United States Senate

WASHINGTON, DC 20510

April 9, 2010

The Honorable Daniel Inouye
Chairman
Subcommittee on Defense
Senate Appropriations Committee
Senate Dirksen Office Building, Room 122
Washington, DC 20510

The Honorable Thad Cochran
Vice Chairman
Subcommittee on Defense
Senate Appropriations Committee
Senate Dirksen Office Building, Room 122
Washington, DC 20510

Dear Senator Inouye and Senator Cochran:

As the Committee begins its consideration of the Fiscal Year 2011 Defense Appropriations Bill, we are writing to request support for the following programs. **Please note these projects are listed in no particular order.**

Item Name: Abrams Virtual Operations Trainers (AVOT)
Request: $2,000,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various
Purpose/Project Description:
AVOT Trainers will replace obsolete Abrams Tank Crew Trainers that were fielded over the past two decades. The introduction of Abrams Virtual Operations Trainers (AVOT) will allow the Guard's soldiers to conduct required training on their newly fielded M1A1 Abrams AIM SA Tanks. In addition to providing training on the new tank, these AVOT trainers will include the latest gunnery training tasks and gunnery exercises that are required for Abrams tank crews to become proficient and combat ready. Without funding for AVOT trainers, the Guard's Abrams Tank Crews will have no crew training simulation systems for their newly fielded M1A1 Abrams AIM SA tanks.

Item Name: Advanced Sensor Gimbal
Request: $2,000,000
Account: Research & Development, Navy
Line: 26
PE: 0603207N
Language: N/A
Intended Recipient: Cloud Cap Technology
Address (City, State): Hood River, Oregon
Purpose/Project Description: The project is to perform research and development of a smaller, lighter weight, higher performing gimbal serving defense needs. The advancement of unmanned system technology has created ever-growing demands on day/night imaging performance. Though the reliability of unmanned systems has increased and the aircraft sizes have decreased,

there continues to exist an unfulfilled requirement for a small, lightweight gimbal that can provide multisensor actionable intelligence from slant ranges of up to 1 mile during the day and night.

Currently, available gimbals have limited ability to meet the required cost, size and capability envelope. The few that do exist are either too large in size, too heavy, or do not have mature/sophisticated companion software tools and or user interfaces that meet multispectral imagery mission requirements. In general, most of what is in process and/or exists today is not applicable to the class of unmanned vehicles currently in development by most of the small UAS developers. This advanced sensor gimbal meets this shortfall and will provide enhanced capability to the warfighter.

Item Name: Amputee Skin Breakdown Research and Development
Request: $4,024,000
Account: Research & Development, Army
Line: 30
PE: 0603002A
Language: N/A
Intended Recipient: SAM Medical Products
Address (City, State): Tigard, Oregon, Seattle, Washington, Palo Alto, California
Purpose/Project Description: For the current conflicts in Afghanistan and Iraq, 7.4% of major limb injuries resulted in amputation. It is believed that there are close to 1,000 traumatic amputees from operations Iraqi Freedom and Enduring Freedom. Furthermore, non-traumatic amputations far outnumber traumatic amputations. For example, between 1989 and 1998, 70,200 lower limb amputations were performed at VHA facilities, primarily resulting from diabetic complications and atherosclerotic vascular disease.

SAM Medical currently produces a medical dressing with a unique gliding dome designed to reduce shear and friction at the wound site, which aids in the prevention and treatment of pressure ulcers (bedsores). This dressing would be especially beneficial to returning U.S. servicemembers with traumatic lower extremity amputations. Prostheses often cause pressure ulcers due to pressure, prosthesis pistoning and friction/rubbing at the user-residual limb interface.

Phase I of the project (design) will evaluate new polymeric dressing materials and incorporation of actives such as antimicrobials or wound healing factors. For Phase II, SAM Medical proposes to determine the effectiveness of the BursaMed dressing for the prevention of pressure ulcers formed at the prosthesis/tissue interface in the amputee population, as well as the prevention of recurrence of pressure ulcers at tissue sites previously affected by pressure ulcers but recently healed. An optional Phase III would bring the production and manufacturing capability required to produce the dressing in Oregon to SAM Medical's facilities.

Item Name: ANG's A-10 Improved Communications (ARC 210)
Request: $6,200,000
Account: Aircraft Procurement, Air Force
Line: 39

PE: N/A
Language: N/A
Intended Recipient: Rockwell Collins, Inc.
Address (City, State): Wilsonville, Oregon
Purpose/Project Description: Explanation/justification of request (in 250 words or less): The ANG A-10 communications suite has an ARC-210 multiband and multimode radio that provides Secure Line-of-Sight (SLOS) communications with ground forces and Beyond Line-of-Sight (BLOS) communications with command and control agencies. An A-10 pilot, with only one ARC-210 radio, must choose between SLOS or BLOS communications because the radio cannot provide both capabilities simultaneously, which has proven to be a necessity in combat operations. A 2nd ARC-210 radio is required in order for the pilot to conduct simultaneous time sensitive SLOS and BLOS communications, as well as aid in other mission requirements to include: Forward Air Controller-Airborne, Combat Search and Rescue and Close Air Support. The ANG has identified a simultaneous SLOS and BLOS capability for A-10s as a "Critical Combat Capability" in its 2011 Weapons Systems Modernization Requirements document. The ARC-210 radio is a standard multiband/mode 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.

Item Name: ARL-ONAMI Center for Nanoarchitectures for Enhanced Performance
Request: $2,500,000
Account: Research & Development, Air Force
Line: 2
PE: 0601103F
Language: N/A
Intended Recipient: University of Oregon (Eugene), Oregon State University (Corvallis), Portland State University (Portland), Oregon Health and Science University (Portland), Oregon Nanoscience and Microtechnologies Institute (Corvallis)
Address (City, State): Competitive among above listed entities
Purpose/Project Description: The ARL-ONAMI nanotechnology center is a collaborative grant agreement seeking 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-to-lab collaborations and student internship/post-doc assignments at ARL have been increasingly emphasized as a means of assuring technology transitions as well as a supply of U.S. Citizen talent for ARL-SEDD.

UO, OSU, PSU, OHSU and ONAMI are requesting funds for four general areas of activity: power and energy management and generation, thermal management, nanoelectronics, electromagnetic structures, which are now being augmented by a more specific focus on areas of interest identified by ARL scientists.

Item Name: Assessment of Alternative Energy for Aircraft Ground Equipment (AGE)
Request: $4,000,000
Account: Research & Development, Air Force

Line: 235
PE: 0708611F
Language: N/A
Intended Recipient: Lektro, Inc.
Address (City, State): Warrenton, Oregon
Purpose/Project Description: Project funding is requested to conduct an assessment of alternatives to diesel and gasoline powered aviation tugs and aviation ground equipment (AGE), including the integration of hydrogen proton exchange membrane (PEM) fuel cells into existing aviation tugs and AGE.

The current fleet of AGE is powered predominately by diesel and gasoline. These tugs use cumbersome tow bars to pull U.S. Air Force fighters and bombers on the flight light line, undermining readiness through their large logistical footprint. As DOD strives to meet the global threats of the decades ahead it will do so under continuing environmental regulatory pressure. An innovative examination of alternative fuel sources for aviation tugs and aircraft ground equipment (AGE) is warranted in order to decrease emissions and reduce the logistics footprint of such equipment.

The requested $4M in funding would be used to assess new power technology applied to AGE, and integrate hydrogen-powered PEM fuel cells into existing conventional powered aircraft tow tugs. Funds within the AF RDT&E Program (PE 0708611F Support Systems Development) would be allocated for this effort. This program will be executed by the Air Force Advanced Power Technology Office (APTO) at Warner Robbins Logistics Center at Robbins Air Force Base, Georgia. APTO leads and manages the Air Force role in integrating advanced power and alternative energy technologies into ground support equipment and vehicles.

Item Name: Bradley Virtual Operations Trainers (BVOT)
Request: $1,500,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Marion County, Oregon
Purpose/Project Description: Bradley Vehicle Operations Trainers (BVOT) will replace the obsolete Bradley Vehicle Crew Trainers that were fielded over the past two decades. The introduction of Bradley Virtual Operations Trainers (BVOT) will allow the Guard's soldiers to conduct required training on their newly fielded M2A2 Bradley ODS SA vehicles. In addition to providing training on the new Bradley vehicle, these BVOT trainers will include the latest gunnery training tasks and gunnery exercises that are required for Bradley Fighting Vehicle crews to become proficient and combat ready. Without funding for BVOT trainers, the Guard's Bradley Fighting Vehicle Crews will have no crew training simulation systems for their newly fielded M2A2 Bradley ODS SA vehicles.

Item Name: Brain Safety Net
Request: $3,750,000

Account: Research & Development, Army
Line: 30
PE: 0603002A
Language: N/A
Intended Recipient: University of Oregon
Address (City, State): Eugene, Oregon
Purpose/Project Description: The University of Oregon will use funds to acquire a functional Magnetic Resonance Imaging (MRI) instrument and to continue its neuro-rehabilitation research program involving the application of high performance computing to analyze human brain activity. The University of Oregon proposal furthers multimodal advanced rehabilitation neuroimaging research using multimodal imaging and research to improve the science and health of civilians and veterans, targeting rehabilitation for both stroke and traumatic brain injury. The combination of instrumentation will put the University of Oregon among the first advanced multimodal (MRI-dEG) neuroimaging systems in the world collecting 256-channel EEG simultaneous with BOLD imaging and supported by a high performance dedicated computing cluster.

The project has the potential to improve the lives of those whose ability to effectively use a prosthetic device or manage the consequences of a traumatic brain injury means a higher quality of life and better opportunities for employment.

Item Name: Combined Arms Virtual Trainers (CAVT)
Request: $7,000,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various
Purpose/Project Description: Combined Arms Virtual Trainers (CAVT) has been developed as the next "leap ahead" technology that will allow Army National Guard trainers (both fielded and yet-to-be procured) to network together on a Combined Arms virtual battlefield. The CAVT operating system allows soldiers and units to "train as they will fight" – as Combined Arms Teams. The networking capability provided by CAVT will exponentially improve training with all effected battle simulators.

Item Name: Constant Look Operational Support for UGS Persistent Surveillance (CLOSE-UPS)
Request: $3,500,000
Account: Research & Development, Army
Line: 6
PE: 0602120A
Language: N/A
Intended Recipient: Ultra Prologic & Venture Ad Astra
Address (City, State): Wilsonville, Oregon
Purpose/Project Description: CLOSE-UPS will provide a wide field of view electric-optical

video capability packaged in a tactical, low probability of detection unattended ground system (UGS) to support the field assets who conduct operations against potential hostile elements in support of the Global War on Terror (GWOT). The system will allow for full, comprehensive situational awareness through the use of a spectrally filtered video background upon which other sensor, intelligence information or blue force information can be placed. Additional packaging will include a high resolution foveal camera designed for assisting facial recognition and other biometric information gathering. Additional video sensors and/or lenses can be utilized to enhance this capability such as low light Infrared (IR), polarized, or multispectral sensors which provide an increased assessment of the area.

Item Name: Controlled Humidity Protection for Oregon Air National Guard 142 Fighter Wing Equipment and Facilities
Request: $4,100,000
Account: Operation and Maintenance, Air Force
BA: 1 Air Operations
Sub-activity Group: 020
Intended Recipient: 142d Fighter Wing, Oregon Air National Guard
Address (City, State): Portland, Oregon
Purpose/Project Description: The cost of corrosion to the United States Air Force exceeds $1.1B annually, of which over $19M is attributed to F-15 airframes. Recognizing the significance of the impact of corrosion on the readiness of aviation units, the Air National Guard took proactive steps to test Controlled Humidity Protection technology and its potential benefits in terms of mission readiness and aircraft life-cycle support cost savings. With installation of CHP equipment, the Hawaii Air National Guard (HIANG) experienced a 31% annual reduction in F-15 line replaceable units (LRU) remove and replacements (R2 actions) and associated man-hours. Advanced F-15 aircraft of the 142d Fighter Wing assigned to Portland ANG base, Oregon, are continually subjected to an array of climatic conditions similar to Hawaii's environment ranging from salt-laden fog, snow, sleet and rain, constant ultraviolet rays, and high relative humidity. These conditions have devastating effects not only on aircraft structural integrity, but also on on-board avionics and electronics. Portland ANG Base is consistently exposed to the most prevalent component of the corrosion process – high relative humidity.

Likewise, aviation ground equipment (AGE) used to support F-15 operations normally is parked outside in various locations throughout the installation. Some overhead protection is provided to a limited number of pieces that are stored in tension fabric shelters; however, the equipment is still exposed to ambient conditions. Remaining pieces of AGE parked outside are constantly exposed to harsh ambient conditions already mentioned. Moreover, equipment is idle 90% of the time. These non-dedicated periods present the greatest opportunity for Controlled Humidity Protection applications.

Item Name: Dragon Runner Small Unmanned Ground Vehicle (DR SUGV)
Request: $6,000,000
Account: Other Procurement, Army
Line: 137
PE: N/A
Language: N/A

Intended Recipient: Oregon Army National Guard
Address (City, State): Marion County, Oregon
Purpose/Project Description: The Dragon Runner Small Unmanned Ground Vehicle (DR SUGV) will substantially increase the ability of both the dismounted and mounted soldier to conduct reconnaissance and surveillance in an urban environment, day or night, at a much reduced risk of sustaining casualties. It is small, lightweight and can be thrown onto rooftops, deployed in attic and crawl spaces, caves and other confined spaces. The DR SUGV is a man packable (21 lbs.), light-weight robot, which can be reconfigured in the field to perform multiple missions in minutes. DR SUGV may be configured with either tracks or wheels, servo cam or manipulator arm, is able to climb stairs and stays mobile in very tight spaces, and has on-board motion and light sensors.

Item Name: Forward Osmosis Beverage Generation
Request: $3,000,000
Account: Research & Development, Army
Line: 29
PE: 0603001A
Language: N/A
Intended Recipient: Hydration Technologies
Address (City, State): Albany, Oregon
Purpose/Project Description: This project will allow Combat Feeding Systems to field test the use of a forward osmosis personal fluid filtration technology with Special Operations Forces and demonstrate the use of the technology to relieve pressure on resupply efforts and provide units with tactical options not otherwise available. Forward osmosis is the only personal fluid filtration technology that can reliably work with the very cloudy, contaminated waters typically found in the current theaters of operations. With the technology, risks of dehydration and water borne illness are removed, resulting in improved unit health and force multiplication benefits.

Providing safe fluids for hydration is fundamental to combat nutrition. Unfortunately, unforgiving terrain, high elevations and the need for tactical secrecy challenge our ability to resupply forward deployed troops. Water is the heaviest and most difficult ration to resupply. This difficulty has exposed gaps in our tactical and logistical postures. The burden of carrying large amounts of water on long foot or mounted patrols limits the warfighters' ability to carry other mission critical supplies. More seriously, when water resupply is disrupted, missions can be jeopardized and soldier health put at risk. Because water is often the limiting factor in mission length, there is an interest in demonstrating the value of personal water filtration technologies.

Item Name: High Altitude Shuttle System (HASS)
Request: $5,000,000
Account: Research & Development, Army
Line: 56
PE: 0603308A
Language: N/A
Intended Recipient: GSSL, Inc. dba Near Space Corporation
Address (City, State): Tillamook, Oregon
Purpose/Project Description: The High Altitude Shuttle System (HASS) is an affordable,

integrated, high altitude (65-100kft) platform that can provide persistent battle space coverage using NSC's revolutionary tactical balloon and autonomous payload return vehicle technologies. The purpose of this request is to mature the HASS technology so it can be deployed quickly in support of troops in Iraq and Afghanistan.

With increasing focus on Afghanistan, there will be new challenges for U.S. 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 the troop's ability to use traditional line of sight communication systems as well as their ability to fly lower tier UAV's which are currently being deployed. 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. This becomes increasingly important with the intended draw down in troop strength. 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 U.S. intent and thus thwart these efforts.

These same capabilities make HASS an invaluable tool for supporting first responders in dealing with natural and manmade disasters who also desperately need extended communications and situational awareness to save lives.

Item Name: Host Based Security System US Army
Request: $10,000,000
Account: Operation and Maintenance, Army
BA: 1
Intended Recipient: McAfee, Inc.
Address (City, State): Santa Clara, CA
Purpose/Project Description: McAfee runs a Global Threat Intelligence Service out of Beaverton, OR, that ensures customers receive regular updates on global cyber threats. This project will help the teams in Oregon ensure products are developed to address the most up-to-date cyber threats. Further, this project will enlist the expertise of at least 10 more employees in Beaverton.

As the cyber threats posed to U.S. military networks become more frequent and sophisticated, it is increasingly important to provide attack defense, detection, and response to these threats from the host level. October 2007, JTF-GNO issued CTO 07-12, Deployment of the HBSS mandating deployment on DoD Unclassified Networks and the future deployment on classified systems. HBSS is an enterprise-wide automated, standardized tool that enhances end-point system security against internal and external threats capable of penetrating network defenses.

Working with key cyber security vendors, this project will develop and sustain computer host defense operations to utilize security tools already procured and deployed under the HBSS program by the US Army, and ensure integration with and furthering of the Army's Global Network Enterprise Construct.

HBSS will ensure the U.S. Army segment of the DoD Global Information Grid is protected from

those outside the system who monitor and attack DoD computer systems, including maintaining up-to-date protection, create asset baseline configurations, create specialized countermeasures, monitor a system's security and compliance status, detect rogue systems, and ensure baseline policies are in adherence.

Item Name: Information System Security
Request: $7,000,000
Account: Research & Development, Navy
Line: 196
PE: 0303140N
Language: N/A
Intended Recipient: McAfee, Inc.
Address (City, State): Santa Clara, California, Global
Purpose/Project Description: McAfee runs a Global Threat Intelligence Service out of Beaverton, OR, that ensures customers receive regular updates on global cyber threats. This project will help the scientific teams in Oregon ensure products are developed to address the most up-to-date cyber threats. Further, this project will enlist the expertise of at least 10 more employees in the Beaverton and will add 5 high level computer scientists, in the Navy.
An expanding range of threats are being used today to attack the Navy's Network The currently deployed Information Assurance Security Assist that protects the U.S. Navy's networks on the IT21, OneNET, as well as the Command and Control Systems, Computers, Communication, Intelligence, Surveillance, and Reconnaissance is several years overdue for a technical refresh. The system, thus, cannot continue to meet its security requirements. These cyber security systems protect all Navy assets, from battle groups, to seal teams, and CB's that are deployed. These security solutions enable the war fighter to communicate with his deployed colleagues and with headquarters in a secure manner by protecting against the full range of cyber threats, including BotNets and MalWare.

This technical refresh is necessary to meet the requirements of the U.S. Navy, as well as to fight the technical cyber threats that attack the network on a daily basis.

Item Name: Joint Threat Emitter for Juniper Training Range Complex
Request: $8,500,000
Account: Aircraft Procurement, Air Force
Line: 52
PE: N/A
Language: N/A
Intended Recipient: Oregon Air National Guard
Address (City, State): Klamath and Lake Counties, Oregon
Purpose/Project Description: This project would procure and install a Joint Threat Emitter (JTE) system in the Juniper Training Range Complex. The JTE will fill a critical missing link in the Guard's training programs by providing realistic surface threat training required in the F-15 flying syllabus for student pilots stationed in Klamath Falls, as well as for combat F-15 pilots stationed in Portland.

Kingsley Field, in Klamath Falls, Oregon is the training base for Active Duty and Air National

Guard pilots transitioning to the F-15 aircraft. Student pilots are required by the flying syllabus to react against surface threats in the simulator, and airborne when assets are available. The intent in Oregon is to make training as realistic as possible by adding a JTE in our Juniper Training Range Complex. A JTE will enable student pilots to fly against these lethal threats and become more combat ready, and combat survivable upon graduation from training. Additionally, the Guard's combat F-15 pilots stationed in Portland deploy regularly overseas, and the JTE can provide them the realistic training necessary to survive against surface threats which currently account for the largest number of aircraft losses in theater.

The JTE is a multi-threat, hi-fidelity, surface-to-air weapon simulator which is used to increase the level of realistic fighter and attack aircraft training. The JTE has the capability to generate six modern surface-to-air threats from one platform and adds an essential element to the Oregon National Guard's combat training capability. The new JTE also has the capability to integrate and simulate Infra Red (IR) Surface to Air Missile (SAM) Systems that are an increasing threat to the Guard's aircraft during low level flights, takeoffs, and landings.

Item Name: Launch Systems for Ultra-Small Satellites
Request: $2,104,312
Account: Research & Development, Air Force
Line: 10
PE: 0602203F
Language: N/A
Intended Recipient: Space Propulsion Group – NanoLaunch
Address (City, State): Hillsboro, Oregon
Purpose/Project Description:
Electronic miniaturization in the last decade has made nano-satellites (less than 100 lbs.) viable. However, no current propulsion systems can place them in low earth orbit (LEO) cost-effectively. In addition, there are no current launch systems that will dedicate the launching rocket to the time, place, altitude, and orbital inclination desired by a DOD customer for one such satellite. This system, when operational, proposes to cost 25% of currently available launch systems.

Nano-satellite arrays, as well as dedicated ISR satellites-on-demand can by launched by this system. The risk of loss in launching small satellites is lowered in such a system. Such emerging concepts as DARPA's "System F6" and "On Orbit Assembly" will be supported by this launch system capability. With proper funding and intense management, this LEO capability can become reality in 2015.

There has been a DOD statement of need for a dedicated launch system of small satellites since 2001, at least. This system addresses that need without punitively robbing funds from the development or procurement of larger launch systems. This project add-on keeps the development of this launch system on pace. It prevents a year of the development schedule from being lost.

DOD has a need for a dedicated, responsive, affordable, mobile, and indigenous system by which to launch nano-satellites. The object of this program is to meet that need.

Item Name: Light Tactical All Terrain Vehicle (LTATV) and Armor Systems Development
Request: $460,000
Account: Research & Development, Army
Line: 85
PE: 0604642A
Language: N/A
Intended Recipient: RP Advanced Mobile Systems LLC
Address (City, State): McMinnville, Oregon
Purpose/Project Description: Recognizing the unique mission criteria of today's mobilized warrior, RP Advanced Mobile Systems is developing the next generation of advanced Light Tactical All-Terrain Vehicles (LTATV) and Vehicle/Personnel Ballistic Protection Systems (Lancelot Shield Armor).

These mutual projects are intended to enhance mission performance by providing a family of high-performance armored light Ground Mobility Vehicles (GMV) platforms capable of specialized military functions. The armor systems are designed to supplement these functions by providing a highly effective ultra-lightweight 'shield' for the protection of the vehicle occupants.

Item Name: Light Tactical Trailer for Army Reserve
Request: $6,700,000
Account: Other Procurement, Army
Line: 1
PE: N/A
Language: N/A
Intended Recipient: Silver Eagle Manufacturing
Address (City, State): Portland, Oregon
Purpose/Project Description: The U.S. Army Reserve has identified the need for more Light Tactical Trailers (LTTs) for use by deploying units. The President's Budget Request includes $25.5 million for LTTs. The additional Army Reserve requirement of 769 trailers is not fully funded by the President's Budget Request. LTTs are in constant use by the Army and Marine Corps in both Iraq and Afghanistan. These trailers provide critical extra cargo capacity when towed behind High Mobility Multi-Purpose Wheeled Vehicles (HMMWVs) and other prime movers. The Army Reserve has identified a currently unfunded priority for an additional 769 LTTs for use by deploying units. This request would fully fund the additional, and unfunded, requirement of the Army Reserve for their deploying units. When fully loaded with soldiers or marines wearing body armor and carrying personal weapons and communications gear, the currently configured HMMWV offers little internal space for carrying necessary supplies. When up-armored for critical force protection purposes the added weight further reduces the HMMWV's capacity for cargo. In this situation the use of the LTT maintains the ability of the HMMWV to meet its mission while offering the greatest protection to the service members. The LTT is towed behind the HMMWV providing space to bring critical supplies such as ammunition, drinking water, and generators to the fight and taking the additional weight off the primary vehicle.

Item Name: MEMS Ink Jet Fuel Injection
Request: $1,000,000
Account: Research & Development, Air Force
Line: 144
PE: 0207268F
Language: N/A
Intended Recipient: Northwest UAV Propulsion Systems
Address (City, State): McMinnville, Oregon
Purpose/Project Description: Funds would help to develop a Michroelectric Mechanical Systems (MEMS) fuel injection system/micro-nozzle fuel atomizer at the Microproducts Breakthrough Institute using low cost, laminated architecture. This will enable small gas engines to burn various logistical fuels like JP5 & JP8 military grade aircraft fuels as well as Bio-Diesel. This will also develop a fuel system that enables small gas engines burn more efficiently resulting in burning less fuel and emitting fewer greenhouse gasses. This will help reduce fuel consumption of UAVs and enable these military assets greater capability for the war-fighter (longer on-station time, increased reliability and up-time).

Item Name: Metals Affordability Initiative (MAI)
Request: $10,000,000
Account: Research & Development, Air Force
Line: 15
PE: 0603112F
Language: N/A
Intended Recipient: Pratt & Whitney
Address (City, State): Competitive and Various
Purpose/Project Description: There are currently 11 active Industry led near term projects with identified insertion points and a return on the government investment. The requested FY11 funding of $10-million will allow initiation of 4 new industry led high-impact programs, as well as sustaining ongoing programs. New industry-led programs will be directed at improvement in total systems cost; energy management /fuel savings; "green" (environmental impact); and access to space.

Item Name: Mine Resistant Ambush Protected Vehicle Virtual Trainers (MRAP-VVT)
Request: $6,000,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Marion County, Oregon
Purpose/Project Description: During FY11, the Oregon National Guard must field a Mine Resistant Ambush Protected Vehicle Virtual Trainer (MRAP-VVT) in order to train soldiers to operate this new family of Army vehicles that is being fielded and deployed in support of Current Operations in Iraq and Afghanistan. MRAP-VVT allow soldiers who have limited or no

opportunity to conduct training on the actual vehicles - to learn to operate MRAP vehicles on "Virtual Battlefields" that are geo-specifically accurate for major areas of Iraq and Afghanistan. Without funding for this program, Guard soldiers will continue to have no training devices that allow them to learn to operate MRAP vehicles over the streets and terrain that they will encounter when deployed for operations.

Item Name: Multi Fuel- High Power Efficient Engine
Request: $2,500,000
Account: Research & Development, Army
Line: 18
PE: 0602705A
Language: N/A
Intended Recipient: WaveTech Engines
Address (City, State): Redmond, Oregon
Purpose/Project Description: The Army has established its Energy Security Implementation Strategy. It has numerous goals and its energy security mission is to "make energy a consideration for all Army activities to reduce demand, increase efficiency, seek alternate sources and create a culture of energy accountability while sustaining or enhancing operational capabilities." The two main goals of the program include: Reducing energy consumption and increased efficiency across platforms and facilities. These goals should be met but not at the expense of a reduction in operational capabilities, or the ability of the Army to carry out its primary mission.

The Multi-Fuel High Power Fuel Efficient Engine can be used to run the generators which use 22% of the fuel for contingencies operations. This unique engine does not have a crankshaft. It is estimated it can decrease fuel usage of a current internal combustion engine by up to 50%. The technological factors leading to the decrease in fuel usage includes, a programmable non-typical piston motion which allows for reduced knock, higher compression ratios and reduced thermodynamic losses; reduced friction due to fewer pistons; and a variable compression ratio allowing for leaner air fuel ratios. The engine will be much smaller than today's current engine size while delivering equivalent or greater power with less fuel consumption. This engine has fewer moving parts and provides easier maintenance availability. FY 11 funds will be used to continue the research and development of this engine as well as building a prototype for testing and evaluation by the Army.

Item Name: Multi-function Rifle-mounted Eyesafe Laser Range Finder
Request: $3,800,000
Account: Research & Development, Army
Line: 19
PE: 0602709A
Language: N/A
Intended Recipient: nLIGHT Corporation
Address (City, State): Hillsboro, Oregon and Vancouver, Washington
Purpose/Project Description: The Army recently fielded the M320, an improved grenade launcher that is replacing the Vietnam era M203. The M320 has numerous advantages, but its accompanying laser rangefinder and ballistics sighting system struggles with lack of integration

(two devices weigh more, extra batteries, extra bulk) and limited performance (at night, in smoke/fog, and over longer distances).

In response, the Army conducted a fair and open competition for a higher performance, integrated laser rangefinder with ballistic sighting functionality known as the Grenadier Laser Rangefinder (GLRF). nLIGHT was ranked as the overall highest rated product in the final down-select.

There are three purposes to funding the purchase of GLRF. First, the Army wants to accelerate the production transfer of the GLRF to meet an urgent fielding need. More highly integrated GLRF units in the field faster is both a better use of taxpayer funds and provides the Army with a more effective operational tool. Second, through value engineering, this project will drive improvements in size, weight, performance, and cost. By improving cost, in particular, the Army estimates that approximately $75M in taxpayer funding can be saved. Third, the DOD has expressed a strong desire to leverage nLIGHT's GLRF technology into other programs. Most notably, the Army has specifically requested nLIGHT participate in the Small Tactical Optical Rifle Mounted micro-Laser Range Finder program (solitication number W91CRB10STORM). Re-use of the GLRF technology will meet future needs and is a highly efficient use of government funding.

Item Name: Multiple Configuration Medical Simulation Training System
Request: $1,500,000
Account: Research & Development, Army
Line: 38
PE: 0603015A
Language: N/A
Intended Recipient: Skedco
Address (City, State): Tualatin, Oregon
Purpose/Project Description: The Multiple Configuration Medical Simulation Training System (MCMSTS) is a completely compartmental training system consisting of individual anatomical components that can be added or subtracted as needed by the user. The training system is designed to be used as a stand-alone mannequin training device or can be worn by the trainer in conjunction with live casualty simulation. This capability will allow for seamless transition between live and mannequin simulation giving the user the versatility and durability necessary for training in the field. This system design will also conserve training dollars by giving the user everything they need to train Tactical Combat Casualty Care requirements in one piece of equipment. This design increases the realism of training by allowing users to substitute real people for mannequin casualties if desired. The Field Expedient Bleeding simulation System (FEBSS) will be integrated into both the mannequin and live casualty configuration.

Item Name: National Guard Critical Backup Power Fuel Cell Program
Request: $4,600,000
Account: National Guard and Reserve Equipment
Line: 2
Suggested Recipient: IdaTech, LLC
Suggested Location of Performance (major portion of the work): Various counties in Oregon
Purpose/Project Description: The Oregon Military Department (OMD) 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. Commercially-available fuel cell systems replace generators and batteries for power backup missions resulting in significantly reduced cost, a fraction of the maintenance, and no harmful environmental emissions. Fuel cell systems are a new technology for OMD applications and National Guard applications nationwide; thus, there is no practical experience history with their use for critical backup functions within OMD. The proposed project will enable real-world experience needed to prove operational, cost and environmental benefits of these power systems.

FY2011 funding is being requested to site and operate fuel cell systems at OMD Army and Air National Guard sites. Fifty Fuel Cell Power Plants will be installed and operated for the life of the plants. The plants will be fueled with commercially-available methanol and renewable biofuels. Fuel Cell technology is ideally suited for backup power missions in all applications and geographies. These power plants will be evaluated for military backup power applications wherein high availability for on-site service is a critical requirement. The project will release a Final Project Report wherein the experience history will be documented, and a cost-benefit analysis provided for potential broader implementation of these fuel cell systems in Oregon and throughout the U.S. National Guard (together, essentially a "How To" Manual).

Item Name: Northwest Manufacturing Initiative
Request: $2,550,000
Account: Research & Development, Defense Wide
Line: 245
PE: 0708011S
Language: N/A
Intended Recipient: Manufacturing 21 Coalition
Address (City, State): Oregon and SW Washington (primarily Clark County)
Purpose/Project Description: The Northwest Manufacturing Initiative 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:

- Advanced composite design, fabrication, and testing technologies and robotic edge breaking systems for aerospace applications;
- Additive surface engineering technologies for repair, optimization and product lifecycle enhancement for defense system components;

- Integration of automated, reconfigurable composite manufacturing systems for defense manufacturing.
- Lean, agile sustainable operations for supply chain management; and
- Incumbent workforce training grants to integrate new technologies and processes into the defense manufacturing environment.

The purpose of this project is to build significant new applied R&D capacities within partner academic institutions that are positioned to meet the technology needs of regional defense-related manufacturing companies. This will be achieved through investments in four partner institutions; Washington State University, Vancouver; Portland State University, Oregon Institute of Technology and University of Oregon. These investments have been vetted by industry experts and are consistent with the high priority needs of manufacturing companies. The investments will support an integrated, multi-institutional approach applied research and development and build the long-term capacities of the partner institutions to deliver critical applied research to industrial partners.

Item Name: ONAMI Mobile Military Energy Initiative (MME)
Request: $5,000,000
Account: Research & Development, Army
Line: 33
PE: 0603005A
Language: N/A
Intended Recipient: University of Oregon (Eugene), Oregon State University (Corvallis), Portland State University (Portland), Oregon Health and Science University (Portland), Oregon Nanoscience and Microtechnologies Institute (Corvallis)
Address (City, State): Competitive among above listed entities
Purpose/Project Description: These funds will be used to develop a diverse range of micro and nanotechnology-enabled mobile military energy technologies (MMET) for military vehicles that contribute substantially to this goal. The resulting research will strengthen collaborations within the Oregon University System (OUS) via the Oregon Nanoscience and Microtechnologies Institute (ONAMI) and between OUS and the Pacific Northwest National Laboratory (PNNL) via the ONAMI Microproducts Breakthrough Institute (MBI) in Corvallis, OR. These collaborations will advance the micro and nanotechnology necessary to support energy development on mobile military platforms.

This initiative will inherently develop and integrate sustainable energy technology within military energy supply chains by leveraging ONAMI expertise and infrastructure. Nanomaterial synthesis, nanolaminates and nanotextured surfaces (areas of international leadership demonstrated by ONAMI) will be used to enhance thermoelectric effects, photovoltaics, transparent conductivity, anti-reflection, chemical kinetics, heat transfer, hydrophobicity, hydrophilicity, etc. Microchannel process technology, an area of international leadership provided through the ONAMI MBI, will be used to overcome heat and mass transfer limitations yielding smaller, more compact energy systems with high surface area densities for deploying surface phenomena. Finally, this initiative will help to realize the development of cost-effective solutions by leveraging the extensive industrial partnerships and facilities available through ONAMI.

Item Name: ONAMI Nanoelectronics, Nanometrology and Nanobiotechnology (N3I) Initiative
Request: $5,000,000
Account: Research & Development, Navy
Line: 3
PE: 0601153N
Language: N/A
Intended Recipient: University of Oregon (Eugene), Oregon State University (Corvallis), Portland State University (Portland), Oregon Health and Science University (Portland), Oregon Nanoscience and Microtechnologies Institute (Corvallis)
Address (City, State): Competitive among above listed entities
Purpose/Project Description: Portland State, Oregon State, University of Oregon, Oregon Health & Science University and ONAMI will use funds to 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. There are Oregon companies that are directly interested in this work: FEI, the world's leading nanometrology company, Intel, the world's leading semiconductor manufacturer, Invitrogen, the first company to bring quantum dot detection into biomedicine, and Virogenomics, an OHSU-based company for commercializing biomedical technologies. We also have strong research partnerships with PNNL and the Western Institute of Nanoelectronics (UCLA). Projects are supported at all four ONAMI universities with an emphasis on collaborative research among all the universities.

Item Name: ONAMI Safer Nanomaterials and Nanomanufacturing
Request: $5,000,000
Account: Research & Development, Air Force
Line: 4
PE: 0602102F
Language: N/A
Intended Recipient: University of Oregon (Eugene), Oregon State University (Corvallis), Portland State University (Portland), Oregon Health and Science University (Portland), Oregon Nanoscience and Microtechnologies Institute (Corvallis)
Address (City, State): Competitive among above listed entities
Purpose/Project Description: University of Oregon, Oregon State University, Portland State University, Oregon Health & Science University, and ONAMI will use funds to develop inherently safer and greener nanomaterials and nanomanufacturing methods, which directly impact the Defense Department's need for high performance materials. Recent achievements in this project include development of a library of greener engineered nanomaterials with widely

tunable properties, concomitant assays for biological testing of nanomaterials to ensure safety, creation of a nanomaterials-biological interactions knowledge-base designed to collect data on nanomaterials and predict potential biological impacts, and development of nanomanufacturing methods (e.g. parallel microchannel reactors) to scale quantities for high volume production of nanomaterials.

The general areas of activity included within the initiative are: rational design of inherently safer and greener materials based upon unique properties found at the nanoscale, development of rapid characterization strategies to support biological and manufacturing studies, systematic assessment of the biological impacts of engineered nanomaterials, development of technology for high volume manufacturing of precision-engineered nanomaterials and the use of greener nanostructures as components of high performance materials. The application of this research facilitates application of nanomaterials and manufacturing in important defense technologies including energy production and storage, nanoelectronics and nanophotonics, medical diagnostics and therapeutics, drinking water purification and environmental monitoring & remediation systems.

Item Name: ONR Organic Landing Aid for Multi-Mode Sensor/Seeker (MMSS) and Fire Scout VTUAV
Request: $4,000,000
Account: Research & Development, Navy
Line: 4
PE: 0602114N
Language: N/A
Intended Recipient: FLIR Systems, Inc.
Address (City, State): Wilsonville, Oregon
Purpose/Project Description: The Multi-Mode Sensor/Seeker (MMSS) is an on-going Future Naval Capability (FNC) program to provide:

- A multi-mode Visible, Mid-Wave Infrared (MWIR) and Laser Detection and Ranging (LADAR) sensor, with a Laser Designator/Rangefinder for Fire Scout and future weapon systems.
- Advanced Automatic Target Recognition (ATR) capabilities to demonstrate functionality for target detection, classification and identification against ships, boats & shore facilities as well as ground-based mobile targets.
- Increased stand-off range to accurately identify and target beyond 6 kilometers with very low false alarm rates against Blue/White forces.
- Fire Scout VTUAV with an organic capability for landing on ship, or ashore with the addition of a landing aid within MMSS. This additional capability within a second MMSS system will greatly increase the ability to conduct test and evaluation of the system for use on Fire scout. This also allows landing in unimproved landing zones which broadens the fire scout/MMSS system for potential search and rescue, firefighting and urban mission
- This request would fund building a second MMSS sensor for additional test and evaluation by the Navy during FY11.
- The funds would be used for engineering, integration and production for the 2nd sensor.
- Integration, testing and evaluation of a SWIR sensor will be conducted during FY11.

The project will transition these additional capabilities to the Navy UAS community with

potential for the manned aircraft as well. This modest addition will yield an increase in capability, reduction of risk, and a true benefit for the U.S. war fighting community.

Item Name: Oregon National Guard PT-1 SC Ballistic Eyewear & CAG-1 Combat Glove Kit
Request: $700,000
Account: Operation and Maintenance, Army
BA: 1
Sub-activity Group: 122
Intended Recipient: Wiley X, Inc.
Address (City, State): Livermore, CA
Purpose/Project Description: The Oregon National Guard has identified a requirement for 7,000 sets of ballistic eyewear and 7,000 pair of combat gloves. Due to eye injuries sustained during combat operations and cost to the government in support of these injuries, it has become apparent that ballistic eye protection is an essential piece of personal protective equipment for the war fighter. Military doctors and ophthalmologists serving in Iraq report that approximately 10% of all American troops they treat for battle related wounds have some form of eye damage. The use of ballistic eye protection is one of the major reasons in the reduction of eye injuries to Soldiers.

Combat Gloves are used in field operations to protect Soldiers' hands while navigating rough terrain and moving objects. They are reinforced in exactly the area most needed for combat and contingency operations without interfering with dexterity and tactility which includes thermoplastic knuckle protectors. These gloves are manufactured with Kevlar/Nomex fabric which increase cut and flame protection.

Item Name: Oregon National Guard Reintegration Program
Request: $2,000,000
Account: Operation and maintenance, Army National Guard
BA: 160
Sub-activity Group: 433
Intended Recipient: Oregon National Guard Reintegration Program
Address (City, State): Salem, Oregon
Purpose/Project Description: The Yellow Ribbon Reintegration Program – created by fiscal year 2008 National Defense Authorization Act – was created to address the needs specific to National Guardsmen, Reserve members, and their families. This project would fulfill those aimed objectives, specifically in Oregon where the long-term need for these services will be significant upon the return in 2010 of the largest deployment of the Oregon National Guard since World War II.

Funding will be used to address budgetary shortfalls in order to continue existing services for servicemembers and their families. This funding would improve outreach efforts to returning servicemembers through the creation of a one-stop "Fort Oregon" website for up-to-date information on healthcare and employment opportunities, continue the work of the state's suicide hotline for returning servicemembers, fund a Government Services Administration vehicles contract to reduce costs, and hire two additional staff members.

Item Name: Permanent Magnet Generator – Wave Energy System
Request: $5,000,000
Account: Research & Development, Navy
Line: 58
PE: 0603725N
Language: N/A
Intended Recipient: Columbia Power Technologies
Address (City, State): Corvallis, Oregon
Purpose/Project Description: In conjunction with Oregon State University, Columbia Power Technologies is currently designing and engineering a wave-tank and ocean tested wave power unit with a peak operating capacity of 2 MW. Funds are needed to continue to develop, fabricate, install, and operate a multi-buoy wave energy conversion system for the Navy.

DoD is required to procure 25% of its energy from renewable sources by 2025. Furthermore, the Department of the Navy's recent Program Objective Memo 12 outlines the Department's desire to "seek facilities, ships, aircraft, and ground combat systems that operate more efficiently, consume less energy per measured output, and – where possible - rely on alternate, renewable energy sources." This program will demonstrate wave power as an alternate electric power source for broad utility and military use; demonstrate the interconnection of multiple wave power units to scale up the capacity; deliver significant power at Navy designated facilities. This project will provide a highly competitive domestic U.S. designed and U.S. built wave energy converter.

Item Name: Portable Ultra Sound Finger Probe
Request: $4,100,000
Account: Research & Development, Army
Line: 30
PE: 0603002A
Language: N/A
Intended Recipient: Blacktoe Medical, Inc.
Address (City, State): Portland, Oregon
Purpose/Project Description: Working with the Army Medical Research and Materiel Command, Blacktoe Medical has developed working prototypes of a miniaturized, fingertip-mounted ultrasound probe. This probe will allow quick, easy, and accurate front-line diagnostic imaging, bringing much-needed far forward imaging capability to the armed forces. Initial use of the probe is targeted for high impact, front-line medical assessment, which can significantly improve battlefield survivability. The technology is compatible with lightweight, portable, ruggedized ultrasound systems currently employed by the U.S. Army.

This request would fund efforts to complete probe development and gain regulatory clearance, so as to make the probe available to the military for use in the field. Work accomplished under this request would enable the probes to meet military specifications for placing central lines for resuscitation, assessing and treating wound infections, 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 would also support 1)

development of wireless display capability to allow front-line ultrasound images to be viewed remotely, enabling real-time specialist over-read and consultation from remote field hospitals or other clinical locations, improving quality of diagnosis and care in the field, and 2) clinical evaluation of prototype units as the final step for fielding the technology.

Item Name: Portable Helicopter Oxygen Delivery System (PHODS) Console
Request: $3,000,000
Account: Research & Development, Army
Line: 79
PE: 0604601A
Language: N/A
Intended Recipient: Mountain High Equipment and Supply Company
Address (City, State): Redmond, OR
Purpose/Project Description: Portable Helicopter Oxygen Delivery System (PHODS) enables pilots, crew and passengers to make the best use of available oxygen by automatically adjusting to their individual breathing rhythms and supplying exactly the amount of oxygen needed at varying altitudes. The Army is currently operating 3,000 on-person PHODS units in Aghanistan today.

The requirement is a portable console to extend the duration for the smaller person-worn PHODS cylinder. The current Helicopter Oxygen System (HOS) remains an outdated, unreliable system that weighs over 100 pounds and needs aircraft power to operate. The PHODS *Oxygen Console* System consists of an easy carry, person portable, rugged, light-weight steel component console with a complete oxygen control system. The Console system will have the ability to supply from one (1) to sixteen (16) PHODS or eight (8) PHODS with a single console.

Item Name: Recoil UH-60 Wild Land Fire-Fighting Tank System
Request: $5,000,000
Account: Aircraft Procurement, Army
Line: 27
PE: N/A
Language: N/A
Intended Recipient: Recoil Suppression Systems, LLC
Address (City, State): Merlin, Oregon
Purpose/Project Description: The Recoil R60 is a 1,000 gallon fire suppression fixed belly tank designed for the UH-60A, L & M Blackhawk helicopter. The National Guard Bureau requires force modernization to standardize Army National Guard (ARNG) Aviation equipment to respond to wildland fires, natural disasters, and terrorist events for protection of life, property, resource preservation, and national security purposes. Funds would enable Recoil to engage in engineering, procurement, and evaluation of fire suppression belly tanks for the ARNG. These tanks will be distributed nationwide to State Army National Guard units to support and respond to fires and other emergencies.

ARNG aviation units are tasked with emergency firefighting that requires over flight of populated areas and aerial fire suppression in congested urban areas that have expanded into areas traditionally considered wildlands. Through ARNG establishment of Memorandum of

Understanding (MOU) with national, state, regional, and local using agencies, MOU mandates the adherence to the Federal Aviation Regulations (FAR) while conducting wildland fire suppression flight operations. USDA Forest Service, Military Use Handbook 70.4 references the Interagency Helicopter Operations Guide (IHOG) for management of military aircraft. Section 2-10 F (1) references flight operations to be conducted IAW FAR 91.119 (d) and 133.33 (d). The R60 fixed tank brings ARNG into compliance with these FAR's, reducing public safety and liability issues.

The National Guard Bureau requires a twenty year sustainable, modern, standardized fire fighting fixed tank system for the UH-60A, L & M Blackhawk helicopter, which provides ARNG aviation the capability to respond to wildland fires and for protection of life, property, resource preservation, and homeland security purposes.

Item Name: SiC RF Power for Airborne Avionics and Radar
Request: $3,800,000
Account: Research & Development, Air Force
Line: 17
PE: 0603203F
Language: N/A
Intended Recipient: Microsemi Corporation-Power Products Group
Address (City, State): Bend, Oregon
Purpose/Project Description: This funding continues the development of critical components for data communication and radar systems. The components, radio frequency (RF) transistors for power amplifiers, use silicon carbide (SiC) semiconductor technology in order to shrink the physical size and weight of avionics systems (i.e. LINK 16) while expanding system bandwidth. The components being developed are expected to be available for F-22 and F-35 aircraft programs by 2011/12. These new RF transistors are also being developed for new and upgraded radar applications, most specifically for the new 3DELRR system, now in development for the Air Force by Lockheed-Martin.

This project adheres closely to "The DoD RF Modules Strategic Roadmap" developed at the direction of Congress. The "2006 Defense Science Board Critical Technologies Report" also recommended investment in semiconductor manufacturing capability in this area of research. Federal funding is justified to support this project because the products resulting from the development are specifically for insertion into DoD data communication and radar systems. Microsemi-PPG will have contributed equipment, facilities, and operating expenses of nearly $20M by the end of 2012 for SiC technology.

Item Name: Tabletop Trainers (IGT, TGT, and TFT)
Request: $1,000,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various

Purpose/Project Description: The Tabletop Trainer Program provides on-site individual, convoy, and crew gunnery training for soldiers all across Oregon and for soldiers who are deployed worldwide. Individual, convoy, and crew training is provided for crewmembers of Up-Armored HMMWVs, Tactical Trucks, Abrams Tanks, and Bradley Fighting Vehicles and individual training for .50 Cal machine-gunners. Without this program, Guard soldiers will not have the required trainers needed at worldwide locations for training individual gunnery, crew gunnery, counter-IED training, and convoy duties for HMMWVs, Tactical Trucks, Abrams Tanks, and Bradley Fighting Vehicles.

Item Name: TALON SWAT/MP
Request: $24,000,000
Account: Other Procurement, Army
Line: 137
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various
Purpose/Project Description: The TALON SWAT/MP robot as one platform may be configured to perform explosive/forced entry of buildings, reconnaissance when a larger platform with gripper is required, and Improvised Explosive Device (IED) disruption and destruction. In addition, its loudhailer capability may be used for personnel or vehicle access control points to communicate (hear and talk) with personnel, to increase stand-off. SWAT/MP is a robot specifically equipped for scenarios frequently encountered in urban areas. TALON SWAT/MP can be configured with the following equipment: loudspeaker and audio receiver for one-or two-way communications, night vision and thermal cameras, breaching capabilities, sensor emplacements. The SWAT/MP platform weighs 150 lbs and may operate depending on environment for up to 4-6 hours on a single set of batteries.

Item Name: Transportable Transponder Landing System (TTLS)
Request: $5,000,000
Account: Research & Development, Air Force
Line: 190
PE: 0305114F
Language: N/A
Intended Recipient: Advanced Navigation & Positioning Corporation
Address (City, State): Hood River, Oregon
Purpose/Project Description: The TTLS is a precision approach landing and surveillance system designed 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.

Item Name: Treatment of Battlefield Spinal Cord and Burn Injuries
Request: $4,000,000
Account: Research & Development, Army
Line: 30
PE: 0603002A
Language: N/A
Intended Recipient: Oregon Biomedical Engineering Institute
Address (City, State): Portland, Oregon
Purpose/Project Description: This program will fund medical research into two tragic injuries which strike soldiers -- spinal trauma and burns. Spinal cord injury is normally the result of trauma resulting in swelling which cuts blood supply, leading to cell death and paralysis. But in NIH models of spinal injury in animals, a laminectomy where the spinal cord is exposed within a three-hour window after injury, allowing the tissue to freely expand without compression, universally resulted in prevention of permanent paralysis. Clinical trials in multi center military and civilian settings are required to demonstrate efficacy and safety of this approach. Animal studies of adjunctive therapies such as local cooling or administration of anti-inflammatory drugs should also be undertaken. Severe burns are highly prevalent in current military conflicts. Normal skin healing following burn injuries produces inflexible collagen scars which contain little or no elastin, the matrix protein which gives human tissue its flexibility. Severe burns to extremities are particularly disabling as the soldier is left with severely limited mobility and the prospect of frequent surgeries to treat scar contracture. Preliminary data indicates that human skin cells, though incapable of producing elastin in burn scars, when given human recombinant elastin proteins, can construct normal appearing and functional skin matrices. Thus, the potential exists to allow the skin to heal itself if given the raw protein material, potentially achieving a flexible and functional skin replacement. A prototype device has already been developed which may serve as a highly precise delivery device.

Item Name: UH-60 MEDEVAC Thermal Imaging Upgrades
Request: $2,000,000
Account: Aircraft Procurement, Army
Line: 27
PE: N/A
Language: N/A
Intended Recipient: FLIR Systems, Inc.
Address (City, State): Wilsonville, Oregon
Purpose/Project Description: 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.

Additional funds are required to procure AN/AAQ-22 systems for the Army National Guard.

The Army National Guard Blackhawks are critical airborne platforms used in search and rescue, civil disaster response and evacuation scenarios domestically as well as MEDEVAC and CSAR missions when deployed. Improvements to the existing thermal imaging systems would include: a color camera, laser range finder, laser pointer, spotter scope and improved interface with the aircraft navigation system. In addition, aircraft with these enhancements can provide crucial MEDEVAC and search and rescue capabilities when the unit is deployed to Afghanistan, Iraq or some future theater of operations.

Item Name: Universal Freeze Dried Blood Plasma for Battlefield Use
Request: $4,600,000
Account: Research & Development, Army
Line: 30
PE: 0603002A
Language: N/A
Intended Recipient: HemCon Medical Technologies, Inc.
Address (City, State): Portland, Oregon
Purpose/Project Description: Plasma contains the blood's clotting proteins. Thirty to forty percent of soldiers injured in current conflicts suffer from an inability to stop bleeding. Severity is directly correlated to death rate. A study published by the U.S. Army showed that infusing plasma with red blood cells in a roughly 1:1 ratio reduced mortality rates from 65% to 19%.

Currently plasma is collected from blood donations and frozen, then thawed prior to use. It must be transported and stored at -18°C. Up to 40% of the fresh frozen plasma units are broken during transport, severely exacerbating supply logistics and availability. When thawed, it must be used within 4 hours or refrigerated and used within 5 days. Due to storage requirements, currently blood plasma can only be administered at a definitive care facility.

In 2008, HemCon was awarded U.S. Army grants to develop freeze-dried plasma. Freeze dried plasma can be stored 1-2 years with refrigeration or up to 1 year at ambient temperatures and reconstituted with sterile water on the battlefield. However, only AB plasma can be given without testing blood type and AB plasma is present in only 4% of the population.

This project would develop universal plasma that could be given to any patient. This involves removing an antibody from Type A plasma. The major technical challenge is to cost-effectively integrate an additional antibody removal processing step without decreasing the efficacy of the clotting proteins in the plasma.

Item Name: Upgrade U.S. Air Route Surveillance Radar (ARSR) to Mitigate Wind Turbine Interference
Request: $8,000,000
Account: Operational Test and Evaluation, Defense
Line: 01
PE: 0605118OTE
Language: N/A
Intended Recipient: Department of Defense
Address (City, State): Fossil, Oregon and Elwood, Illinois

Purpose/Project Description: Provides sufficient funding for the expedient research, testing, and operational fielding of new signal processing software or hardware for the ARSR-3 systems in Fossil, Oregon and Elwood, Illinois, to allow the radars to operate notwithstanding the existence of additional wind turbines in the radar's line of sight.

The Department of Defense and the Federal Aviation Administration currently partner to maintain and administer these and other ARSRs across the United States. Several new technologies recently introduced, such as augmenting or upgrading radar or improving signal processing capacity, can address the DoD's current national defense concerns of wind turbines and their adverse impact to radars across the United States. Unfortunately, DoD has not had sufficient funding to become an active partner in the investigation of new technologies that would allow both national goals of national security and energy security to be met.

Without DoD's involvement on new technological research and breakthroughs for signal processing, recent green job expansion and increases in renewable energy will likely grind to a halt as more and more renewable energy projects conflict with operational national security requirements.

Item Name: U.S. Government Security Cloud
Request: $5,000,000
Account: Director of National Intelligence Classified Line Item
Line:
PE: Director of National Intelligence Classified Line Item
Language: N/A
Intended Recipient: McAfee, Inc.
Address (City, State): Beaverton, Oregon
Purpose/Project Description: The U.S. Intelligence Community requires the most up to date and sophisticated security technologies available. One leading technological enhancement is the development and use of Global Threat clouds by leading commercial product vendors. These clouds enhance existing commercial products by providing them real time threat and reputation information. This real time information is based on data collected from millions of sensors worldwide. It is massaged using sophisticated statistical analysis to create useful and accurate threat information. This information is then available in real time via the Internet to make sure the candidate security products have the most up to date threat and reputation information to use when protecting customer systems and networks. Use of the Global Threat cloud can significantly increase the rate at which threats are identified and stopped. It can also significantly increase the speed with which remediation for the threat is provided. Unfortunately because of existing security constraints, the U.S. Intelligence Community cannot take advantage of this new capability. Use of the commercial Global Threat cloud by the U.S. Intelligence Community could possibly open up covert channels providing sensitive information to undesirable third parties.

Funds will enable the Intelligence community to leverage the benefits of cloud computing to give it real time threat and reputation information. This real time information is based on data collected from millions of sensors worldwide, and will thus give the intelligence community much deeper insight into the range of threats attacking their networks and systems. Use of the Global Threat cloud can significantly increase the rate at which threats are identified and

stopped. Remediation for a wide range of threats will also be provided in a more timely, and rapid way.

This proposal is intended to provide the benefit of using the Global Threat cloud while eliminating the covert channel created. To do this, we propose to create a private version of the Global Threat cloud for use solely by the U.S. Intelligence Community. This cloud would receive frequent one directional updates from the commercial Global Threat cloud but would not transmit any information back into the Global Threat cloud. This cloud would reside at the IC IRC and be available to all Intelligence Community elements. The Global Threat cloud will be made available initially to support the HBSS security suite due to its wide deployment and strategic position in the Intelligence Community security architecture.

Item Name: U.S. Navy Airship Laboratory
Request: $ 5,000,000
Account: Research & Development, Navy
Line: 27
PE: 0603216N
Language: N/A
Intended Recipient: American Blimp Corporation
Address (City, State): Hillsboro, Oregon
Purpose/Project Description: This project is for the conversion of the existing MZ3A U.S. Navy Airship from manned to unmanned flight and the implementation of heavy fuel engines onto the airframe. Funds will also be used to incorporate critical technologies into the US Navy airship flying laboratory in order to support the overall mission when the airship is deployed in-theater.

Unmanned persistent surveillance systems (being able to survey the battlefield in difficult and remote regions 24 hours a day, 7 days a week) are fundamental in protecting ground forces and identifying IED's and combatants that wish to use various terrorist tactics in harming the warfighter. A persistent airship laboratory to test sensors and capabilities before being fully deployed in-theater to assist the warfighter is needed. The U.S Government has already invested in the airship flying laboratory called the MZ3A, which is a U.S. Navy (NAVAIR) asset. Funds will also be used to convert existing flight systems to unmanned operations.

Item Name: Virtual Convoy Operations Trainer (VCOT)
Request: $2,000,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various
Purpose/Project Description: During FY11, the Oregon Army National Guard needs to continue to field a second Virtual Convoy Operations Trainers (VCOT) and upgrade the current VCOT. The VCOT has been enhanced to allow convoy soldiers to leave their vehicles and conduct independent dismounted operations which will greatly assist in training the

identification and disposition of IEDs on the battlefield. Also, the VCOT allows training on several types of vehicles and with numerous types of weapons. Without this program, soldiers will continue to have fewer trainers than needed to train counter-IED drills, immediate action drills, and convoy operations.

Item Name: Virtual Door Gunner Trainer (VDGT)
Request: $2,500,000
Account: Other Procurement, Army
Line: 177
PE: N/A
Language: N/A
Intended Recipient: Oregon Army National Guard
Address (City, State): Various
Purpose/Project Description: FY11 funding for the Virtual Door Gunner Trainer (VDGT) Program is the Oregon Army National Guard's # 1 priority for virtual helicopter crew training. The Virtual Door Gunner Trainer (VDGT) Program will allow helicopter crew chiefs to train door gunner operations in the Middle Eastern Contemporary Operating Environment (COE) and other types of terrain. VDGT provides essential door gunner training for helicopter crews that is not now available without using very limited flying hours, ammunition, and firing ranges. Without VDGT, our National Guard crew chiefs will continue going to war without proper training in the critical skill of helicopter door gunnery.

We certify that neither ourselves nor our immediate families have a pecuniary interest in any of the congressionally directed spending item(s) that we have requested, consistent with the requirements of paragraph 9 of Rule XLIV of the Standing Rules of the Senate. We further certify that we have posted a description of the items requested on our official websites, along with the accompanying justification.

Thank you for your consideration of these worthy projects. We appreciate your strong and continued leadership and look forward to working with you this year on funding vital to our nation. If you have any questions, please contact Mr. Isaiah Akin in Senator Wyden's office at 224-5244, or Ms. Courtney Thompson in Senator Merkley's office at 224-3753.

Sincerely,

Ron Wyden
United States Senator

Jeff Merkley
United States Senator