appropriated funding higher than contained in the budget submission; however, funding remains inadequate to address identified and validated requirements. As noted in the RAND report, there is a narrow window of opportunity to take effective action to preclude further serious encroachment due to incompatible development and loss. The combined effects of BRAC re-stationing, "grow the force" initiatives, global relocation of forces, and new weapon systems, techniques, and tactics make timely action to address encroachment through the REPI program even more imperative.

Project: Reconnaissance and Data Exploitation (REX) System

Request: $6 million
Suggested Recipient: NovaSol
Suggested Location of Performance: Honolulu, Hawaii

The DoD needs improved intelligence, reconnaissance, and surveillance (ISR) tools. With the rapidly increasing and pervasive deployment of unmanned, limited payload ISR platforms such as UAVs, the need for minimal size weight and power (SWAP) ISR sensor systems is paramount. The Reconnaissance and data Exploitation (REX) system will enable the implementation of fused HyperSpectral Imaging (HSI) and other Electro Optic (EO) sensors with integrated real-time target detection. The REX payload will be capable of integration with a wide variety of airborne and ground-based platforms whose payload limitations previously precluded hosting such a capability. In particular, REX will allow the rapidly expanding fleet of small military UAVs to take advantage of the powerful automated target detection inherent to high spectral resolution HSI and multispectral sensors and enable cueing of high spatial resolution panchromatic EO sensors for target identification. REX will provide the inherent benefits of spectral sensing to the modern day warfighter. REX will leverage recent breakthrough miniaturization efforts in HSI sensors, real-time data processing, target detection algorithm development, and free space optical communications technology to provide a robust and complete ISR solution. REX will support counter-terrorism and Special Forces missions currently or envisioned to be performed from a number of unmanned platforms, including small type II UAVs and unattended ground stations. Furthermore, the technologies will be leveraged to develop new handheld and vehicle mounted devices for persistent surveillance, threat detection, and Special Forces operations in multiple environments including riverine. Recent significant individual technical breakthroughs have been made in the miniaturization of spectral sensors, spectral data processors and tactical optical communications systems that can now enable REX to meet demanding unmanned platform SWAP requirements. REX will integrate these individual capabilities into a robust, cohesive package that will provide turn-key ISR payloads for airborne and ground-based applications. REX will expedite the transition of the benefits of these extensive recent technology developments into the warfighter's hands. REX is a benefit to taxpayers because it will leverage existing developed technology into a transitional program for immediate deployment opportunities and warfighter impact.

Project: Standoff Improvised Explosive Device Detection Program (SIEDDP)
Request: $6.0 million
Suggested Recipient: University of Hawaii
Suggested Location of Performance: Honolulu, Hawaii

Improvised Explosive Devices (IEDs) have emerged in Iraq and other locations throughout the world as an unanticipated and deadly threat to US and Allied military forces. Recently developed chemical trace and ancillary detection technologies are proving their value in theater, but real-time standoff detection and in-situ forensics remain an elusive goal requiring sensor technologies that do not exist today. Building on cutting edge academic research in physics and chemistry, Florida A&M University

(FAMU), Arkansas State University (ASU) and the University of Hawaii (UH), have assembled a multi-disciplinary team of faculty, research staff and students dedicated to the development of innovative technologies that address such requirements. Funding is sought in FY10 to establish the Standoff Improvised Explosive Device Detection Program (SIEDDP) to expedite research and development of a new generation of sensor technologies based on recent innovations in laser and spectroscopic interrogation techniques. The envisioned systems will provide US military assets with powerful new capabilities in the areas of IED standoff detection and forensic tracing. The proposed collaborative team extends and integrates demonstrated research strengths at each University. To characterize and identify the threat, scientists at the UH are building a prototype in-situ high-sensitivity resonance ionization isotope measurement system with anticipated forensic capability to characterize a wide range of materials, including IED explosives. ASU's spectroscopy and nonlinear optical sensing laboratories complements and enables flexible selection and characterization of the optical signatures of the molecules of interest. FAMU's dedicated state-of-the-art computing cluster will perform the critical calculations necessary to confirm experimental results while it's terawatt laser system and range facilitate the investigation of nonlinear pulse propagation phenomena for remote detection. These are significant advances over existing technologies and have the potential to identify and track IED explosives as well as to provide information on terrorist leaders and bomb makers. The proposed work will help develop a valuable new system that will enable rapid collection and near real-time assessment of forensic evidence in the field. Researchers at ASU and FAMU are exploring remarkable new laser probe and spectroscopic analysis techniques with novel modulated power and temporal pulse profiles. Equipped with state-of-the-art laser systems, ASU will explore promising multicolor laser molecular sensing techniques while FAMU investigates Quantum Control and multi-pulsed LIBS in the femtosecond and nanosecond regimes. The envisioned technologies aim to mitigate unwanted atmospheric and background effects and significantly improve detector signal to noise ratios. In parallel work, scientists at UH require deep UV lasers for improved eye-safe standoff detection of explosive vapor and residues using Raman technique. Additionally, we anticipate that UH's extensive experience designing infrared standoff mine detection systems will prove invaluable to the SIEDP team. The goal is to explore and develop a revolutionary new multimodal sensing system that can rapidly locate, analyze and enable the defeat of IEDs from a safe distance, with minimal risk to military or civilian personnel. The proposed work leverages existing peer-reviewed funding from NASA, DIA, ONR, NSF, and others, yet will allow us to focus and expedite the work on the difficult IED detection and mitigation problem. UH, ASU, and FAMU also have strong multi-year existing collaborations with industrial partners. These relationships will directly assist in research, development, and technology transition as well as ensure capabilities to build a rangeof advanced sensors.

Project: STARBASE Academy Hawaii Air National Guard
Request: $300 thousand
Suggested Recipient: Hawaii Air National Guard
Suggested Location of Performance: Honolulu, Hawaii

The program's interactive learning activities, which focus on Science, Technology, Engineering and Math, has brought stimulating educational experiences to the students. The program has generated hands on experience in learning and has enhanced the subject matter taught in school. Evaluations from the first 10 classrooms show an astounding increase in test results. With imagination, talent and hard work, the program's staff of highly motivated and enthusiastic professionals continues to add excitement to their lesson plans, improve on austere facilities, and is in the process of generating increased local public support. It is the program's continuing goal to present to the community, State of Hawaii and the nation, a stellar educational program benefitting the youth of our community and country. The current $300,000 annual operating budget for STARBASE Hawaii includes salaries for a staff of five (5), bus transportation, operating supplies, and equipment and facility repairs. The continued success of the program is directly dependent upon the continued Congressional support and OASD/RA funding. STARBASE Hawaii seeks to ensure $300K is included in the FY10 Department of Defense budget.

STARBASE HAWAII held its first class in September 2008. Since then, the program has completed sessions in 10 schools in the Kea'au / Kau / Pahoa Complex Area District on the island of Hawaii. The program has reached over 250 5th grade students. STARBASE Hawaii has provided opportunities to help develop a strong foundation of personal direction, self-esteem and socialization skills for these disadvantaged students.

Project: USAR Mobile Corrosion and Protection Abatement Program
Request: $3.6 million
Suggested Recipient: Carwell Products, Inc
Suggested Location of Performance: Nationwide

The USAR has a critical need for corrosion control, in that, the Reserve's vehicles and equipment is older, they have a large number of unprotected assets and manning levels are not sufficient to provide extensive maintenance support for corrosion abatement. This adversely impacts the Reserve's ability to support a proper vehicle maintenance program.

Project: Warfighter Rapid Awareness Processing Technologies (WRAPT)
Request: $6.0 million
Suggested Recipient: Archinoetics
Suggested Location of Performance: Honolulu, HI

The enemy has, by default, information superiority in expeditionary operations because these operations are conducted on their territory. To recover this advantage, the expeditionary warfighter must gain detailed knowledge to match the unfolding operation. Reconfigurable, mobile training environments enable just-in-time training for these operations. Integration of mobile sensor technology for assessing warfighters' physiologic state in these environments is a valuable addition to these training environments and will allow facilitating after-action-reviews. Today, the WRAPT program is refining and testing a sensor and computing platform for embedded situational

awareness. This platform provides trainers with non-GPS based location and weapons firing/pointing information. Concurrently, the same sensor platform will provide measures of simulation realism and warfighter involvement and fatigue. Additional funding is needed in FY10 to continue supporting test-bed application and training environment with the Third Marine Division at Marine Corp Base Hawaii. Additionally, the sensor suite developed with previous congressional funding will be extended for stress detection. This project will continue to dovetail with other ongoing human performance, training, and education efforts within the Marine Corp and provide a test platform for technologies developed in those efforts.

Project: Wave Energy Powerbuoy Generating System
Request: $3.4 million
Suggested Recipient: Ocean Power Technologies
Suggested Location of Performance: Honolulu, HI

This program will continue further demonstrate wave power as an alternate electric power source on DoD Bases. The two advanced and more efficient PowerBuoys will be interconnected and their combined power will be delivered to the MCBH grid through the submarine power cable. Multiple Buoy ocean testing for a two-year period will generate an operating history for wave power electrical generating systems at Naval bases. Future Program Scope (Funding anticipated from the Navy & alternate sources). Future scope would involve the fabrication and installation of advanced power units to achieve and increase the capacity and install wave power stations at other US Naval Bases. Program Objectives include the demonstration that wave power as an alternate electric power source for large power systems for DoD Bases. Demonstrate the interconnection of multiple wave power units to scale up the capacity of a power station. Deliver power to Hawaiian Electric's electrical grid.