

23-Acre Land Acquisition for Peterson AFB - Amount Requested: \$4.9M

Peterson AFB, Colorado Springs, CO

- Provides required force protection by allowing the Department of the Air Force to acquire from a willing seller a 23 acre parcel in the State of Colorado.

The U.S. Northern Command is the Combatant Command responsible for the defense of the United States stationed at Peterson Air Force Base in Colorado Springs, CO. This amendment would allow the Department of Defense to acquire from a willing seller a 23 acre parcel in the State of Colorado adjacent to Peterson Air Force Base and U.S. Northern Command Headquarters in the amount of \$4,900,000. The headquarters building sits on the boundary of the base and does not meet the current requirements for force protection established by the Department of Defense as encroachment upon the base continues as the area around the base continues to grow. The headquarters facility was constructed prior to the implementation of the current force protection imposed by the Department of Defense as a result of the tragic events of 9/11. The additional 23 acres will provide for the necessary force protection measures as required by the Department of Defense, and protect the personnel who are responsible to protect the citizenry of this great nation.

Missile Defense Integration and Operations Center - Amount Requested: \$10M

Schriever AFB, Colorado Springs, CO

- Provides funding for the Missile Defense Agency's modeling and simulation center for ballistic missile defense applications.
- The MDIOC, located at Schriever AFB, Colorado, is the proving ground for current and future missile defense programs and bridges the gap between developmental systems and the operational community.

The MDIOC is MDA's premier mod/sim center for both Homeland and International missile defense applications. During its 20-year operation at Schriever Air Force Base, Colorado, the MDIOC has become a critical National Asset in the development, integration and operation of all system-level aspects of the nation's Ballistic Missile Defense System (BMDS). MDIOC (and the JRDC program) is the proving ground for the Nation's current and future missile defense projects and programs. Missile Defense concepts and hardware elements are simulated, tested, and integrated into BMDS. The facility is specifically co-located with the Warfighting community to bridge the gap between the development and operational community. This ensures early Warfighter involvement and realistic BMDS operational concepts for the fielded system that will protect US Homeland, our Allies, and US troops from the threat of ballistic missile attack. The Committee continues to support the MDIOC as DOD's premier missile defense mod/sim center. To that end, the Committee recommends an additional \$10M in FY09 to be executed specifically at the MDIOC for the following purposes: 1) Development of new, broader Integrated Air & Missile Defense (IAMD) mod/sim capabilities to address Warfighter needs & provide MDA's Warfighter Support Center & the Warfighter community with broader wargaming, exercises & operational analysis capabilities; 2) Accelerated International missile defense mod/sim capabilities.

ACES 5 Ejection Seat - Amount Requested: \$12M

Colorado Springs, CO

- Funds development and testing of the ACES 5 ejection seat to enable insertion into the F-35 Joint Strike Fighter for the protection of our pilots in emergencies
- Ensures preservation of the domestic capability to produce vital life saving ejection seat systems.

The Joint Strike Fighter requires an advanced ejection seat to ensure pilot safety and lower the aircraft's O&M costs. The JSF seat must accommodate pilots weighing between 103 and 250 pounds, and it must be designed to enable efficient handling so that it does not endanger the JSF's stealthy skin during maintenance. This program will fund ACES 5 seat development and testing for the Air Force-variant F-35 to enable insertion into F-35 LRIP to leverage the most capable and safest ejection seat ever developed and ensure that the U.S. preserves the domestic capability to produce vital life saving ejection seat systems for the Air Force. ACES 5's unique technology includes a stability package (STAPAC) and articulating headrest that prevent neck strain and protect the smallest to the largest pilots. Inserting the ACES 5 into the JSF program will ensure the U.S. preserves the domestic capability to produce vital life saving ejection seat systems for the Air Force.

Expeditionary 200 kW+ Alternative Power Generator -Phase 1 - Amount Requested: \$6M

Peterson AFB, Colorado Springs, CO

- Demonstrates and qualifies in a cold climate an innovative, energy efficient, alternative power technology for an energy intense Air Force installation

To demonstrate and qualify in a cold climate an innovative, energy efficient, alternative power technology, on an energy intense Air Force installation. Utilizing tactical or readily available fuels, this first phase of qualifying will implant in the field a next generation power generator in a military environment, while showcasing all the benefits (monetary, environmental, and technical) this technology can provide within various scenarios, such as "Silent Camp" or "Islanding".

Radiation Hardened Non-Volatile Memory Technology - Amount Requested: \$6.25M

Colorado Springs, CO

- Improves satellite payload operations by developing advanced memory components and subsystem capabilities, hardening them for protection in hostile settings

Develops radiation hardened non-volatile (NV) memory technology to be used in a variety of applications, principally satellites. There would be two phases to this project, the first would be a near term, 2-year project to bring 16Mb of radiation hardened memory on board; and the second phase with a longer term goal of 4 years, to do the same but with a much more dense variant: 64 Mb memory. The current technology

constrained memory requirement is one Mb, but that requirement will grow rapidly over the next few years as denser memory may become available.

Digital Engine/Hydraulic Valve Actuation Technology - Amount Requested: \$3.5M

Woodland Park, CO

- Develops technology to increase truck engine fuel efficiency up 50% for existing multi-fuel (JP8, biodiesel, E85, DME, gasoline, diesel) engines.

The project's objective will be to develop an engine with widespread use and potential for the U.S. Military, trucking, and automobile industries. The engine will have off-road and industrial applications. Among the potential benefits are:

- An engine that will run on a variety of fuels (JP8, biodiesel, E85, DME, gasoline, diesel,...)
- Reduced fuel consumption through 50% improvement in engine efficiency
- Increased torque and horsepower by approximately 50%
- Real-time switching between engine cycles for optimized performance in the field.
- Reduced regulated emissions (HC, CO, NOx) and the potential to eliminate aftertreatment.

The successful implementation of the Digital Engine is significant for the United States:

- Less fuel will need to be transported to the battlefield. Since the price of fuel exceeds \$400/gallon by the time it reaches the battlefield, the switch to the Sturman Digital Engine will result in fuel cost savings to the military.
- A variety of fuels can be used in the battlefield.
- The increased torque and horsepower will give our troops a competitive advantage.
- The technology can be retro-fitted onto existing engines.
- The engine size can be reduced while maintaining current torque and power, allowing for an increase in protective vehicle armor.
- The basic engine geometry and packaging (block, pistons, crankshaft, valves, cylinder heads) remain unchanged, therefore the technology can be packaged into both military and private sector trucks.

Webster Agent Case Expert - Amount Requested: \$6.5M

Colorado Springs, CO

- Improves software designed to gather, assess, and manage military information operations from specified databases and open source material.

Webster-ACE is a comprehensive set of software tools designed to gather, assess, & manage information from specified databases as well as open source material. It is designed to assist Information Operations (IO) analysts search through & analyze large quantities of information so as to understand the relationship of an adversary's network &

potential terrorist activity. A functional prototype version of Webster is currently being used and upon further accreditation will provide operationally relevant multi-source intelligence to the Joint Information Operations Warfare Command (JIOWC) in support of all Combatant Command IO efforts.

Deployable Space and Electronic Warfare Analysis Tools - Amount Requested: \$4M
Colorado Springs, CO

- Creates a common operation environment for Army support teams by incorporating space object data, improving navigation accuracy prediction, and integrating electronic warfare analysis
- Provides mission planners with a near real-time assessment platform to support operation centers worldwide

This program will incorporate space object data, improve navigation accuracy prediction (including jamming and weapons modeling), and integrate electronic warfare (EW) analysis into a common operational environment for Army support teams. The user friendly interface will couple real time data integration with currently deployed and supported data feeds, including the following:

- Imagery
- Terrain
- GPS status
- Electronic warfare environment
- Terrestrial weather

The U.S. Army Space and Missile Defense Battle Laboratory has successfully tested and fielded many Space Analysis and collaboration tools. As technology progresses, however, it has become even more critical that the Army is able to 1) rapidly integrate several disparate data sources, 2) analyze the data thoroughly, and 3) provide battlefield recommendations to the operational commanders in real time. There needs to be improvements in Army Space Elements capabilities to utilize space and electronic warfare assets in a complex battlefield environment and to provide critical time sensitive information to commanders in the field. Simple refinements to existing commercial-off-the-shelf (COTS) technology will allow DOD to develop the first true “effects-based” analysis tools. DOD will be able to fully assess effectiveness of processing satellite, aircraft, and ground based time dynamic position and attitude information. This modeling and simulation capability will also provide mission planners with a near real-time assessment platform to support operation centers worldwide. Lastly, this effort will undertake extensive testing -- commanders can be assured that when this capability is employed, it will have the desired effects.

High Altitude Long Endurance Development Program - Amount Requested: \$5.5M

Colorado Springs, CO

- Corrects force capability gaps by providing the High Altitude Long Endurance (HALE) stratospheric operating regime with “Space-like” communications and surveillance for battlefield situational awareness and over-the horizon communication.

Army documents clearly highlight force capability gaps regarding the need for improved battlefield communications and surveillance. The HALE stratospheric operating regime will provide “Space-like” communications and surveillance for our troops for battlefield situational awareness and over-the-horizon communications. HALE vehicles will increase payload footprints, reduce airspace and bandwidth congestion, and be controlled by tactical units for maximum, affordable daily combat support. This program will accelerate development of the High Altitude Long Endurance (HALE) operating regime through five objectives: (1) Optimizing a combination Airship--UAV vehicle for HALE. Rudimentary versions of this vehicle have proven quite successful. (2) Modifying communications and surveillance payloads for light, low-power HALE vehicles; (3) Producing and storing enough power to propel a HALE vehicle and keep it in place over a target area, and also to enable it to loiter over a point of interest during descent; (4) Modeling HALE vehicles, payloads, and weather effects to serve as the basis for a ground station for troops to plan missions efficiently and control the vehicle once launched; (5) Developing and testing “Sense and Avoid” sensors and algorithms, to enable these vehicles to operate in US National Airspace, while avoiding other vehicles such as airliners.

Full Access to Peterson AFB from Powers Boulevard - Amount Requested: \$4M

Peterson AFB, Colorado Springs, CO

- Addresses mobility and future congestion at the Powers Boulevard intersection by providing an interchange

Improvements at Fort Carson Gates 5 & 6 - Amount Requested: \$687,000

Fort Carson, CO

- Accelerates intersection improvements at Fort Carson Gates 5 and 6 and safety improvements along SH 115 located between these gates