

## **Fiscal Year 2010 Defense Appropriations**

**Item Name:** 40mm Cartridge, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Day & Zimmermann  
**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

Cartridge, 40mm HEDP M433 (E12601) is a dual-purpose impact type round designed to penetrate lightly armored targets and perform an anti-personnel mission. Upon impact, the detonator triggers the explosive fuzing sequence and produces a jet blast that detonates the high explosive bursting charge. This procurement also supports building a war reserve in accordance with the Army's and Marine Corps' procurement goals. This project will take place at the Red River Army Depot, which employs over 300 Arkansans.

**Item Name:** 60mm Mortar, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Pine Bluff Arsenal  
**Suggested Location of Performance:** Pine Bluff, AR

**Purpose/Project Description:**

The M721 is a 60mm Illuminating Mortar Cartridge. It is designed to provide illumination out to the full range of the M720 HE cartridge and to illuminate target areas to facilitate adjustment of fire. The M721 contains a standard illuminant mix which provides approximately 300,000 candlepower of light. The M722 Smoke Cartridge is designed for use with the M224 60mm Mortar System and is used as a spotting/marketing round.

**Item Name:** 60mm Mortar, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Day & Zimmermann  
**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

Mortar systems enhance mission effectiveness of the maneuver unit commanders by providing indirect fire support. The US Army and Marine Corps rely on the family of mortar systems in direct combat in Afghanistan and Iraq in the Global War on Terrorism (GWOT) and for war fighter training. This project will take place at the Red River Army Depot, which employs over 300 Arkansans.

**Item Name:** 81mm Mortar, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Day & Zimmermann  
**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

Mortar systems enhance mission effectiveness of the maneuver unit commanders by providing indirect fire support. The US Army and Marine Corps rely on the family of mortar systems in direct combat in Afghanistan and Iraq in the Global War on Terrorism (GWOT) and for war fighter training. This project will take place at the Red River Army Depot, which employees over 300 Arkansans.

**Item Name:** AAR-47 Missile Warning System for A-10 Air National Guard Aircraft  
**Request:** \$15,000,000  
**Suggested Recipient:** Alliant Techsystems  
**Suggested Location of Performance:** Clearwater, FL

**Purpose/Project Description:**

This request would help fund the installation of the AAR-47 MWS on the ANG's A-10 fleet. The ANG has a stated "critical combat capability" requirement for additional A-10 AAR-47 MWS. Currently, A-10s are located with the Air National Guard in Fort Smith, Arkansas.

**Item Name:** Advanced Functional Nanomaterials for Biological Processes  
**Request:** \$2,500,000  
**Suggested Recipient:** University of Arkansas at Little Rock  
**Suggested Location of Performance:** Little Rock, AR

**Purpose/Project Description:**

Targeted delivery of drugs and other medical therapies can radically improve recovery and survival rates from battlefield injury and diseases such as cancer. Army medical applications for targeted delivery include tissue regeneration, treatment for drug resistant infections, wound preservation, and cancer imaging and treatment. UALR's research is looking into the nanotoxicology aspects of using nanomaterials for medical treatment in the body. A thorough understanding of how nanomaterials enter the human body and interact with living tissues is critical to realizing the benefits to the military of targeted drug and therapy delivery via nanomaterials.

**Item Name:** Automated, Portable Device for Diagnosis of Traumatic Brain Injury  
**Request:** \$2,000,000  
**Suggested Recipient:** SFC Fluidics  
**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

This funding will be used to develop a fully automated, small, self-contained, disposable chip to diagnose traumatic brain injury at the point-of-need. The overall objective of the project is to meet the needs of the military in the development of a diagnostic system suitable for use both in the field and in military medical facilities.

**Item Name:** Biological Air Filtering System Technology (BAFST)

**Request:** \$4,000,000

**Suggested Recipient:** Arkansas State University

**Suggested Location of Performance:** Jonesboro, AR

**Purpose/Project Description:**

The Department of Defense needs advanced biological filtration systems to mitigate complex biologically based threats. This funding will support research for a stand-alone/fully integrated biological detection and cleansing subsystem that will allow missile defense systems to operate continuously during combat regardless of the contaminated environment.

**Item Name:** Chemical Biological Protected Shelter (CBPS) System

**Request:** \$500,000

**Suggested Recipient:** Pine Bluff Arsenal

**Suggested Location of Performance:** Pine Bluff, AR

**Purpose/Project Description:**

CBPS systems are managed by TACOM and are released via DA G8 and FORSCOM direction. The systems are part of the ARFORGEN pool required for immediate deployment if Leave Behind Equipment (LBE) is not available for the deploying unit. If COSIS is not performed on the CBPS systems, they will not be ready for deployment. This service must be done semi-annually or there is risk of damage to the equipment.

**Item Name:** Chemical-Mechanical Self-Destruct Fuze (cm-SDF)

**Request:** \$3,000,000

**Suggested Recipient:** Day & Zimmermann

**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

The Dual-Purpose Improved Conventional Munitions (DPICM) system, delivered by both artillery shell and rocket warhead, provides unprecedented effectiveness on the battlefield but falls short of achieving the goal of less than 1% residual unexploded ordnance. An innovative and cost effective chemical-mechanical Self-Destruct Fuze device is currently under development. Further funding is needed to support the continued development of a Self-Destruct device to assure the long-term viability of the DPICM system. This project will take place at the Red River Army Depot, which employs over 300 Arkansans.

**Item Name:** Combined Injury Consortium

**Request:** \$5,000,000

**Suggested Recipient:** University of Arkansas for Medical Services

**Suggested Location of Performance:** Little Rock, AR

**Purpose/Project Description:**

Radiation injuries occur in combination with other types of trauma in 70 percent of casualties after a nuclear incident. The treatment of radiation combined injuries differs significantly from the treatment of traumatic injuries or radiation injuries alone. Consequently, research on radiation combined injury and development of effective medical countermeasures against radiation combined injury are essential steps to meet the military requirement. This funding will support the establishment of a multi-state consortium for development of medical countermeasures against radiation combined injury.

**Item Name:** C-3TV/C-16TV Television Surveillance System

**Request:** \$10,000,000

**Suggested Recipient:** Naval Surface Warfare Center

**Suggested Location of Performance:** Philadelphia, PA

**Purpose/Project Description:**

Specific plans for the use of these funds include the manufacture and delivery of advanced video sensors already tested, approved, and selected by the Navy, system level operational manuals and troubleshooting guidelines, and software to remotely operate these imaging systems as they provide continuous surveillance of all combatant ships' weather deck, flight deck, quarterdeck, piers (when in port) and surrounding surface contracts both in port and at sea. This system will reduce manpower (lookouts, roving patrols) and increase crew safety during critical operations. The system has been fully tested and has been selected by the Navy as the preferred replacement system for the current C-3TV/C-16TV systems. Components of this project will be produced in Rogers, Arkansas.

**Item Name:** CTG, Mortar, 120mm Mortar, All Types

**Request:** \$10,000,000

**Suggested Recipient:** Pine Bluff Arsenal

**Suggested Location of Performance:** Pine Bluff, AR

**Purpose/Project Description:**

The M930 provides the user a 120mm Illuminating cartridge which will provide illumination out to the full range of the M120/M121 Mortar System. The M930 Cartridge is designed for use with the M120 and M121 120mm Mortar Systems for illuminating target areas to facilitate adjustment of fire.

**Item Name:** CTG, Arty, 155mm, All Types  
**Request:** \$15,000,000  
**Suggested Recipient:** Pine Bluff Arsenal  
**Suggested Location of Performance:** Pine Bluff, AR

**Purpose/Project Description:**

The M1066 is a 155mm projectile that uses a special infra-red 'candle' payload. The projectile is used in conjunction with night vision goggles to illuminate the target area. The projectile is almost invisible to the naked eye, but the infra-red spectrum allows a night vision advantage for our troops. The illuminating and infra-red ammunition is a high demand commodity and the M1066 fulfills a critical battlefield need.

**Item Name:** Durability, Energy Saving and Sustainability of Oceanic Vehicles  
**Request:** \$2,000,000  
**Suggested Recipient:** NanoMech  
**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

NanoMech has developed a process to create open ended, aerodynamic fish shaped nanoparticles (15-70 nm average size) of inorganic molybdenum disulphide ( $\text{MoS}_2$ ) at room temperature. This active material has demonstrated very low friction and wear characteristics in laboratory testing. The invention represents a breakthrough in terms of performance, cost, and environmental friendliness and can meet today's more stringent lubrication demands for both aging and new naval vehicles and support infrastructure equipment.

**Item Name:** Enhanced Threat Imaging System Multi-Spectrum Image Fusion  
**Request:** \$5,000,000  
**Suggested Recipient:** Nychorama  
**Suggested Location of Performance:** Little Rock, AR

**Purpose/Project Description:**

The Enhanced Threat Imaging System (ETIS) effort develops an affordable and portable sensor that provides shot detection and shot localization to the warfighter in real-time to provide Force Protection and Sniper Detection. ETIS is based upon a multi-aperture, 360 degree 'fish-eye'-like lens configuration, with multiple sensors providing overlapping multi-spectrum scene coverage; and, with algorithms optimized to detect muzzle flash. ETIS algorithms are designed to characterize the munition type (with a minimized false-alarm rate) and direction of the shot.

**Item Name:** Grenades, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Pine Bluff Arsenal  
**Suggested Location of Performance:** Pine Bluff, AR

**Purpose/Project Description:**

Smoke grenades are canister-type grenades used as ground-to-ground or ground-to-air signaling devices, target or landing zone marking devices, or a screening device for unit movements. Smoke grenades are normally considered non-lethal, although incorrect use may cause injury or fatality. The body consists of a sheet steel cylinder with a few emission holes on top and at the bottom to allow smoke release when the grenade is ignited.

**Item Name:** Grenades, All Types  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Day & Zimmermann  
**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

A system contract for a multi-year award of Army/Marine Corps M67 Hand Grenades (FY05-FY09) was awarded in June 2006. There is currently, however, a shortage of Army M67 Hand Grenades in inventory. An alternative source of production is needed to maintain adequate supplies for the Global War on Terrorism, for meeting training inventory, and for fostering innovative technology regarding the quality and safety of the M67 Hand Grenade. This project will take place at the Red River Army Depot, which employs over 300 Arkansans.

**Item Name:** High Frequency Devices and Circuits for Nanotubes and Nanowires  
**Request:** \$2,000,000  
**Suggested Recipient:** University of Arkansas  
**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

The objective of this proposed research is to develop carbon nanotube- and silicon nanowire-based high frequency components. The university's tests demonstrated the short-wavelength of electromagnetic waves in carbon nanotubes. This means that a structure built based on this material will have effective wavelengths much shorter than in vacuum. This will lead to miniaturization of components. The university will design, fabricate and test optimized electronic devices that take advantages of these features. Faster switching speed and size reduction of components are crucial figures of merit for military and commercial applications. Furthermore, this research will lead to fully organic (plastic) electric and electronic circuits, which are lightweight, low loss, durable, easy to carry and bend, and provide more battery life.

**Item Name:** Hydra-70 70 mm (2.75 inch) Rockets

**Request:** Support President's Budget Request

**Suggested Recipient:** General Dynamics

**Suggested Location of Performance:** Camden, AR

**Purpose/Project Description:**

The Hydra-70 rocket system is used by Army, Navy, Marine Corps and Special Operations helicopters and Navy, Marine and Air Force jet aircraft. The Hydra-70 Family of rockets includes eight different tactical warheads that provide combat overmatch and three training warheads required to ensure the warfighting readiness posture for U.S. aviation assets. The combat proven Hydra-70 is crucial in the accomplishment of anti-material, anti-personnel, and air-to-ground suppression missions in both Afghanistan and Iraq.

**Item Name:** IdentClarity – Identity Resolution

**Request:** \$2,000,000

**Suggested Recipient:** Acxiom Corporation

**Suggested Location of Performance:** Conway, AR

**Purpose/Project Description:**

Many of the current defense technology initiatives pertain to finding new information by extracting information from documents or the web to piece together intelligence. The goal of this project is to find links and information within existing and known sources of data. This research intends to influence investigative services, beneficiary quality, and overall search awareness in existing databases.

**Item Name:** Information Quality Tools for Persistent Surveillance Data Sets

**Request:** \$2,000,000

**Suggested Recipient:** University of Arkansas at Little Rock

**Suggested Location of Performance:** Little Rock, AR

**Purpose/Project Description:**

The University of Arkansas at Little Rock would use this funding to develop new automated tools and methods to ensure data quality for the Air Force. Data quality is a fundamental challenge for data applications involving large and diverse data sets such as persistent surveillance, autonomous air vehicle operation, integrated battle command and control, financial, personnel management, and other Air Force mission systems. Managing input data and ensuring quality is critical to the performance of analysis systems in terms of accuracy, processing efficiency, reliability and cost.

**Item Name:** Insensitive Munitions Testing (IM Testing)

**Request:** \$5,000,000

**Suggested Recipient:** National Technical Systems

**Suggested Location:** Camden, AR

**Purpose/Project Description:**

Insensitive Munitions are weapons or munitions that are designed not to react to any stimulus other than the designed initiation sequence. This allows the munitions to be stored and used safely. IM tests include bullet and fragment impact, fast cook off, slow cook off and other external stimulus. The tests verify the design/explosive formulation does not detonate or cause a violent reaction when shot or burned. The funding requested would be used for engineering and testing of new IM designs for existing munitions in the USMC stockpile.

**Item Name:** Land Based Standard Missile - 3

**Request:** \$96,000,000

**Suggested Recipient:** Raytheon

**Suggested Location of Performance:** Camden, AR

**Purpose/Project Description:**

Land Based SM-3 integrated with an indigenous or U.S. developed Fire Control System and the AN/TPY-2 radar provides a significant upper-tier ballistic missile defense capability in terms of range, battlespace, shoot-look-shoot opportunities and overall performance and reliability. Both SM-3 and AN/TPY-2 are proven, in production, and operational around the world. Initial funding would provide resources for minor modifications and risk reduction efforts required for SM-3 and the AN/TPY-2 radar, and a trade study to determine the best fire control approach.

**Item Name:** Nanoscale Bio-Sensors

**Request:** \$3,000,000

**Suggested Recipient:** University of Arkansas

**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

These funds will be used to develop new nanotechnology infrastructures and promote breakthroughs in nanostructures for research and development of nanoscale biological sensors. This initiative is vital to the Army's vision to achieve protection for its soldiers and civilian communities from bacteria, viruses, and biological toxins likely to be used as biological weaponry.

**Item Name:** Nanotechnology for Anti-Reverse Engineering

**Request:** \$3,000,000

**Suggested Recipient:** Space Photonics

**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

Space Photonics, an Arkansas high technology small business, is working with the Army, Navy, and Air Force to develop and deliver advanced Anti-Tamper products for protecting weapon systems. These funds will be used to complete product development and integration of the components and prepare for full flight qualification within military aircraft, both manned and unmanned aerial vehicles (UAV).



**Item Name:** Near Net Shape Nanomanufacturing of Advanced Nano Composites

**Request:** \$1,500,000

**Suggested Recipient:** NanoMech

**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

With funding, NanoMech will demonstrate the feasibility of fabricating polymeric nanocomposites with at least 10% carbon nanotubes by using the proposed innovation to fabricate 2D and 3D components. Then, based upon systematic testing of material processing, NanoMech will work towards developing the near net shape manufacturing technique into a turnkey system to fabricate components of interest to Army and other civilian applications.

**Item Name:** Projectile 155mm DP Basebleed M864

**Request:** Support President's Budget Request

**Suggested Recipient:** Day & Zimmermann

**Suggested Location of Performance:** Texarkana, TX

**Purpose/Project Description:**

The 155mm M864 ER-DPICM artillery projectile is needed to support the Stryker combat teams with a Self-Destruct Fuze DPICM capability. Fuzes used on the DPICM grenades currently have no Self-Destruct feature and result in less than optimum percentages of hazardous unexploded ordnance (UXO) on the battlefield after deployment. This program provides for retrofit of existing M42/M46 grenades with modern fuzes that incorporate a Self-Destruct mechanism, while providing recapitalization/reuse of the three primary projectile components.

**Item Name:** Silicon Carbide Power Modules for the F-35 Joint Strike Fighter

**Request:** \$4,000,000

**Suggested Recipient:** Arkansas Power Electronics International, Inc.

**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

The F-35 Joint Strike Fighter is one of the first major programs implementing the Air Force's new More Electric and All Electric Aircraft (MEA/AEA) design philosophy, which mandates the replacement of costly and bulky mechanical hydraulic aircraft flight control systems with lighter weight, high-reliability, low-maintenance electric motors and drives. The high power densities and high voltages required to operate mechanical flight systems using electric motors are driving a transition to high density silicon carbide (SiC) power electronic systems that can operate at higher efficiencies, higher voltages, higher power densities, and higher temperatures in comparison with conventional silicon electronics. This request would fund the transfer of laboratory tested SiC power electronics technology developed at APEI, Inc. to F-35 actuator drive flight systems. In particular, APEI, Inc. will begin by qualifying the SiC power modules in laboratory environments for flight testing; this will be followed by collaborating with Hamilton Sundstrand for flight testing and qualification. Finally APEI, Inc. will begin manufacture of the actuator drive for deployment into the F-35 production models.

**Item Name:** Spectroscopic Materials Identification Center

**Request:** \$2,000,000

**Suggested Recipient:** Arkansas State University

**Suggested Location of Performance:** Jonesboro, AR

**Purpose/Project Description:**

The capabilities of the ASU Arkansas Center for Laser Applications and Science (ArCLAS) in laser induced breakdown spectroscopy (LIBS) and cavity ringdown spectroscopy (CRD) would be promoted to allow for the the low level detection of solids (LIBS) and liquids and gases (CRD) from the list of chemicals of primary interest to the Department of Defense and the Department of Homeland Security.

**Item Name:** Standard Missile Propulsion Upgrade Dual Pulse Rocket Motor

**Request:** \$5,000,000

**Suggested Recipient:** Aerojet

**Suggested Location of Performance:** Camden, AR

**Purpose/Project Description:**

Standard Missile 2 (SM-2) is the primary ship self-defense weapons system deployed by the US Navy. The current generation, SM-2 Block IIIB, is the latest in a long history of highly capable Anti-Air Warfare (AAW) weapons. The SM-2 Block IIIB capitalizes on communication techniques, advanced signal processing, and the proven Aerojet MK-104 rocket motor to substantially increase the intercept range and provide high- and low-altitude intercept capability against the modern anti-ship missile threat. These upgrades and advances have been added as existing threats have emerged to ensure that the US and allied navies deploy the most modern self-defense missile system. However, the MK-104 rocket motor has not been upgraded since its introduction into the fleet in the early 1980s. A pulse motor variant will significantly increase both kinematic performance and flexibility to fully realize the benefits of prior investments in the "front end" of the missile in countering ever-increasing threats.

**Item Name:** Standard Missile -3 Procurement

**Request:** \$50,000,000

**Suggested Recipient:** Raytheon

**Suggested Location of Performance:** Camden, AR

**Purpose/Project Description:**

The JCM II study, completed by U.S. Strategic Command in CY07, indicates that combatant commanders require twice as many Standard Missile-3 (SM-3) missiles than the 147 that are currently planned. In 2008, both the House and Senate recognized the threat imperative by supporting increased funding and accelerating the Aegis BMD system. Additional funding for Long Lead Materials for 24 SM-3 Block IB missiles would accelerate deployment of Aegis BMD capability by better optimizing existing production capacity.

**Item Name:** Standard Missile - 6  
**Request:** Support President's Budget Request  
**Suggested Recipient:** Raytheon  
**Suggested Location of Performance:** Camden, AR

**Purpose/Project Description:**

The US Navy has been developing the Standard Missile - 6 (SM-6) missile for more than six years. SM-6 development is currently on budget and on schedule with multiple, successful test firings completed in 2008 proving the performance of the system. The Navy should be encouraged to continue the program and ensure it goes into Low Rate Initial Production (LRIP) on time and proceeds to Full Rate Production as quickly as possible.

**Item Name:** Standoff Hazardous Agent Detection and Evaluation System (SHADES)  
**Request:** \$3,979,000  
**Suggested Recipient:** Arkansas State University  
**Suggested Location of Performance:** Jonesboro, AR

**Purpose/Project Description:**

Proliferation of explosive and hazardous agents' threats require higher value (confidence, reliability, accuracy, and responsiveness) and more timely detection and discrimination with greater stand-off capability. SHADES, prioritized to meet urgent SMDC needs dealing with IEDs and weapons of mass destruction (WMD), is a warfighter performance multiplier -- enabling hazardous agent detection systems to react more quickly, see farther, be employed in a safer warfighter environment, and be more fully integrated to engage sophisticated and complex threats by military and homeland security response teams.

**Item Name:** Standoff Improvised Explosive Device Detection Program (SIEDP)  
**Request:** \$2,000,000  
**Suggested Recipient:** Arkansas State University  
**Suggested Location of Performance:** Jonesboro, AR

**Purpose/Project Description:**

Funds will be used to develop the concepts, devices, systems, and techniques required to extend the range, sensitivity and discrimination with which the materials, manufacture, storage and transportation systems used to deliver these deadly devices can be detected. Such areas of research and technology development are very important for future military and civilian protection and advanced security systems.

**Item Name:** Terahertz Sensing and Imaging Technology

**Request:** \$3,000,000

**Suggested Recipient:** University of Arkansas

**Suggested Location of Performance:** Fayetteville, AR

**Purpose/Project Description:**

Portable Terahertz Sensing and Imaging Technology will significantly reduce the risk to soldiers to hidden or concealed weapons and explosive devices, and serve as a replacement to current technologies due to the system size and weight for portability, while providing added bandwidth. Terahertz Sensing and Imaging Technology dramatically improves the power and performance of packaged system modules, especially in the frequency range of 0.1 to 1.0 terahertz, a range that is of significant interest due to its ability to see through clothing and other materials.