Defense

Information about each project was provided by the requesting entity. Amounts requested are not guaranteed; funds secured are likely to differ from the requested amount. Senator Tester's appropriation requests to the Defense Subcommittee for Fiscal Year 2011 are listed below.

United States Senate Appropriations Subcommittee on Defense

Adaptive Lightweight Materials Technology for Missile Defense
Blackfeet Nation Tribal Business and Radiance Technologies
Blackfeet Nation, Browning, MT
$6,000,000
The Adaptive Lightweight Materials (ALM) for Missile Defense Project is a research & development project for the military. The primary focus is to improve production, tooling, and manufacturing techniques; develop new production technology concepts (pultrusion and injection hybrid manufacturing); evolve polymer composite based source materials (resins, polymer structures, fillers, and coatings) into an adaptive materials test-bed; develop and test space and missile defense products with enhanced physical properties (reduced size, cube and weight); increased performance (enhanced load bearing, battlefield protection, fire retardation, non-toxicity); and at reduced life-cycle costs. Funds will be used to build, test, demonstrate and validate products for space and aviation based platforms concentrated to producing and testing Hellfire missile launch rails for helicopters, unmanned air vehicles and other air platforms. The priority will be placed to stand-up and qualify the new Blackfeet Nation tribal owned business as a certified “ISO 9001” ALM producer. The Blackfeet Community College at Browning, Montana in conjunction with Montana Tech University, will provide ALM associated workforce training.

Advanced Motion Simulation System
Square One /Western Transportation Institute
Bozeman, MT
$650,000
Funds will be spent to develop an advanced motion simulator that will provide soldiers with a more realistic training experience and the Navy with a means for testing advanced shipboard systems. Soldiers have noted that the “feel” of current simulators does not adequately represent lateral maneuvers such as turns, lane changes, wind gusts, and slides. This project will create a new simulator which can transcend the inherent limitations of current motion simulation systems. Use of simulators will be ever more critical as the complexity of military systems increases and the inventory of training vehicles declines.

Advanced Wearable Power System Manufacturing
MSE Engineering
Butte, MT
$3,000,000
This project will develop wearable electric power units for the individual soldier thereby significantly reducing battery weight and increasing soldier survivability, effectiveness, mobility and mission flexibility. The electric power will be provided by small fuel cells imbedded in the soldier's jacket pockets. The fuel cells will utilize a light-weight, highly energetic, safe fuel. Manufacturing processes for the fuel cell and

fuel will be evaluated and optimized. National security interests will require cost-effective, domestic production of these items.

Approaches to preventing and treating epilepsy in military personnel
University of Montana
Missoula, MT
$2,000,000
Funds will be usedfor the development of therapeutics that are safe, have a large window of efficacy, and can be easily administered by first responder personnel such as paramedics and battlefield medics. Ongoing research developed therapies to prevent the initiation of seizures following brain injury and thus prevent the establishment of epilepsy in the first place. Within FDA approved doses, methamphetamine is neuroprotective and may limit the development of epilepsy. Preliminary data also demonstrates that viral-mediated gene delivery to the brain can be used to modulate seizure activity in animals suffering from established chronic seizures. Further studies in this area are needed to fully characterize and develop this approach to the treatment of epilepsy.

Basecamp Environmental Management System (BEMS)
Advanced Composting Systems LLC
Whitefish, MT
$2,000,000
This project will demonstrate the viability of the BEMS self-contained composting latrine system to provide user functionality while eliminating the current waste disposal costs, environmental impact, logistics and risks to deployed soldiers. It has applications in small remote base camps and for humanitarian/ stability deployments that most critically need such basecamp technology. BEMS will accelerate the process to bring such technologies to the Army and all services that operate in forward deployed locations. PM Force Sustainment Systems intends to become a joint services resource for all basecamp technologies, conducting evaluation, a full-scale basecamp test site, and assisting with the transition of technologies to the force. Additionally, these advanced technologies are well suited for use in the numerous bases and training areas in the United States. Funds will also support lowering costs of sustainment, operations, water and transportation requirements and training and deployments.

Clinical Development of a Norovirus Gastroenteritis Vaccine
LigoCyte Pharmaceuticals, Inc.
Bozeman, MT
$7,500,000
Norovirus (NoV) remains as the major unaddressed cause of acute gastroenteritis throughout the world. LigoCyte Pharmaceuticals is developing a vaccine against important strains of NoV, including NoV genotype I.I and II.4 which has been associated by the medical and scientific community with the significant burden of disease caused in global outbreaks of gastroenteritis. Reported outbreaks over a two year period in the US Navy include 10 big deck ships and 50 support ships. In addition to shipboard outbreaks, NoV has been characterized as a significant problem in ground-based installations, recruitment centers, and other settings of importance to Military readiness. Funds will be used to complete epidemiology studies for the determination of military field trial sites, define the lasting health consequences of NoV infections, manufacture vaccine & initiate a Phase II human clinical efficacy trial of the multivalent VLP vaccine at a site in the military command.

Cold Climate Algae Fuel Recovery
MSE Technology Applications, Inc.
Butte, MT
$2,000,000
This project will develop the information necessary to show the economic and technical feasibility of growing and harvesting algae in cold regions of the US for the production of biofuels using as a feedstock flue gases enriched in carbon dioxide (CO_2) from fossil fueled electric power plants. The development effort will utilize the cold climate test facilities of MSE, and its association with power plants in Montana and the region. The primary accomplishment will be to provide the US military with a domestic alternative source for liquid fuel.

Continued Development of Next Generation Simulation Training for AFSOC Pararescue Forces
National Center for Health Care Informatics
Butte, MT
$6,406,400
Preparing the US Air Force Pararescuemen (PJ) to treat and rescue casualties in a battlefield environment is complex, time intensive, and rigorous, and current training methods cannot replicate the visual, tactile, technical, emotional, and communication skills required to effectively execute the PJ's medical and rescue missions in an actual battlefield environment. The Air Force is seeking the development of next generation, virtual-world training environments that can accurately depict the complexities of treating and rescuing wounded soldiers in a real-world battlefield environment. The NCHCI will develop next generation simulation training environments including an initial prototype of a battlefield trauma care procedure (i.e. chest tube insertion) and will incorporate that simulated training environment into existing Battlefield Airmen (BA) network-capable simulation training devices. Funding would be used to (1) develop several additional battlefield trauma care procedures (i.e. Retracted Artery, Burn Cut Down, Battlefield Amputation) and rescue specific scenarios (i.e. Collapsed Structures, Aircraft Crash, IED/Ambush), (2) further integrate its simulations into existing and future BA simulation trainers, and (3) support the development of the STAR Center.

Defense-Critical Languages and Cultures Program
University of Montana - Mike and Maureen Mansfield Center
Missoula, MT
$2,500,000
Six faculty members now provide intensive, practical instruction in Arabic and Chinese strategic culture and in the speaking, reading, and writing of Arabic, and Chinese language. In response to recent directives from the Department of Defense and evolving strategic realities, the Center is rapidly developing new on-site and on-line training capacity related to the cultures and strategic environment in Afghanistan and Pakistan, while adding new instruction in Dari (a key dialect in Afghanistan that is closely related to the Farsi spoken in Iran) and Pashto (a predominate language found both in Afghanistan and in western Pakistan). Both are included at the top of the DoD's list of critical languages.

Demilitarization of HC White Smokes
MSE Technology Applications, Inc.
Butte, MT
$2,990,000
The United States military has huge inventories of obsolete Hexachloroethane (HC) white smoke canisters and other HC smoke ordnance. These devices are designed to produce very large quantities of small particulate matter which acts as an obscurant in battlefield environments. Because of this particulate production, open burning demilitarization of HC smokes has been prohibited and attempts to use other incineration methods have resulted in problems. Technology for treatment of white smokes has been identified as a technology "gap." It is on the unfunded priority list of the Program Manager (acting) for Demilitarization. MSE has performed initial work on a low-temperature, low-cost, environmentally friendly alternative technology for the demilitarization of the HC smokes. The results of this initial work are highly encouraging. The proposed project will allow refinement of the process, bench-scale testing, engineering, and pilot-scale tests leading to full-scale implementation.

Hyperbaric Oxygen Research Project
Montana Neuroscience Institute
Missoula, MT
$3,000,000
This project will enable Montana's servicemen and women to participate in Department of Defense research involving hyperbaric oxygen therapy for the treatment of traumatic brain injuries (TBI). Hyperbaric oxygen therapy is a safe, FDA-approved treatment that is used for a number of indications, ranging from carbon monoxide poisoning to skin infections. In 2008 the Department of Veterans Affairs and the Department of Defense determined that case reports on the use of hyperbaric oxygen to treat TBI were compelling enough to mandate expedited research trials. This project will enable Montana's military personnel to have access

to hyperbaric oxygen therapy and the ability to participate in this important research. Funds will be used to purchase hyperbaric oxygen chambers for treatment and research purposes, and obtain medical-grade trailers so that the chambers can travel to patients in remote areas.

Improved Pararescue Upgrade Training
The PEAK
Butte, MT
$3,600,000
There is a shortage of higher level trained and qualified pararescuemen for the Air Force. Historically, Air Force pararescuemen have had to travel to remote sites to receive and be evaluated on the required advanced training for the myriad of tasks they must perform. The availability of a compact training site with multiple and complex areas of terrain, altitude and facilities, is difficult to find and the follow on permission to use such property is extremely difficult to attain. In order to meet their training requirements, pararescuemen have had to coordinate for individual small segments of the total training required and then coordinate travel to each of these smaller sites to conduct training and evaluations piecemeal. Consequently, there has always been a large number of these men who are only partially qualified in their field (normally to only level 3 of 7 levels. Upgrade training is essential in preparing war fighters for deployment, and these personnel must report to the Combat Theater fully qualified.

Marine Expeditionary Rifle Squad – Reconfigurable Vehicle Simulator (MERS-RVS)
Western Computer Services, Inc.
Helena, MT
$4,000,000
Project will incorporate communications, C2, Human Factors, and fighting capability. More importantly, the MERS-RVS can be reconfigured to replicate any of the transport vehicles that are in service today and are envisioned for the near term. It will allow for easy removal and repositioning of seating, communications and C2 links, sensor inputs, visibility and will accommodate changes with a minimum of tools and systems. Funding is needed for the integration of the Infantry to the large variation in host transports. MERS-RVS is critical to the future of the USMC's vehicle and warfighter integration efforts.

Materials Technology for LED Lighting Applications
Federal Technologies Group
Bozeman, MT
$3,000,000
Federal Technology Group plans to work with major LED lighting manufacturers to make advances into high-wattage LED applications and to commercialize super-efficient thermal management devices that are currently unavailable to the industry. The object of this project is to utilize Federal Technology Group's metal coated diamond particle technology to produce both a cost-effective and superior thermal management device that will enable LED technology to be incorporated into high-energy applications where good alternative technology options do not exist. These next-generation materials and products will revolutionize heat-dissipation technology and significantly enhance the heat removal from LED lights, greatly expanding their use in military and industrial applications. Adopting LED lights into these buildings could provide energy savings as high as 80 percent, and eliminate the environmental hazards associated with alternative lighting options.

Metamorphose/i3 Data Conversion, Integration and Support
Synesis7
Butte, MT
$10,000,000
The Navy's Air Systems Command (NAVAIR) has a critical need to convert the massive amount of enterprise-wide operational, logistics and technical data. NAVAIR (Navy and Marine Corps) data will be converted from paper or from various static digital formats (PDF, SGML, etc.) and existing legacy databases to highly-structured and intelligently tagged eXtensible Markup Language (XML) formats. Related graphics, illustrations, wiring diagrams, and engineering drawings will be transformed to intelligent Scalable Vector Graphics (SVG), CGM, or as specified by NAVAIR. The

conversion process will be done in compliance with the international S1000D specification or other standards as specified by NAVAIR. Advanced highly structured and intelligent data conversion will be accomplished through the Metamorphose/i3 proven intelligent automated assist system and process.

MilTech Extension — Transitioning Innovative Technology to the US Military
Montana State University
Bozeman, MT
$2,000,000
This program will improve the cost and efficiency of transferring technology from small businesses to the U.S. military by hiring additional staff who will be available to small, non-traditional defense contractors. The MilTech expansion ensures that the warfighter acquires critically needed new technology more quickly, reliably, and cost-effectively. MilTech helps innovative small companies to overcome key technical, manufacturing, and procurement hurdles that stand in the way of delivery of new technology to the US military. In recent years, the program has helped Montana small businesses achieve more than $60 million in sales and follow-on SBIR funding. Small businesses nationwide have achieved more than $200 million in sales and SBIR funding.

Montana Institute for Simulation Technologies
Montana Tech of The University of Montana
Butte, MT
$2,000,000
MIST is partnered with the Rocky Mountain Supercomputing Center to develop high-performance computing for advanced computation, modeling, simulation, and visualization research. This partnership will serve the needs of national and state industries, especially in the areas of energy exploration, geographic information systems, aerospace, material sciences, biotechnology and medicine. This project will create advanced computing, modeling, simulations, and visualization research capability within the Montana University System and will enable leading research institutions to participate more fully in DoD missions resulting in increased research funding and economic development for Montana.

Montana National Guard Counterdrug Task Force
Montana National Guard
Ft. Harrison, Helena, MT
$1,000,000
The Montana Counterdrug Joint Task Force (CDJTF) supports drug law enforcement agencies (LEAs) and community-based organizations in their efforts to reduce the flow of drugs into Montana as well as to educate the youth about the dangers of drug use and abuse. Funding will establish continuity in added areas with retention and additional personnel.

Network Centric Airborne Defense Element
Sonju Industrial
Kalispell, MT
$8,000,000
The Network Centric Airborne Defense Element (NCADE) is an air-launched interceptor capable of engaging short-, medium- and intermediate-range ballistic missile threats in both the boost/ascent and terminal phases of flight. As a derivative of the widely-used AIM-9X seeker and AMRAAM airframe, extended rocket motor and steering control section, the NCADE program incorporates existing technology, production concepts and infrastructure to reduce risks and costs for the Armed Forces. The Missile Defense Agency has conducted several successful tests of this system. In 2008, Sonju Industrial and Raytheon signed a DOD-sponsored Mentor-Protegee Program agreement. As part of this program, Sonju Industrial will play an integral role in the development and manufacture of NCADE. Funding would allow for the continued development of key NCADE technologies including 1st stage prototype motor tests; nosecone development; separation testing; divert and attitude control system (DACS) component risk reduction; and seeker development. Of this, Sonju Industrial will be responsible for prototype work on the nosecone development, 1st stage prototype motor case manufacture and 2nd stage DACS component manufacture.

Regenerative Therapeutics for Combat Wound Healing
Resodyn Corporation
Butte, MT
$5,000,000
The technology developed from the research will provide regenerative medicine applications for the restoration of human bone and tissue. These applications will provide medical breakthroughs in which battlefield wounds can be repaired rather than have limbs replaced with prosthesis, as well as restore human functions that will improve the quality of life. The technology can be further applied directly to the commercial medical sectors. The first year of this three-year project will involve the development of advanced stem cell extraction, cell culturing and cell processing protocols; the exploration of new biocompatable materials for tissue engineering. During the second year, laboratory and pilot scale equipment will be developed, designed, manufactured and evaluated. Optimization and scale up of the specialized processing equipment and bioprocessing methods will be completed in the third year of the project. During the third year, work will be conducted using animal models.

SOCOM Visual Augmentation - System Hand Held Imagers – Long Range (SOVAS HHI-LR)
FLIR Systems, Inc
Bozeman, MT
$5,000,000
This electro-optical/infrared sensor provides portable long-range surveillance, identification, detection and tracking capabilities in all viewing and weather conditions; at ranges beyond which the operator would normally not be able to see the target. The unit is interchangeable among Special Operations Forces (SOF) and interoperable with a central control station. SOVAS HHI-LR is a thermal camera that can be hand held or mounted on a vehicle. With the ability to detect and identify targets at distances that exceed 5 kilometers, SOVAS HHI-LR allows special operations forces to conduct reconnaissance, surveillance, detection and recognition from positions of relative safety.

Spin-Torque Effect Research for MRAM
University of Montana
Missoula, MT
$2,000,000
Magnetic Random Access Memory (MRAM) is a promising new technology with large potential impact across many fields. It is a magnetic based memory that is comparable in speed to current computer memory but does not require electrical power to maintain its information. In addition, it does not wear-out during long-term use, which makes MRAM ideal for critical data storage and security-critical applications. For example, current systems that use SRAM with battery backup in order to ensure no data loss could be replaced with a single MRAM chip saving power and space and eliminating the need for batteries, which are prone to failure in harsh environments. This project will support additional research on spin-torque MRAM including theoretical modeling, experimentation, and test and evaluation.

Submarine Automated Acoustic Intercept Technology
Advanced Acoustic Concepts
Bozeman, MT
$2,000,000
DOD submarine defense protection operational requirements (OR) include the need to detect, localize, track and classify surface and undersea threats. This acoustic sensor (SPVA) significantly improves the submarine's survivability and overall situational awareness including higher sensitivity during submarine surfacing maneuvers.

The Adelos Program: Nuclear Security Sensor System
TerraEchos Inc.
Missoula, MT
$5,700,000
Funding for this project will allow completion of exhaustive research, development, testing and evaluation of the Adelos Sensor Array against a variety of national nuclear security related requirements on both land and sea. A robust classification engine, designed to classify sensor signals, will have been tested and evaluated against real-world security scenarios of interest to DOD and other government

agencies interested in advanced capabilities associated with the utilization of advanced, passive acoustic, fiber optic sensor arrays. Funds will be spent to produce, deliver, test, and evaluate Adelos Sensor Arrays, and provide for the substantiation of Adelos Sensor Systems at various test ranges. These funds include all materials and equipment for manufacture of Adelos Sensor Arrays, all labor associated with design, manufacture, delivery, and field testing of Adelos Sensor Arrays, all travel associated with sensor performance and testing at various secure locations, and on-going collaboration, coordination, and utilization of the National Security Test Range at DOE-INL as the Adelos Test Center program home.

Titanium Extraction, Mining and Process Engineering Research
Universal Technical Resource Services, Inc.
Butte, MT
$8,000,000
The goal of the TEMPER Program is to produce low-cost titanium that will directly benefit the United States' military and commercial applications. This goal will be accomplished by identifying and developing new extraction and mining process technologies that will significantly reduce the cost of titanium. Emphasis is being placed on extraction and mining technologies that enhance the use of domestic titanium ore deposits, thus reducing the country's reliance on foreign titanium ore. The TEMPER program has resulted in a prototype titanium reactor developed that successfully created liquid titanium directly from titanium ore, operating at 1800 degrees Celsius. This technology will be scaled-up to commercial grade in order to use the vast deposits of US domestic ore. This capability will directly benefit the Army and will be validated on weapon systems under development by the U.S. Army at Redstone Arsenal.

Ultra Wideband Active RF Detection of IED's
S2 Corporation
Bozeman, MT
$7,800,000
The ability to quickly locate and identify low technology improvised explosive devices (IEDs) has eluded the Army and other services in spite of major recent research and development investment. The Army funded project we are working on aims to address this problem. Army technical staff working with S2 Corporation on this effort at Redstone Arsenal have indicated a high-level of support for our ultra-wideband signal processing technology, and their aim is to integrate and expand the S2 counter-IED technology development into their programs in the near-term. This program represents a transition from previously funded conventional signal processing applications to a full-radio frequency spectrum monitoring, signal identification and classification effort.

V-22/S7 CABO/i3 Integration, Implementation and ALE Support
Synesis7
Butte, MT
$8,700,000
This project will enable the V-22 Osprey program to ramp up and expedite the completion and deployment of the CABO/i3 integration and implementation project, ensuring that the CABO/i3 completion schedule is met in calendar year 2012. The CABO/i3 system and software will provide the range of tools, information and data required by the logistics, operational, maintenance, support, sustainment, acquisition, and in-service engineering organizations. CABO/i3 will be a government-owned non-proprietary solution available to Navy ship fleet operations and to the other DoD branches.

Whitmore Ravine Erosion Control and Stabilization
Cascade County Conservation District
Great Falls, MT
$5,000,000
Over the last several decades, stormwater runoff from Malmstrom Air Force Base has caused significant erosion to two forks of Whitmore Ravine, which sits on private lands between the boundary of the base and the Missouri River. In addition to the loss of valuable agricultural lands, the erosion has delivered 470,000 tons of sediment to the river and caused regular damage to the Rivers Edge Trail. The proposed project design is a combination of onbase work to reduce peak flows and

offbase work to install bypass pipelines around the Ravine.