

# Defense

The following appropriation requests were received by the offices of Senator Merkley and Senator Wyden. These requests have not been vetted or approved by the Senate offices, and their inclusion in this list does not indicate any judgment about the projects' value, appropriateness, or likelihood of receiving funding. Every funding request has been included, and project summaries have been drawn verbatim from applicants' proposals. Not all of the requests received by both Senators will be submitted for funding consideration to the Senate Appropriations Committee, and that Committee will then select a limited number of projects to fund from each state.

The following appropriations for Oregon are being considered for inclusion in the Defense appropriations bill for fiscal year 2010.

## **Center for Aircraft Development : UAVs as a Sensor Platform - \$9,500,000**

### **Windward Performance, Bend, OR**

- 1) Develop alternatives for sensor platforms to enhance the warfighter's capabilities away from the lethal zone (reducing casualties in the field).
- 2) Drive down costs for UAVs while dramatically increasing mission reliability and expand the range of options for the war fighter.
- 3) Co-locate key aircraft platform industry partners near WPAFB for close and rapid contact with four primary directorates: the AFRL materials & manufacturing; sensors, air vehicles, and propulsion directorates to increase communications and industry responsiveness to Air Force priorities for UAVs.
- 4) Rapid deployment of new sensor platform designs from test to full size production within close proximity to WPAFB.

## **SiC - RF Power for Airborne Avionics Systems - \$4,500,000**

### **Microsemi Corporation-Power Products Group, Bend, OR**

This project continues the development of critical components for data communication systems on new and upgraded Air Force platforms (ie. F-22 aircraft, F-35 Joint Strike Fighter, etc.) The components, Radio Frequency transistors for power amplifiers, use silicon carbide (SiC) semiconductor technology in order to shrink the physical size and weight of avionics systems (ie. LINK 16) while expanding system bandwidth. The components being developed

are expected to be available for F-22 and F-35 aircraft programs by 2010/11. These new RF transistors also have significant potential to improve RADAR applications, most specifically with regard to the new 3-D ELRR system, now in development.

**National Guard Critical Backup Power Fuel Cell Pilot Program - \$4,600,000**  
**IdaTech, LLC, Bend, OR**

The Oregon Military Department has critical backup power requirements that respond to communications infrastructure, emergency and consequence management. Currently diesel generators and lead acid battery power backup solutions are employed. These systems are maintenance intensive, expensive, have reliability issues, and have adverse environmental impacts. Fuel cell systems are now available for power backup missions providing flexible quality power with competitive capital investment, significantly reduced life-cycle cost, minimal maintenance, and no harmful environmental emissions. Fuel cell systems are a new technology for Oregon Military Department applications and National Guard applications nationwide; thus, there is no practical experience history with their use for critical backup functions within the Department. The proposed project will enable the real-world experience needed to prove the operational, cost and environmental benefits of these power systems.

**AVIAN FLU and Seasonal Flu Therapeutic - \$7.8 Million**  
**AVI BioPharma, Inc., Corvallis, OR**

The project goal is to complete early stage development of a broadly applicable therapeutic for avian and seasonal flu. The lead candidate has demonstrated anti-flu activity in multi-drug resistant avian flu in culture and against multiple strains of flu in mouse challenge models. This project will complete efficacy studies in a second animal model using an appropriate formulation and inhalation delivery device.

**Bio-terror Countermeasure Development for Category A and B Pathogens - \$7.2 Million**

**AVI BioPharma, Inc., Corvallis, OR**

Develop Host Gene Targeting Countermeasures against Category A and B bio-terror pathogens. The project goal is to further develop Host Gene Targeting to identify broadly applicable countermeasures for category A and B pathogens. This project builds on work conducted over the past two years which have identified

several potential candidates.

**Forward Osmosis Water Purification - \$4,000,000**

**Hydration Technologies, Inc., Albany, OR**

This request will ensure that US Special Operations Forces have the capability to generate safe drink during remote deployments, emergencies, or during the disruption of the supply train. Because water is often the limiting factor in mission length, this request will give commanders new capabilities for mission planning by extending mission duration, thereby enhancing force projection. Dehydration and water borne illness are removed, resulting in improved unit health and force multiplication benefits. Forward osmosis is the only personal water technology that can reliably work with the very cloudy, contaminated waters typically found in the current theaters of operations. As a result of these benefits Army, Air Force and Marine Corps units, have evaluated and requested forward osmosis devices in the Middle East and East Africa and in training operations at home.

**Metals Affordability Initiative (MAI) - \$10,000,000**

**Metals Affordability Initiative (MAI) Consortium, East Hartford, CT**

The MAI consortium, established in 1999 includes the Air Force Research Laboratories (AFRL) and 18 companies from the entire Specialty Aerospace Metals supply chain. Member companies are Aerojet, Allegheny Technologies, Brush Wellman, Boeing, Cartech, Crucible Materials, General Electric, Honeywell, Howmet, Ladish, Lockheed Martin, Northrop Grumman, PCC Structural, Pratt Whitney, Rolls Royce, RTI, Special Metals, and Timet. The MAI presence in Oregon involves PCC Structurals, Inc. with 2500 jobs (Portland + Oregon Operations), Allegheny Technologies - Wah Chang - 350 jobs (Albany), Ladish division - Pacific Cast Technologies - 290 jobs (Albany), & Boeing's Portland machining operation - 1000 jobs. MAI has improved the military war fighting capability while reducing life cycle cost through technology innovation and is helping to transform the US specialty aerospace metals industry by increasing the competitiveness of this critical industrial sector. It also provides technology solutions to military operational problems. MAI enables metal process technology development from proof of concept through insertion into military systems. Key MAI program elements are providing value to both government and industry by obtaining affordability improvements, industry and government collaboration, leveraging of technical resources and financial investment, and speed of insertion of new technologies into both legacy and developmental DoD systems.

**Permanent Magnet Generator - Wave Energy Buoy - \$5,000,000**

**Columbia Power Technologies, LLC, Corvallis, OR**

At present, power requirements in remote DoD locations throughout the U.S. and its territories are met by fossil-fueled generators. Based on the present high cost per kilowatt hour at some of these remote locations and the projected cost of a commercial-grade 1 MW wave energy buoy system, this wave energy buoy system will offer a low-cost, competitive resource. This Project will develop a highly advanced wave energy system identified by Columbia Power during wave energy research in 2008. This project will make progress toward deploying a large scale ocean test of the system with the Navy in conjunction with Oregon State University and subcontracts to other small businesses in the region.

**Brain Safety Net - \$3,000,000**

**University of Oregon, Eugene, OR**

This project is focused on neurorehabilitation and associated medical applications. We seek to develop and optimize evidence-based treatments of soldiers and civilians suffering from amputations, traumatic brain injuries (TBI) and neurological disorders such as epilepsy. A distinguishing feature of this interdisciplinary project is the use of techniques ranging from state-of-the-art brain imaging (functional and structural MRI and dense array EEG) to genetic and behavioral analyses, to advanced computational modeling. These combined capabilities are the foundation of a consolidated effort to increase our ability to harness the brain's remarkable capacity to respond adaptively to change (neuroplasticity). These include responses to bodily (e.g., amputation) or brain (e.g., TBI or stroke) injuries, as well as to stimulation provided by effective therapeutic interventions.

**ONAMI Safer Nanomaterials and Nanomanufacturing - \$5,000,000**

**University of Oregon, Oregon State University, Portland State University,  
Oregon Nanosciences and Microtechnologies Institute, Corvallis, OR**

Activities are to develop safer and greener nanomaterials and nanomanufacturing methods, which directly impact the Defense department's need for high performance materials. Areas of activity include: rational design of inherently safer and greener materials based upon unique properties found at the nanoscale, systematic assessment of the biological impacts, and development of technology for high volume manufacturing of high-performance nanomaterials.

The applications include energy production and storage, nanoelectronics and nanophotonics, medical diagnostics and therapeutics, drinking water purification and environmental monitoring & remediation systems. The initiative has increased its focus on energy because of the essential role that nanotechnology will play in addressing the Nation's energy problems.

**ONAMI Nanoelectronics, Nanometrology and Nanobiotechnology (N3I) Initiative - \$5,000,000**

**Portland State University, Oregon State University, University of Oregon, Oregon Nanosciences and Microtechnologies Institute (ONAMI), Corvallis, OR**

This request addresses important applications of nanotechnology in three nanoscale areas: measurement/imaging, electronics, and biomedicine. The respective challenges in these three areas are: providing a "window" into the nanoscale world, evaluating nanoelectronics devices that will extend the "Moore's Law" scaling of integrated circuits, and providing tools that will enable discoveries and clinical applications in molecular-based medicine of the future. The integrating theme for these specific applications is that discoveries in one discipline may have a major impact on other disciplines. Examples include nanoscale chemical imaging at electronic device interfaces, nanoelectronic-based biosensors for point-of-care health management, nanoscale imaging of protein molecules in cells such as pluripotent embryonic stem cells, and nanoparticle-based diagnosis and drug delivery systems.

**ONAMI Miniaturized Tactical Energy Systems Development - \$5,000,000**

**Oregon State University, University of Oregon, Portland State University, Oregon Nanosciences and Microtechnologies Institute, Corvallis, OR**

The funding will support the development of miniaturized tactical energy systems for a wide range of military and subsequent commercial applications. The research initiative will use capabilities being established at ONAMI to miniaturize a wide range of important tactical energy systems including soldier power systems and advanced cooling units for forward deployed operations. We are requesting continued funding will focus on the applications of mixed nanoscale and microscale systems to develop advanced technology such as miniaturized tactical energy systems. ONAMI will work with Ft. Belvoir (Army) to provide tactical energy systems for a range of Army applications.

**ARL-ONAMI Center for Nanoarchitectures for Enhanced Performance -**

**\$2,000,000**

**University of Oregon, Oregon State University, Portland State University,  
Oregon Nanoscience and Microtechnologies Institute, Corvallis, OR**

The ARL-ONAMI nanotechnology center is a collaborative grant agreement seeking a three-year Phase II funding to build on the first three years' success creating early stage technology for future Army sensing, communications, portable energy storage & generation and thermal management requirements based on breakthroughs in nanomaterials, nanostructured films and surfaces, micro-scale reaction engineering and ultra-lower power mixed signal electronics. Physical lab-lab collaborations and postdoc assignments at ARL have been increasingly emphasized to ensure technology transitions and a supply of US Citizen talent for ARL-SEDD. Four general areas of activity (power and energy management and generation, thermal management, nanoelectronics, electromagnetic structures) are now being augmented by more specific focuses identified by ARL scientists.

**Precision Integrated Laser System - \$3,900,000**

**nLIGHT Corporation, Hillsboro, OR**

Due to the asymmetry of today's warfare, our soldiers are forced carry out their missions in urban locations amongst military enemies and rogue terrorists who are using innocent civilians and locations as shields. It is nLIGHT's belief that through superior precision integrated laser systems (PILS) our soldiers will be better prepared to operate within this new hostile yet civilian battlefield. Specifically nLIGHT will focus on a PILS device that will combine a non-lethal escalation of force green laser with laser range finding for precision targeting control. Benefits of such a device include improving mission effectiveness, decreasing collateral damage and, most importantly, increasing soldier survivability. nLIGHT has partnered with the US Army on such technology over the last five years. Specifically within the last two years we have entered into a deep technical partnership with Night Vision and Electronic Sensors Directorate. The goal of this partnership has been to quickly address the demanding precision targeting needs of our soldiers and engineer a high performing and reliable solution that can be rapidly deployed.

**Trusted Services Engine (TSE) for Cross-Domain Information Awareness -  
\$2,100,000**

**Galois, Inc., Portland, OR**

The funding will certify a next-generation information security capability across the Department of Defense (DoD) and the Intelligence Community (IC). Both the DoD and the IC have critical, ongoing requirements both to protect and to share data across multiple security levels (called "domains"). The events of 9/11 demonstrated a major failure in integrating information. Although different parts of the government knew essentially all the different aspects of the threat, nowhere was the information integrated together. The total picture never emerged until it was too late. Because of the untrustworthiness of the software in our everyday computers, current security protection mechanisms separate data across distinct networks, each at a distinct security level. When data needs to be combined across multiple networks, expensive data guards can transfer the information, though these are usable only in limited situations. Otherwise human operators have to copy data physically from one system to another. As a result, information often fails to get to the people who need it, and armed personnel have to juggle three or four separate laptops in the midst of a combat situation. In recognition of this need, the Navy and the NSA funded Galois to develop a robust and flexible solution to the challenge of controlled information sharing across multiple security levels. Applying our expertise in the mathematical foundations of information assurance, Galois developed a secure, multi-level file server called the Trusted Services Engine (TSE). The TSE connects to networks at multiple sensitivity levels in such a way that users at any level have instant and direct access to all the information for which they are authorized. This "cross-domain" technology opens up an extensive range of opportunities for sharing, integrating, and managing information at different security levels. In a combat scenario, this capability can increase situational awareness and thereby save lives.

### **Advanced Airship Flying Laboratory Phase 2 - \$8,000,000**

#### **American Blimp Corporation, Hillsboro, OR**

Continuation of the Navy's only airship program to develop an advanced surveillance capability for fighting the global war on terror and for fleet and force protection in-theater. Funding will continue to facilitate Phase 2 of the development program. Funds are programming funds. Funding shall be used to facilitate the integration of new power sources by integrating Thielert heavy fuel engines, and the addition of autonomous unmanned flight controls on the existing MZ-3A airship owned by the Navy. Additional funding will be used to integrate various sensors for flight tests after the unmanned variant has been fully flight tested. This funding is to facilitate the addition of heavy fuel propulsion

and the integration and flight testing of autonomous flight controls to create an unmanned variant of the current vehicle. Additional funds are to be used for integration of sensors to be tested for use on a persistent platform in the global war on terror GWOT.

**Reinforcement HMMWV Repair Hood Kits - \$990,000**  
**Miles Fiberglass & Composites Inc., Happy Valley, OR**

To supply Military refurbishing unit with 3,300 HMMWV reinforcement repair kits to repair current cracked hoods as well as installing them to prevent hoods from cracking. This eliminates the need to replace the entire hood. The reinforcement kit is 1/3 the cost of a new hood and 1/3 the time to install as a replacement hood. Replacing the entire hoods does not guarantee they will not crack again. The reinforcement kit effectively strengthens the hood and prevents growth of pre-existing cracks as well as prevent cracking. This is a savings to the military in terms of hood cost and down time of the vehicle. The kits have been approved by TACCOM and an NSN number has been established NSN 2510-01-547-7220. The kits can also be installed in the field where ever the vehicle is located by using the high bond adhesive tape and riveting the kit on.

**Optimization of Lightweight High Performance Direct-Sintered Silicon Carbide Optics for Space and Aerial Sensors - \$3,500,000**  
**CoorsTek, Hillsboro, OR**

CoorsTek's Hillsboro, OR facility is known for precision machining of ceramics and the facility has leveraged this know-how to manufacture lightweight mirrors out of silicon carbide, a ceramic also used by the US Department of Defense for body and vehicle armor. The high stiffness and high thermal conductivity of silicon carbide, as well as the ability to polish the material to a mirror surface, makes it perfect for advanced optics used by the Department of Defense in aerial and space applications. The US Air Force and Missile Defense Agency are developing space-based optics for missile defense in the MDA Exoatmospheric Kill Vehicle (EKV) program. It is expected that several hundred of these three mirror assemblies will be required for complete defense of our nation. It is known that silicon carbide would be an ideal material for these assemblies, due to its excellent stiffness and light weight. Its high thermal conductivity would be required to prevent excessive heating of the optical coatings in the case of a nuclear event or high powered laser impingement. The primary issue with using silicon carbide is the expense of the final polish. Although CoorsTek has been



successful in producing individual mirrors and assemblies, the relatively high cost has prevented the transition to high volume projects. The primary cost driver is the expense of polishing the hard ceramic to a final prescribed figure. CoorsTek has recognized these issues and has developed an in-house process to reduce the cost of the final polish by more than 33% -- a huge cost saver. CoorsTek would be well positioned to manufacture the sorts of volumes required for the missile defense optics, as they demonstrate volume ceramic manufacturing on a daily basis. Funding would enable CoorsTek to complete and prove out the grinder that has been designed. CoorsTek will purchase the required services to complete the control and motion systems, and then demonstrate the improved capability. It would also enable CoorsTek to expand conventional machining in silicon carbide to meet the expected demand of missile defense.

**Transportable Transponder Landing System (TTLS) - \$5,000,000**

**Advanced Navigation & Positioning Corporation, Hood River, OR**

The TTLS is a precision approach landing and surveillance system designed to for rapid deployment to establish a remote Air Traffic Control and precision landing aid that enables all types of military aircraft: fixed; rotary-wing and Unmanned Air Vehicles to recover efficiently and safely in any terrain and in severe weather conditions day or night. The TTLS does not require upgrades to the existing aircraft of the Air Force, provides a Precision Approach Radar (PAR) capability, and it can be rapidly deployed in mountainous landing areas where most current landing technologies aren't able.

**U.S. Marine Corps Installation Access Enterprise Solution Project - \$4,670,000**

**Eid Passport Inc., Portland, OR**

The Project thus will allow for the cost-efficient and effective management of all persons requiring access to secure USMC installations. For purpose of this request, the Project is designed for deployment at U.S. Marine Corps MCI East and MCI West installations where the Program is in operation. UMC Enterprise Installation Access Control Solution Project (The Project) is a cost-effective and operationally efficient enterprise installation access control solution that manages the identities and access privileges of uniform military personnel, DoD civilian employees, military dependants and retirees, certain contractors and other individuals who possess DoD-issued CAC and Teslin credentials and who are authorized to access secure DoD installations. The Project will provide security personnel at 14 USMC installations the capability to scan, validate and

authenticate credentials and the identities of individuals presenting them, against a DoD authoritative database. Those database checks will also determine access privileges to specific DoD installations; identify personnel presenting expired or invalid CAC and Teslin credentials; and reveal other factors that may disqualify personnel for unescorted access onto secure installations. At those installations where the USMC elects, the Project also will provide for enhancement of the enrollment and background screening process for vendors participating in the RAPIDGate Program, through the capture and submission of fingerprints to the FBI for a Criminal History Record Information (CHRI) inquiry. For persons who do not hold a CAC, Teslin or other approved DoD credential(s), but who require infrequent access to DoD installations, the Project will provide the ability for security personnel at ACPs, and when appropriate Visitor Centers and Pass & ID facilities, the ability to scan, validate and authenticate state-issued driver's licenses and other government-issued credentials against "no-entry and debarment lists" and other databases. This process can identify suspected terrorists, convicted felons, sexual predators, individuals with outstanding warrants and other factors that may disqualify persons from unescorted access onto secure installations.

### **SmartData SOCOM Small UAV Integration - \$4,480,000**

#### **Digimarc, Beaverton, OR**

U.S. Special Operations Command (SOCOM) is in need of critical equipment and technologies that provide Special Operations Forces (SOF) with situational intelligence by quickly integrating leading-edge technologies that close existing capability gaps. Special Operations Forces are comprised of small groups of soldiers that operate somewhat autonomously from larger troop actions. SOFs travel light and are highly mobile and agile. Consequently, the amount of gear these forces carry is limited and light weight. One of SOCOM's current requirements is developing small UAVs with real-time mapping and geospatial linkage capabilities. Today, small UAVs are unable to link to the soldier's mapping application or require significant processing which consumes excessive battery power rendering the device useless in an unacceptable short period of time. Additionally, the labor intensive demands to derive actionable intelligence are unreasonable requirements for an agile fighting force. As a result of this capability gap, forces are reduced to use their instincts and best judgment to determine the precise location of the raw video feeds coming back. The SmartData program managed by Army Night Vision and Electronics Sensor Directorate has

demonstrated that geospatial intelligence can be incorporated, real time, into live video shot by a UAV through the use of digital watermarking. SOCOM and Army Research Lab (ARL) have seen live demonstration test flights of a prototype SmartData system and wish to see the program integrated into UAVs that are currently flown in theater, as well as UAVs that are being tested for deployments in theater. The SmartData SOCOM Small UAV Integration program will work with UAVs and receiver platforms that SOCOM and ARL designate for operational testing. Digimarc will adapt SmartData technologies for integration into the proprietary networks for UAVs and receivers, make necessary modifications for payload and power consumption limitations, as well as run operational test flights with SOCOM and ARL. Additionally, the company will provide system training and technical support throughout the program. Moving the program into operational rollout and applying it to programs of record will complete the cycle of testing the capability's technical readiness. The next logical step is to apply SmartData to operational communities in need of accurate, reliable data to drive safety and success for Special Operations Forces and other warfighters.

**Controlled Humidity Protection for Oregon ANG 116th Air Control Squadron Equipment and Facilities - \$2,700,000**

**Oregon Air National Guard, Salem, OR**

Controlled Humidity Protection (CHP) dramatically reduces or eliminates corrosion in critical electronic components in 116th Air Control Squadron (ACS) equipment by sustaining relative humidity levels below 50% in OR ANG facilities that house 116th ACS testing, maintenance, and vehicles. Payback from CHP is at least 9:1, cutting costs while increasing readiness. Please see [www.logis-tech.com](http://www.logis-tech.com) for full system details and successes in various applications.

**F-15 Radar Warning Receiver (RWR) / Eagle Passive and Active Warning and Survivability System (EPAWSS) - \$10,000,000**

**The Oregon Military Department, Salem, OR**

This project provides money for research & development, as well as procurement of F-15 RWR and EPAWSS. The F-15 currently employs a 30-year old RWR that is unable to provide adequate threat warning against many current and emerging radar systems. To ensure survivability and air superiority, the F-15 requires an advanced RWR / EPAWSS that can quickly and accurately detect, locate and identify current and emerging threat systems.

### **High Altitude Shuttle System (HASS) - \$5,000,000**

#### **GSSL, Inc. doing business as Near Space Corporation, Tillamook, OR**

HASS is an affordable, integrated, high altitude (65-100kft) shuttle system that provides persistent battle space coverage using NSC's revolutionary tactical balloon and autonomous payload return vehicle technologies. With increasing focus on Afghanistan, there will be new challenges for our troops and their ability to communicate effectively. Specifically, troops comprised of small units located in highly complex natural terrain currently need the ability to maintain situational awareness enabled by reliable communications. The rugged terrain of Afghanistan reduces our troop's ability to use traditional line of sight communication systems as well as their ability to fly lower tier UAV's. A new solution is essential and among the candidate technologies, HASS is one of the most promising near term options. The ability to provide focused communications, imaging, and signal intelligence from a highly covert yet accessible platform can be a significant combat multiplier. The additional capability to launch and recover these high altitude assets from distances outside the main operational area reduces the ability of the threat to determine our intent and thus thwart our efforts. These same capabilities would make HASS an invaluable tool for supporting first responders in dealing with natural and man made disasters that desperately need extended communications and situational awareness to save lives. The purpose of this request is to mature the HASS technology so it can be quickly deployed in support of troops in Iraq and Afghanistan.

### **F-15 Digital Video Recorder (DVR) - \$7,000,000**

#### **The Oregon Military Department, Salem, OR**

This project provides money for upgrading ANG F-15 aircraft with Digital Video Recorder. Reliable recorders are absolutely necessary for training and for recording real world events - for both homeland defense and contingency operations. Current 8mm recorders are becoming less reliable and more difficult to maintain. A new, more reliable recorder is required to optimize training and debrief capability.

### **F-15 BOL Upgrade - \$29,210,000**

#### **The Oregon Military Department, Salem, OR**

This project provides money for upgrading ANG F-15 aircraft with the BOL countermeasures system. This system greatly enhances the survivability of the F-

15 against current and emerging threat systems. The pilot vehicle interface (PVI) has already been purchased and will be fielded in the next release of F-15 avionics suite software (Suite 6).

**F-15 Beyond Line of Sight (BLOS) Secure Communication - \$56,000,000**  
**The Oregon Military Department, Salem, OR**

This project procures 140 BLOS Secure Communication systems for ANG F-15 aircraft. Current F-15 radio communications are limited to line-of-sight. F-15s conducting Air Sovereignty Alert missions often encounter situations in which they cannot communicate with national command and control, due to radio line-of-sight limitations. A secure BLOS communication system is needed to ensure that F-15 pilots can communicate with national command and control.

**Controlled Humidity Protection for Oregon ANG F-15s - \$3,400,000 Oregon Air National Guard, Salem, OR**

Controlled Humidity Protection (CHP) dramatically reduces or eliminates corrosion in critical avionics and electronic components in F-15 aircraft by sustaining relative humidity levels below 50% in critical areas within the F-15. Payback from CHP is at least 9:1, cutting costs while increasing readiness. CHP is operational with the Hawaii ANG F-15s, yielding a 17:1 return on the investment. Please see [www.logis-tech.com](http://www.logis-tech.com) for full system details and successes in various industries.

**Controlled Humidity Protection for Oregon ANG Base - \$2,600,000**  
**Oregon Air National Guard, Salem, OR**

Controlled Humidity Protection (CHP) dramatically reduces or eliminates corrosion in critical facilities and equipment used to support F-15 aircraft based at Portland ANGB. CHP equipment will sustain relative humidity levels below 50% in OR ANG facilities that house ground support, test, and munitions equipment and electronics, thereby reducing maintenance costs and enhancing readiness. CHP has been used by the Army National Guard for 10 years with a payback of at least 9:1. Please see [www.logis-tech.com](http://www.logis-tech.com) for full system details and successes in various applications.

**F-15 Active Electronically Scanned Array (AESA) radar - \$62,000,000**  
**The Oregon Military Department, Salem, OR**

This project procures Active Electronically Scanned Array (AESA) radar systems for

ANG F-15 aircraft. AESA far surpasses the current F-15 radar (the mechanically scanned APG-63 V0) in detection, tracking and engagement capabilities, and also provides improved reliability and maintainability. AESA provides next-generation capability to ANG F-15s - critical for homeland defense in order to counter asymmetric threats, such as cruise missiles and unmanned aerial vehicles. Additionally, AESA is needed to counter emerging air threats in support of theater OPLANS.

**Coupled Integration of Communications, Health Monitoring and Chem. Bio Threat Stopping Technology for Warfighters - \$3,125,000**  
**High Impact Technology, Salem, OR**

Successful technology development in this program will provide the US military and first responders with a domestic source of a lightweight, inexpensive self-decontaminating breathable garments capable of defeating chemical and biological threats while monitoring both the combat environment as well as the wearer's physiological status and enable additional technology enhancements without the logistics interface burden. The suit architecture integrates protection, detection, interconnectivity and communication into a collective protection garment. The technology development for sensitivity (threshold detection level), detection response time and temperature range will adhere to the US Department of Defense requirements for a Joint Chemical Agent Detector (JCAD). The development of industrial protective equipment maintaining the defeat agents to combat the threat agent in order to outfit US Military, First Responders and the general public will be managed through High Impact Technology LLC (HIT) who provides engineered solutions to military and commercial customers. Their multidisciplinary team is skilled in engineering, program management, production, and business operations. HIT will serve as the ensemble integrator, utilizing the most advanced chemical and biological protective fabrics coordinated with electronic textile interconnectivity to produce a comfortable, protective coupled integrated ensemble maintaining physiological monitoring and reporting with additional communication and threat detection capabilities built in. High Impact Technology (HIT) will focus on the design, interconnectivity and manufacture of integrated sensing and monitoring systems within the garment using QinetiQ, North America (Q-NA), protective fabrics and the e-textile components. At the conclusion of the program, HIT will be prepared to fully respond to national emergencies by producing fully integrated chemical and biological protective clothing that is also ready to integrate all communications

devices and physiologic monitoring.

**Assessment of Alternative Energy for Aircraft Ground Equipment (AGE) - \$4,000,000**

**Lektro, Inc., Warrenton, OR**

Project funding is requested to conduct an assessment of alternatives to diesel and gasoline powered aviation tugs and ground positioning units, including the integration of hydrogen powered proton exchange membrane (PEM) fuel cells into aviation tugs. The current fleet of aviation ground equipment is powered predominately by diesel and gasoline. These tugs use cumbersome tow bars to position aircraft on the flight light line. Readiness is undermined through their large logistical footprint. DOD needs ground equipment innovation to sustain readiness while under continuing environmental regulatory pressure. An examination of alternative fuel sources for aviation tugs and aircraft ground equipment (AGE) is warranted in order to decrease emissions, enhance safety, and reduce logistics footprint. The requested \$4M in funding will be used to assess new power technology applied to AGE, and field and integrate hydrogen-powered PEM fuel cell into an existing diesel powered aircraft tow tugs. Air Force RDT&E Program (PE 0708611F Support Systems Development) will resource this effort. This program is executed by the U.S. Air Force Advanced Power Technology Office (APTO) at Robbins Air Force Base, Georgia. APTO leads and manages the integration of advanced power and alternative energy technologies into ground support equipment and vehicles.

**Project Carriage (UH-60, R60 Wildland Fire Suppression Tank) - \$50,648,000**

**Recoil Suppression Systems, LLC, Merlin, OR**

Recoil R60 (900 gallon wildland fire suppression fixed belly tank) for the UH-60A, L & M Blackhawk helicopter. National Guard Bureau requires 150 tanks to standardize Army National Guard Aviation equipment response to wildland fires and Katrina like events for protection of life, property, resource preservation and Homeland security purposes.

**WaterSentinel; Safe Water Anywhere, Oregon - (amount not given)**

**ICx Technologies, Grants Pass, OR**

The WaterSentinel - Safe Water Anywhere program will enhance the capability of users to monitor water used for drinking or industrial processing for hazardous biological and chemical content. Real time monitoring of drinking water is

currently a costly and time consuming process requiring reagents, other consumables, and on-site laboratory capabilities. Executing the program as requested will:

- Provide users with a low-cost sensor of biological and chemical contaminants common to drinking and industrial process water
- An early warning system of potential terrorist threats to municipal water systems, and
- Provide users with prototype sensors ready for field deployment.

**Treatment of Battlefield Spine and Burn Injuries by Enabling Innate Healing - \$4,500,000**

**Oregon Biomedical Engineering Institute, Portland, OR**

Funds are requested for two distinct lines of research intended to improve outcomes from two of the most devastating injuries suffered by troops in combat as well as civilians -- acute spinal injuries which lead to paralysis, and severe burns which result in formation of inflexible scar tissue. It is believed that treatment for both of these injuries can be improved dramatically by enhancing the body's innate healing ability.

**Helping Our Heroes: Preventing Suicide Among Oregon Soldiers and Providing Support to Military Families - \$1,200,000**

**Oregon Partnership, Portland, OR**

"Helping Our Heroes" addresses the escalating occurrence of suicide and addiction among returning soldiers and veterans, and the stress it causes their families. The "Helping Our Heroes" project will create a dedicated Oregon Line at OP's LifeLine Call Center for returning soldiers and their families dealing with mental health, suicide, and alcohol and drug problems. Providing hands-on support to military children and families prior to, during, and after the deployment of a parent or loved one.

**Northwest Manufacturing Initiative - \$2,800,000**

**Manufacturing 21 Coalition, Portland, OR**

The Northwest Manufacturing Initiative is a unique regional effort. Its purpose is to improve the performance of manufacturing companies and the products they create as part of the defense logistics pipeline. The NMI represents the combined efforts of over 100 companies and five participating research institutions across the region. The goal of NMI is to meet the advanced product needs of the US



Department of Defense by improving the capacity of companies of all sizes to acquire and apply innovations to produce superior high value products and components. NMI companies are seeking to accomplish this through selective investments in participating university partners, information systems, and workforce training. This is part of a long-term investment strategy designed by industry leaders to concentrate federal, state, public and private resources to serve the needs of the Department of Defense by building the capacity of an entire region's manufacturing cluster to respond to immediate and long term national needs. The areas targeted for investment in this request are:

- Weld Surface Engineering technologies for repair, optimization, and life cycle enhancement of life limiting components in defense systems.
- Manufacturability of metal matrix composite materials, including the impact of tool wear, in drilling of composite/metal stacks.
- Energy efficiency/savings technologies designed to reduce costs in the manufacturing process.
- Technical innovation leading to the further development and application of friction stir welding for materials, in particular used in aerospace.
- Develop and individualize new approaches to improved supply chain management and the greening of supply chain systems for defense applications.
- Expand the reach of this program to even more manufacturers in the Pacific Northwest.
- Upgrade skills of the defense workforce to support the implementation and integration of new applied technologies and processes in the manufacturing environment.

**Portable Ultrasound Finger Probe - \$4,100,000**

**Blacktoe Medical, Inc., Portland, OR**

Blacktoe Medical, working with the Army Medical Research and Materiel Command has developed proof-of-concept prototypes, which would allow diagnostic images to be viewed on the frontline, quickly and accurately. This request provides for additional development efforts that would allow the probes to meet military specifications for placing central lines for resuscitation, cleansing wounds against infection, imaging deeply imbedded foreign objects, identifying sources of internal bleeding and blood pooling, and aiding in vital signs monitoring during crucial evacuation of wounded service members. Funding will also allow clinical testing of prototype units as the final step for fielding the

technology. Funds would be used for labor, materials, equipment, and travel.

**F-16C (ANG) - Improved Voice/Data Communications (ARC-210) - \$10,000,000  
Rockwell Collins, Inc., Portland, OR**

The Air National Guard (ANG) F-16C fighter wing (FW) aircraft communications suite is currently being upgraded with an ARC-210 radio that provides an improved, Secure Line-of-Sight (SLOS) communications capability with ground forces and Beyond Line-of-Sight (BLOS) satellite communications capability. Additionally, a second ARC-210 radio is required in the suite in order for the pilot to conduct simultaneous SLOS and BLOS communications. If this capability is unfunded, the ANG F-16C aircraft will be unable to conduct simultaneous time sensitive, mission critical communications with ground units, C2 agencies in support of homeland defense, and in-theater operations. The ARC-210 radio is a standard multiband/multimode radio which continues to be installed on a multitude of DoD aircraft. It is flexible enough to satisfy both SLOS and BLOS capability with slight modifications to the aircraft. The ANG has identified the SLOS and BLOS capability for its F-16C "must do" Critical Combat Capabilities List in its FY10 Weapons Systems Modernization Requirements Document. The ANG will benefit from life cycle cost savings in terms of training, maintainability and supportability because the ARC-210 radio is widely proliferated within DoD. These funds will be used to purchase ARC 210 radios for all 17 ANG F-16C FWs in the U.S. (approx 200 aircraft would receive 1 radio per at a cost of \$50,000 procured and installed).

**Casualty Evacuation Safety and Securing Upgrade - \$3,000,000  
Skedco Inc., Tualatin, OR**

Funds provided will be used to procure CASEVAC conversion kits which are designed and constructed by Skedco, Inc. The CASEVAC Evacuation Safety and Securing upgrade (or Conversion Kit) provides all necessary components for an "aircraft of opportunity" to carry and safely secure one approved military litter to the floor of any cargo or utility aircraft, safely secure the casualty to the litter IAW doctrine, provide environmental protection to the casualty and identify and mark the casualty and pick-up zone (PZ). Since there are a limited number of dedicated Medical Evacuations (MEDEVAC) aircraft, each cargo or utility helicopter designed to transport combat troops or equipment onto the battlefield may be regarded as a potential platform to transport combat casualties off the battlefield to a higher level of Combat Health Support (CHS). This can be accomplished by ensuring that

each helicopter designed to carry combat troops includes the organic capability to safely secure one approved military litter, whether it be a NATO standard pole litter or a SKED stretcher, to the floor of the vehicle using rated D-ring type attachment points similar to those that are standard on the floors of cargo or utility fixed and rotary wing aircraft. The recommended basis of issue for the CASEVAC conversion kit is two per cargo helicopter (CH/MH 46, 47 and 53) and one per utility helicopter (UH/MH 1 and 60).

### **Oregon National Guard Reintegration Program - \$350,000**

#### **Oregon National Guard Reintegration Program**

Purpose of the Oregon National Guard Reintegration Program is to provide a continuum of support for service and family members throughout the deployment cycle by organization facilitation, and conducting of "off site" events. These events serve to educate the warriors and their families on social service issues (i.e. employment, healthcare, etc.).

### **Future Medical Shelter System (FMSS) - \$9.5 million**

#### **Mobile Medical International Corporation (MMIC), St. Johnsbury, Vermont**

Mobile Medical International Corporation (MMIC), requests a \$9.5 million plus up for Low Rate Initial Production (LRIP) of seven to eight mobile field hospitals, called the 21st Century Military Hospital System (21CMHS), manufactured by Mobile Medical International Corporation (MMIC) of St. Johnsbury, Vermont, for the Army's Future Medical Shelter System (FMSS) program. This funding will support field testing in theater and sustain forward hospital operations. A portion of this funding will also be used to produce two to four smaller shelter solutions, called the Mobile Single Pallet Unit (MSPU). Silver Eagle Manufacturing Company of Portland, Oregon, will design and manufacture the two-wheeled Light Tactical Trailer that will house the shelter component of the MSPU. The Light Tactical Trailer is expected to comprise about 5% of the total cost of this LRIP. Accordingly, approval of the full \$9.5 million LRIP would yield approximately \$475,000.00 in goods and services provided by Silver Eagle Manufacturing Company of Portland, OR.

### **UH-60 MEDEVAC Thermal Imaging Upgrades - \$8 million**

#### **FLIR Systems, Inc., Wilsonville, Clackamas County, Oregon**

The Army is pursuing product improvements to include thermal imaging systems on UH-60 aircraft to achieve a standard fleet configuration. The additional sensors

and extended optics of this new configuration will permit aircrews performing MEDEVAC missions to more effectively detect and identify targets and/or survivors, significantly improve flight safety and provide critical intelligence for the aircrew to evaluate the situation prior to arriving on the scene. These upgrades will provide an electro-optical/infrared (EO/IR) suite with the latest hardware and software enhancements to safely and successfully accomplish the mission in both domestic and combat scenarios during the day, at night and in reduced visibility conditions.

**U.S. Navy Shipboard Protection System (SPS) - Amount: "Support the President's Budget Request"**

**FLIR Systems, Inc., Wilsonville, Clackamas County, Oregon**

The U.S. Navy has initiated a program to deliver an integrated suite of thermal imaging equipment designed to allow the crew to successfully complete its mission profile safely and effectively by detecting, identifying and countering asymmetric threats. The use of an electro-optical/infrared (EO/IR) system on these craft reduces risk to combat personnel and provides a surveillance and capability at night and in conditions of obscured or reduced visibility. The EO/IR systems are also valuable in a ship's normal underway operations independent from those functions described as part of the SPS system as video is available to underway watch standers for situational awareness and safe navigation. The surface surveillance system integrates EO/IR sensors and radar into a common tactical surveillance system. These systems enable the ships' crews to detect threats that might otherwise remain undetected. The use of an EO/IR system enhances the crew's ability to operate in conditions of obscured or reduced visibility or in total darkness, providing greater force protection.

**U.S. Marine Corps UH-1N Helicopter Navigation Thermal Imaging Systems (NTIS) - \$5 million**

**FLIR Systems, Inc., Wilsonville, Clackamas County, Oregon**

The U.S. Marine Corps is conducting an upgrade program to provide additional capability and significantly improve the performance of the AN/AAQ-22 Navigation Thermal Imaging Systems (NTIS) currently in use on their fleet of UH-1N helicopters. This upgrade permits USMC aircrews to detect, recognize, identify and designate targets for precision-guided munitions.

**Listen While Jamming Software Radio - IED Detection System - \$700,000**

**Maxtek Components Corporation, Beaverton, Washington County, Oregon**

In collaboration with a team of companies across the United States, this request will fund a portion of the development and demonstration costs of a listen-while-jamming system, using a combination of existing digital receiver technology and appropriate computer interconnect technology to provide a SiGe based radio receiver to enable validation of technical approaches and to enable rapid software development. A Listen-while-jamming system could permit location and identification of Improvised Explosive Devices (IEDs) and other threats, while preventing their detonation.