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By Kevin Hunter

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Commander's Corner

MG Kurt J. Stein
Commander
U.S. Army Tank-Automotive Command (TACOM)
Warren, MI
With final troop withdrawal from Iraq and a planned force reduction in Afghanistan, DoD is maximizing joint operations to maintain the upper hand over disjointed elements of a wider Al Qaeda-led insurgency. As part of this effort, threats to American and coalition forces in the form of IED, EFP and unseen sniper ballistic fire are being countered with the latest in underbelly armor, enemy shot detection and capabilities in small unmanned systems that are providing warfighters with situational awareness in forms never seen on the battlefield.

In the August issue, A&M takes readers into the world of Tactical Vehicles and the warfighters that operate these four-wheeled platforms of safety and mobility. In an exclusive interview with MG Kurt J. Stein, Commander, U.S. Army Tank-Automotive Command (TACOM) Warren, MI, MG Stein discusses his command’s mission in support of the Army’s Fleet Sustainment and Force Generation (ARFORGEN) requirements. From the evolution of military vehicle care to the maturation of solutions for platform survivability, new underbelly and B-kit armor upgrades for M-ATV vehicles and advances in stabilized sensor technology for common remote weapons stations are providing greater protection for warfighters.

On the Marine Corps front, A&M offers the third in a series of feature articles on the transformation of armored vehicle application in the operational environment.

With the demand for greater partnering in both joint service and DoD/industry partnering, A&M offers readers a look at the latest efforts to provide brigade-centric training for warfighters in an exclusive interview with BG Terry R. Ferrell, Commanding General, National Training Center, Ft. Irwin, CA. From a network integration perspective, the latest testing at White Sands Missile Test Range, NM is seeing the development of a single battlefield platform that is expected to connect warfighters at all levels of the fight.

Be sure not to miss A&M’s recurring departments such as Rugged on the Move with a look at tactical LED lighting and Unmanned & Beyond with the latest in small unmanned ground vehicle (SUGV) application.

As always, feel free to contact me with questions, comments. Thanks for your readership!

Kevin Hunter
Editor
Armor & Mobility
Tactical Defense Media
301-974-9792

Letter to the Editor

Susan,

Thanks again so much for shipping the magazines to me in St. Louis for Marine Week...they all went like ‘hot cakes’ and DoD Power, Energy, and Propulsion” is now widely known in Missouri!!!...will hope to continue a dialogue as other projects develop...//...Marty: ExFOB II will be demonstrated at 29 Palms next month...I’m going to ask the PAO working it to put you on his media invitation list...all the best, Fred”

Fred C. Lash
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Marine Corps Warfighting Laboratory
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U.S. Army Depot Anniston is one of DoD's primary installations for the overhaul and repair of heavy and light combat vehicles.

By Clester Burdell, Anniston Army Depot Public Affairs Officer

Some things get better with age, and that's a true statement for Anniston Army Depot (ANAD). Marking almost seventy years in existence, ANAD continues to proudly serve the nation and the men and women of our armed forces.

Proud History

Let's take a brisk walk down memory lane. In the 1940s, during World War II, the U.S. War Department began planning construction of a military installation in Northeast Alabama, initially named Anniston Ordnance Depot (AOD). It was comprised of storage igloos, ammunition magazines, warehouses and several administrative buildings.

Nearly a decade later, AOD was assigned a maintenance mission for the overhaul and repair of combat vehicles. In 1962, the facility was renamed Anniston Army Depot, an installation under the jurisdiction of the Army Materiel Command. A year later, the maintenance and storage of chemical munitions at ANAD began.

ANAD began repair and overhaul of the M1 Abrams Main Battle Tank in the mid-1980s and was the recipient of towed and self-propelled artillery and light combat vehicle missions as a result of Base Realignment and Closure 1995.

From its origin to the present, ANAD has transformed into a state-of-the-art maintenance facility, rightfully earning its reputation as the “Tank Rebuild Center of the World.” ANAD holds the distinction as the Secretary of the Army's Center of Industrial and Technical Excellence for Combat Vehicles, both tracked and wheeled (except the Bradley), artillery, assault bridging and small caliber weapons.

Today, ANAD’s primary mission has grown to encompass overhaul and repair of all heavy and light combat vehicles, including the M1A1 and M1A2 Abrams Battle Tanks; M88 Recovery Vehicle; M113A3 Armored Personnel Carrier; M109A6 Paladin Self-Propelled Howitzer; Field Artillery Ammunition Support Vehicle (FAASV); M9 Armored Combat Earthmover (ACE); Stryker Family of Vehicles; M93 Fox Nuclear, Biological, and Chemical Reconnaissance System (NBCRS); Assault Breacher Vehicle; Towed Howitzers (M777, M198, M119, and M102) and Bridge Systems (Joint Assault Bridge, Assault Vehicle Launch Bridge, Medium Girder Bridge, and Improved Ribbon Bridge).

The capabilities that ANAD possesses don’t stop here. The installation overhauls all major subassemblies of these weapons including engines, transmissions, final drives, recoils, gun mounts, hydraulic components, fire control, electronics, electro-optics, optics and other components.

“Anniston Army Depot has an incredible reputation, not only across the Army but across the entire Department of Defense,” said Colonel Timothy Sullivan, the depot’s 32nd commander. “This attributes to our success at home and abroad.”

Whether it’s rifles, pistols or weapon-related hardware, Anniston is the Army’s primary Small Arms Rebuild Center within the Department of Defense and overhauls numerous weapons for all branches of the Armed Forces including the M16A2 rifle, M4 Carbine, MK19 40mm Grenade Launcher, M230 30mm Chain Gun, M2 .50-cal Machine Gun, M9 9mm Pistol, M249 Squad Automatic Weapon, M134 7.62mm Gatling Machine Gun, M240 7.62mm Machine Gun, M60 Machine Gun, and 120mm, 81mm and 60mm Mortars.

Public-Private Partnerships

In 1993, the depot began leading the way within the Department of Defense in the public-private partnership arena with over 98 different partnerships with industry leaders. ANAD
Emerging Forecast / ANAD

is working diligently to improve enterprise efforts with existing and potential industry support utilizing agreements such as direct sales, workshare and facility use.

• Direct sales involve the use of depot land, facilities, equipment and or employees to perform work or produce goods for the private sector. The depot works as a sub-contractor and is funded by the private sector.

• Workshare covers a joint scope of work, coproduction arrangement utilizing depot and private sector facilities and or employees. With this agreement, the depot is funded through normal government sources.

• Facility Use is the private sector use of under-utilized depot land, equipment and /or facilities to perform work for the military. The depot is funded through the private sector or government sources.

Current partnership agreements with Honeywell, BAE, Raytheon, General Dynamics Land Systems and others ensure a wide range of vehicle conversions and upgrades are ongoing.

“Anniston Army Depot looks at the big picture to see where partnering can benefit not only the Department of Defense, but how it can best serve the Calhoun County area,” said Sullivan. “ANAD belongs to the community.”

A highly skilled and diversified workforce, updated facilities and equipment and competitive prices, coupled with industry knowledge, have proved Anniston Army Depot as a prime target for teaming and partnership arrangements for both defense and non-defense related items. Anniston seeks and encourages all opportunities to partner with industry, especially those potentially new and unique opportunities. A full-time staff is dedicated solely to marketing and developing these arrangements with local, regional and global public and private businesses.

According to Johnny Thompson, chief of the depot’s Business Management Office, “Partnering brings complimentary capabilities to the arena. It provides a means for us to capitalize on each other’s strengths. We have been doing this for years and our relationships with our partners have grown in trust and confidence. I believe the future of partnering is strong and will be an enabler for future successes and a means to generate new workload for the combined organic and commercial industrial base.”

**INTERNAL CAPABILITIES**

As a multi-mission installation, Anniston Army Depot continues to equip and sustain the warfighter. From the M48 tank of the 1950s to the M1 series battle tank of today, the depot’s capabilities are endless.

ANAD has the ability to completely overhaul any combat vehicle. The process consists of completely disassembling a battle-damaged or worn vehicle, repairing or replacing any or all components, and reassembling the vehicle to a like-new condition, at a fraction of the cost of a new vehicle.

“Anniston has consistently delivered combat vehicles, artillery, small arms and secondary items on schedule to meet customer requirements,” said Jeff Simmons, ANAD Director of Production.

While a large majority of the workforce is comprised of government civilians, there are reminders of the real value of the employees’ work from the ultimate customer.

**OPERATION “TELL YOUR STORY”**

A program, Operation Tell Your Story, provides soldiers a first-hand perspective of the work performed here by the depot’s skilled laborers, who have repaired much of the equipment used by the visiting soldiers, to include Strykers and small caliber weapons.

Two years ago, soldiers from the 3rd Brigade 2nd Infantry Division, Stryker Brigade Combat Team at Fort Lewis, Wash. toured the facility. While in theater, this brigade gave a nickname – General Lee – to one of the eight-wheeled battle-damaged Stryker vehicles that was here being repaired at Anniston. The advanced combat protection of General Lee is credited with saving the lives of the crew.
EXTERNAL CAPABILITIES

Most of the work is completed internally within the 15,000 acre complex, but employees are ready to deploy to areas abroad within a moment’s notice. The workforce is committed to extending the best possible support on-site to military units at other locations throughout the United States and beyond.

“Our employees are experts in their field and are willing to position themselves to make immediate repairs,” said Ed Morris, Fielding Operations and Value Stream manager. “They understand the mission and importance of the service they are providing.”

ANAD teams work in 42 locations throughout the continental United States and have locations in six countries around the globe. They are:

- Small Arms Readiness Evaluation Teams, or SARET, who provide inspection and repair for pre and post deployment, supporting both CONUS and OCONUS military units, bringing small arms weapons to fully mission capable status.
- Fielding Team and Rapid Repair Support of the M1, M88 and Paladin vehicle repair and hand-off.
- Forward Repair Activities are established in Southwest Asia where depot employees perform any activity coming through the doors -- including engines, transmissions, generators, welding and fabrication or other equipment to meet the Soldiers' needs.
- Defense Generator and Rail Center, located at Hill Air Force Base, Utah, is where locomotives are inspected, repaired and rebuilt for the Army and other customers.

SUCCESS STORIES

Anniston's capacity can accommodate a large quantity and variety of vehicles and is capable of meeting fast paced production schedule requirements.

In addition to overhauling and resetting the entire M1 fleet of vehicles, there are other areas of focus. Some of ANAD’s primary areas include work being performed on the Stryker family of vehicles, to include a pilot overhaul of the Stryker Infantry Carrier Vehicle. From all indications, this program may be complete ahead of schedule. Anniston has also completed four Stryker brigade resets.

Recently, the depot announced production of 586 M113 Family of Vehicles and 21 M88A1s through a foreign military sales case. These vehicles will be used by the Iraq National Government to meet their specific requirements. Through the collaborative efforts of TACOM Life Cycle Management's Security Assistance Management Directorate, US Army Security Assistance Command and the depot, the customer received fully mission capable refurbished vehicles ahead of schedule.

As a result, additional work is being performed on the M113 program, with more vehicles on the way. “The men and women at ANAD are the best in the world at what they do,” said Chuck Gunnels, chief of Combat Vehicle Value Stream. “They have not only set up a new production line but they did it while utilizing quality improvement initiatives and LEAN Six Sigma principles.”

INVESTING IN THE FUTURE

Anniston Army Depot continues to enhance its capabilities and invest in its future. Some of the most recent facility improvements include:

- 2009 – Grand opening of an $85M Powertrain Flexible Maintenance Facility. This 142,500 square feet facility houses overhaul and repair work on reciprocating diesel engines for combat vehicles and was designed with a flexible floor plan that allows for movement and adjustment of maintenance equipment and production lines to support a changing work environment.
- 2009 – Groundbreaking on a new 83,385 square-foot Small Arms Facility. The construction project is expected to cost $17M and the modern production equipment planned for the facility is worth $6.2 million.
- 2010 – Construction of a new 109,824 square foot Transmission Facility, designed for overhaul of transmissions that support the M60 Bridge Launcher, Paladin, FAASV, M113, M1A1, M9ACE, M88 and Stryker vehicles. Estimated contract award of $46M, with a two-year completion date.
- 2011 - Grand opening of a $26M Industrial Wastewater Treatment Plant, which treats depot production industrial wastewater, processing it to meet regulatory discharge requirements, almost doubling the existing gallons per day of wastewater processed.

CHALLENGES FACED

While the future is undetermined, Anniston Army Depot is prepared to meet whatever challenges it may face. The depot will eventually return to peacetime operations, which may affect the number of vehicles overhauled. Regardless of what occurs, the depot is prepared make the shift.

“We focus on all workload regardless of how large or small,” said Phillip Dean, chief of Integrated Logistics Support. “In my 26 years of employment here, I don’t recall a single time when this workforce didn’t step up to the plate and accept challenges. Not only did they accept them, but they exceeded expectations.”

For more info: www.anad.army.mil
BAE Systems and ANAD have had several partnerships in the past on the M88, M109 and M113 programs including overhaul, reset and upgrade of these vehicle platforms.

BAE Systems is currently partnered with ANAD on the M113 recap program for both foreign military sales and the National Guard. Under these programs, BAE Systems provides supply chain, engineering and any additional support. ANAD provides the skilled craftsmen who assemble the vehicles.

**PIM**

BAE Systems has partnered with the Anniston Army Depot since very early in the Paladin Integrated Management (PIM) program. ANAD is responsible for disassembling the M109s, overhauling the cap and several other components. ANAD then ships the cap and components to BAE Systems to be installed into the newly fabricated hull. ANAD has been involved in development of each of the prototypes, performing the same duties that they will when production begins.

**Red River and Letterkenny**

In partnership with Red River Army Depot, BAE Systems has upgraded hundreds of Bradley Fighting Vehicles to the A3 configuration and have also reset several hundred additional vehicles. The company has also produced several variants of the RG33 MRAP and the Panther Command and Liaison vehicles in partnership with Letterkenny Army Depot.

More info: www.baesystems.com
Special Section:

Tactical Vehicles Review

The latest in Tactical Combat Vehicles and their mission in support of warfighters
The Heavy Expanded Mobility Tactical Truck (HEMTT) provides transport capabilities for re-supply of combat vehicles and weapons systems. There are five basic configurations of the HEMTT series trucks: M977 cargo truck with Materiel Handling Crane, M978 2500 gallon fuel tanker, M985 cargo truck with Materiel Handling Crane, M983 tractor and the M984 wrecker. A self-recovery winch is also available on certain models. This vehicle family is rapidly deployable and is designed to operate in any climatic condition where military operations are expected to occur. Standard features include front and rear tow eyes, blackout lights, 24-volt electrical system, and rear pintle hook for towing trailers and artillery. All models are C130, C141 and C17 air transportable and are capable of fording water crossings up to 48 inches deep.

HMMWV (High Mobility Multipurpose Wheeled Vehicle)
The HMMWV (High Mobility Multipurpose Wheeled Vehicle) is a four-wheel-drive tactical vehicle equipped with an automatic transmission. Based on the M998 chassis, using common components and kits, the HMMWV can be configured to become a troop carrier, armament carrier, s250 shelter carrier, ambulance, tow missile carrier, and a scout vehicle. The M998 series of 1 1/4-ton trucks, which are known as the HMMWV vehicles which include 11 variants.

M1070 Heavy Equipment Transporter (HET)
The Heavy Equipment Transport System (HETS) consists of the M1070 Truck Tractor and the M1000 Heavy Equipment Transporter Semi-trailer. The HETS transports payloads up to 70 tons – primarily Abrams tanks. It operates on highways worldwide (with permits), secondary roads, and cross-country. The HETS has a number of features that significantly improve the mobility and overall performance of the system in a tactical environment. The M1070 tractor has front- and rear-axle steering, a central tire-inflation system, and cab space for six personnel to accommodate the two HETS operators and four tank crewmen. The M1000 semi-trailer has automatically steerable axles and a load-leveling hydraulic suspension.

Palletized Load System (PLS)
The Palletized Load System (PLS) consists of a prime mover truck with an integral self-loading and unloading capability, a payload trailer (M1076), and demountable cargo beds, referred to as flatracks. The PLS prime mover truck carries its payloads on its demountable flatrack cargo beds, or inside 8 x 8 x 20 ft International Standards Organization (ISO) containers, or shelters. The PLS prime mover truck comes in two mission-oriented configurations: the M1074 and the M1075. The M1074 is equipped with a variable reach Material Handling Crane (MHC) to support forward-deployed Artillery units. The M1075, without MHC, is used in conjunction with the M1076 trailer in support of transportation line haul missions. The M1076 trailer, capable of carrying payloads up to 16.5 tons, is equipped with a flatrack that is interchangeable between truck and trailer.

Stryker
Stryker comprises two variants – the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS). The ICV has eight additional configurations: Reconnaissance Vehicle (RV), Mortar Carrier (MC), Commanders Vehicle (CV), Fire Support Vehicle, (FSV), Engineer Squad Vehicle (ESV), Medical Evacuation Vehicle (MEV), Anti-tank Guided Missile Vehicle (ATGM), and NBC Reconnaissance Vehicle (NBCRV). Eight configurations are in production now, the first systems having been delivered in Feb 2002. The MGS and NBCRV are in development and will be delivered beginning in 2005. Performance highlights include C-130 transportability; internetted C4ISR capability; integral all-around 14.5mm armor protection and 152mm artillery airburst protection (upgradeable to Rocket Propelled Grenade (RPG) protection with add-on armor); self-deployment and self-recovery capability; reduced vehicle acoustic signature; ability to carry a nine-man infantry or engineer squad; and bunker and wall breaching capability. These highlights provide a force that will move rapidly as a cohesive combined arms combat team, a capability not currently in the Army inventory.

JLTV Replacement
JLTV is a joint service, multinational program for a family of light tactical vehicles companion trailers. As the central component of the DoD's tactical wheeled vehicle strategy, JLTV will enhance the military services' mix of tactical vehicles by providing a balanced vehicle solution — performance, payload and protection — with increased transportability and expeditionary mobility.

The JLTV family of vehicles includes ten configurations and companion trailers in three payload categories. Commonality of components, maintenance procedures, and training between all variants is expected to minimize total ownership costs.

The JLTV family of vehicles will provide a design that supports mobility, reliability and maintainability within the given weight limits to ensure transportability to and from the battlefield. JLTV will use scalable armor solutions to meet requirements for added protection while maintaining load carrying capacity.
M1200 Armored Knight
This wheeled armored system assists Heavy and Infantry Brigade Combat Teams in performing terrain surveillance, target acquisition and location, and fire support for combat observation lasing team missions. The M1200 carries equipment needed to quickly bring in guided bombs, missiles and shells, and contains a laser designator, a laser range finder and GPS, plus radios and computers that take target position data and transmit it to distant artillery units, or bombers overhead. Previously, all this gear was mounted on an unarmored HMMWV. The Armored Knight provides enhanced protection to those who perform targeting missions in high threat environments.

Tactical LAV (USMC)

LAV-25
The LAV-25 is an all-terrain, all-weather vehicle with night capabilities that provides strategic mobility to reach and engage the threat, tactical mobility for effective use of fire power, fire power to defeat soft and armored targets, battlefield survivability to carry out combat missions. It is air transportable via C-130, C-141, C-5 and CH-53 E. When combat loaded there are 210 ready rounds and 420 stowed rounds of 25 mm ammunition as well as 400 ready rounds and 1200 stowed rounds of 7.62mm. There are 8 ready rounds and 8 stowed rounds of smoke grenades. A supplementary M240E1 7.62mm machine gun can be pintle-mounted at the commander’s station in the turret. The LAV-25 is fully amphibious with a maximum of 3 minutes preparation.

Towed Howitzer (155mm) M198
The M198 155mm towed howitzer is a medium artillery system that provides direct support fires on an interim basis to the Stryker Brigade Combat Teams and direct general support fires to light and special purpose forces (Airborne and Air Assault). As the successor to the older M114A1 155mm towed system fielded in World War II, the M198 provides significant improvements in lethality, range, reliability, availability, emplacement and movement. Normally towed by a 5-ton truck, the M198 system can also be dropped by parachute or transported by a CH47 Chinook helicopter or C130 aircraft.

The carriage of the M198 has a retractable suspension system and a top carriage which can be rotated 180 degrees to decrease overall length for shipment or storage. The fire control equipment may be used by one or two crewman for direct or indirect fire. The gunner on the left side controls left and right (traversing) settings and the assistant gunner on the right side controls up and down (elevation) settings.

Tactical Tracked

M113 Family of Vehicles
After more than four decades, the M113 family of vehicles (FOV) is still in service in the U.S. Army (and in many foreign Armies). The original M113 Armored Personnel Carrier (APC) helped to revolutionize mobile military operations. These vehicles carried 11 soldiers...
plus a driver and track commander under armor protection across hostile battlefield environments. More importantly, these vehicles were air transportable, air-droppable, and swimmable, allowing planners to incorporate APCs in a much wider range of combat situations, including many “rapid deployment” scenarios. The M113s were so successful that they were quickly identified as the foundation for a family of vehicles. Early derivatives included both command post (M577) and mortar carrier (M106) configurations.

Over the years, the M113 FOV has undergone numerous upgrades. In 1964, the M113A1 package replaced the original gasoline engine with a 212 horsepower diesel package, significantly improving survivability by eliminating the possibility of catastrophic loss from fuel tank explosions. Several new derivatives were produced, some based on the armored M113 chassis (e.g., the M125A1 mortar carrier and M741 “Vulcan” air defense vehicle) and some based on the unarmored version of the chassis (e.g., the M548 cargo carrier, M667 “Lance” missile carrier, and M730 “Chaparral” missile carrier). In 1979, the A2 package of suspension and cooling enhancements was introduced.

Today’s M113 fleet includes a mix of these A2 variants together with other derivatives equipped with the most recent A3 RISE (Reliability Improvements for Selected Equipment) package. The standard RISE package includes an upgraded propulsion system (turbocharged engine and new transmission), greatly improved driver controls (new power breaks and conventional steering controls), external fuel tanks, and 200 AMP alternator with 4 batteries. Additional A3 improvements include incorporation of spall liners and provisions for mounting external armor.

**Abrams**

The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, and shock effect. There are three variants in service: M1, M1A1 and M1A2. The 120mm main gun on the M1A1 and M1A2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces on a highly lethal battlefield.

Features of the M1A1 modernization program include increased armor protection; suspension improvements; and a nuclear, biological and chemical (NBC) protection system that increases survivability in a contaminated environment. The M1A1D modification consists of an M1A1 with integrated appliqué computer and a far-target-designation capability. The M1A2 modernization program includes a commander’s independent thermal viewer, an improved commander’s weapon station, position navigation equipment, a distributed data and power architecture, an embedded diagnostic system and improved fire control systems.

**Bradley**

Provides protected transport of an infantry squad on the battlefield and overwatching fires to support the dismounted infantry; is employed to suppress and defeat enemy tanks, reconnaissance vehicles, infantry fighting vehicles, armored personnel carriers, bunkers, dismounted infantry and attack helicopters; and performs cavalry scout and other essential (Bradley-equipped fire support and Stinger teams) missions in the 21st century. The infantry version (M2) is used most often to close with the
enemy by means of fire and maneuver. The primary tasks performed by the cavalry version (M3) as part of a troop and/or squadron are reconnaissance, security and flank guard missions.

The M1A2 System Enhancement Program (SEP) adds second-generation thermal sensors and a thermal management system. The SEP includes upgrades to processors/memory that enable the M1A2 to use The Army’s common command and control software, enabling the rapid transfer of digital situational data and overlays.

**Paladin**
The M109A6 (Paladin) howitzer is the most technologically-advanced self-propelled cannon system in The U.S. Army. The “A6” designation identifies several changes to the standard model that provide improvements to weapon survivability, responsiveness, reliability, availability and maintainability, armament and terminal effects. The fire-control system is fully automated, providing accurate position location, azimuth reference and on-board ballistic solutions of fire missions. The howitzer has a servo-driven, computer-controlled gun drive with manual backup.

**Tactical GCV Replacement**
The Ground Combat Vehicle (GCV) program is a critical element of the Army’s combat vehicle modernization effort and represents the first vehicle designed to operate in the Improvised Explosive Device (IED) environment and provide the protected mobility critical to Warfighters’ success. The first vehicle will be an Infantry Fighting Vehicle capable of delivering a nine-Soldier Infantry Squad to the battlefield, providing overmatch protection and operating effectively in a full spectrum environment.

The Army is currently in the midst of source selection for the Technology Development (TD) phase of initial contract award. TD phase selection should be complete by the end of third quarter 2011.

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The U.S. Marine Corps and MRAP Joint Program Office are in the midst of critical improvements to M-ATV platform protection configuration, balancing added under carriage and weight with off-road mobility.

By Kevin Hunter, A&M Editor

Under the direction of the MRAP Joint Program Office and U.S. Marine Corps Systems Command, on behalf of U.S. Navy lead, Oshkosh Defense has designed a newly upgraded Mine Resistant-Ambush Protected All-Terrain Vehicle (M-ATV) with considerable capacity for weight growth specifically to address evolving threats on the modern battlefield.

**UNDERBELLY UPGRADE**

Originally designed by Oshkosh Defense at a base weight of around 25,000 lbs with a 4,000 lb payload capacity, the new design has additional underbody protection kits and armor within the same base platform, with a combat weight of 37,000 lbs and still able to accommodate the objective payload requirement of 4,000 lbs.

“The rapid acquisition of the M-ATV vehicle has been an enterprise-wide effort, resulting in the delivery of thousands of life-saving vehicles, offering greater off road mobility to warfighters with the same levels of MRAP survivability in support of Operation Enduring Freedom,” said Mr. David K. Hansen, Program Manager, Joint MRAP Vehicle Program.

The underbody improvement kits(2), or, UIK2 effort is a survivability upgrade for the M-ATV platform. The UIK consists of automotive and armored components and is in response to an urgent theater requirement. The current requirement for the UIK is 8,011 which is the majority of the fleet. The UIK is intended to provide the warfighter with additional levels of protection beyond the current requirement. UIKs are being provided by Oshkosh and their sub vendors.

“The vehicle is capable of operating at 37,000 lbs.” said Ken Juergens, vice president, joint programs, Oshkosh Defense. “Its current combat weight, configured with user equipment, etc., is approximately 29,000 lbs., meaning it can accommodate 8,000 lbs. in payload or armor upgrades without sacrificing performance.”

“We are moving forward aggressively to install the kits at the MRAP Sustainment Facility as well as across seven regional support activities in the Afghan theater of operations,” said Hansen. “Additionally, all new production MATVs are receiving the upgrade on the production line before government acceptance of the vehicles.”
**Off-Road, On Track**

M-ATV’s design process with the Oshkosh Medium Tactical Vehicle Replacement (MTVR) platform, and then incorporated its proprietary TAK-4 independent suspension system, reducing the pitch, bump steer, and traction hop problems that have plagued other MRAP chassis presently being retrofitted with the TAK-4 suspension. Traction is further enhanced by a Central Tire Inflation (CTI) system which features two channels and four terrain settings, which allows the driver not only to adjust tire pressures from high for paved roads to very low for sand and mud, but can also engage the system so that it can control vehicle speed based on terrain.

The M-ATV design also makes use of many off-the-shelf components. Power comes from a turbocharged 7.2 liter 370 HP Caterpillar C7 engine which utilizes Caterpillar’s ACERT clean diesel technology that meets current EPA standards. A six-speed Allison 3500 SP automatic transmission drives power out through a Marmon Herrington transfer case which in turn drives Oshkosh MTVR front and rear axles.

**Blast Protection Under Foot**

SKYDEX, manufacturer of vehicular flooring protection systems, has signed multiple agreements with Oshkosh Defense to supply its blast mitigating flooring systems for over 1,400 new Oshkosh M-ATV tactical vehicles. The agreements will be completed by September 2011.

Called SKYDEX Convoy Deck, the technology is based on Impact Mitigating Boat Decking, a product design which is used by other branches of the military to mitigate impact and vibration aboard high-speed boats. Convoy Deck technology is currently in more than 12,500 U.S. military vehicles in theater in Afghanistan and Iraq. Two OEMs (Oshkosh and General Dynamics Land Systems – Canada) include the Convoy Deck as standard equipment on new vehicles. The Convoy Deck has been used to retrofit a wide range of vehicles, including vehicles made by Oshkosh, GDLS-C and Force Protection.

“The blast-mitigating floor decking – only 1.25 inches thick – is made of thermoplastic polyurethane (TPU) and employs patented twin-hemisphere technology to absorb blast energy,” said president and CEO, SKYDEX, Mike Buchen. “When an IED explodes under a vehicle, the energy of the blast hits the underside of the vehicle, causing the steel floor to buckle and propelling the vehicle off the ground.”

The hemispheres of the floor decking absorb and redirect the energy of the blast before it reaches the vehicle occupants’ legs, by collapsing by more than 90 percent of their original size. Once the blast energy is mitigated, the hemispheres instantly return to their original size, shape and strength – providing equal protection to the vehicle’s occupants when the airborne vehicle hits the ground. “The floor decking suffers virtually no degradation even after repeated compressions – so the decking may remain in vehicles that survive an IED blast and will provide the same level of protection regardless of how many IED blasts it sustains,” added Buchen.

**Threshold Testing**

Independent testing, done according to NATO’s STANAG 4569 protection standards and thresholds, illustrates the decking’s powerful blast-mitigating properties. The testing demonstrated that during a typical IED blast force without the decking, vehicle occupants face a 100 percent chance of injury. Adding the decking drastically reduces the chance of injury to about 10 percent.

“IED blasts cause the majority of casualties in Afghanistan, and our decking significantly improves survivability for armored vehicle crewmembers. So we’re proud to be working with Oshkosh and other OEMs to help protect our war fighters in combat,” said Buchen.

The importance and value of the decking material was underscored recently in a Safety of Use Message issued to units in the field in Afghanistan by the joint Program Office for MRAP, after that office received reports that some troops were removing the protective flooring from their vehicles to create additional space inside the crew compartment.

“Some soldiers in Afghanistan may be jeopardizing their safety by removing an important piece of safety equipment,” Nathaniel Parady of the Joint Programs Office wrote recently in Knowledge – Official Safety Magazine of the U.S. Army. “Soldiers are being urged to leave the floor coverings in place. In vehicle-level blast testing, the floor coverings have proven to reduce the risk of lower leg fractures by absorbing blast waves and lessening the pressure transmitted to the body. Removing the floor coverings can reduce a crewmember’s ability to survive the blast.”

MG Stein entered the United States Army as an enlisted soldier in October of 1976 and achieved the rank of Staff Sergeant. In 1982, he was commissioned as an Ordnance Officer from the Officer Candidate School at Fort Benning, Georgia. His military education includes the Ordnance Officer Basic and Advanced Course, Combined Arms and Services Staff School, the Army Command and General Staff College, and the Army War College.

MG Stein’s previous assignments include; Maintenance Division Chief, APG, MD; Maintenance Platoon Leader and Shop Officer, C Company, 123rd Main Support Battalion, 1st Armored Division; Battalion Adjutant, 123rd MSB, 1st AD, Commander, D. Co. 123rd MSB, 1st AD; Ordnance Assignment Officer, PERSCOM/HRC, Alexandria, Virginia; Executive Officer, 610th Ordnance Battalion, Fort Belvoir, Virginia; Support Operations Officer, 782d Main Support Battalion, 82D Airborne Division, Fort Bragg, N.C; Executive Officer, 407th Forward Support Battalion, 82D Airborne Division; S-3, 82D DISCOM; Deputy Commander, 20th Support Group, Taegu, Korea; Executive Officer, 82D DISCOM; Commander, 82D Forward Support Battalion; G-4 82D Airborne Division; Commander, 2D DISCOM, Deputy Director for Power Projection, Joint Staff, J-4, Executive Officer to the J-4, Joint Staff, Washington D.C. Assistant Chief of Staff, J4, Headquarters, United States Forces Korea (USFK), Deputy Assistant Chief of Staff, C4, Combined Forces Command (CFC), Deputy Commanding General for Support, Eighth United States Army (EUSA), Yongsan, Korea, Deputy Commanding General of USFK (Advanced Element), Camp Humphreys, Korea and MNF-I CJ 1/4/8, Baghdad, Iraq.

MG Stein was interviewed by A&M Editor Kevin Hunter.
Q: Please talk about the TACOM LCMC’s background, mission, and role as part of the Army and greater DoD community.

A: This organization has been at the forefront of ensuring Army readiness for nearly seventy years. Our roots go back to World War II and our position as part of the Detroit area’s “Arsenal of Democracy.” In 1941, the first tank was produced at the Detroit Arsenal Tank Plant. During the war, the plant built 22,234 tanks – enough to equip more than 100 divisions.

Fast forward to August 2004 when the Assistant Secretary of the Army for Acquisition, Logistics, and Technology and the U.S. Army Materiel Command commanding general signed a memorandum of agreement creating the TACOM Life Cycle Management Command.

The TACOM LCMC consists of the Integrated Logistics Support Center (ILSC), Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS), Program Executive Office Ground Combat Systems (PEO GCS), and Program Executive Office Soldier (PEO Soldier).

The TACOM LCMC is also aligned with several business partners: the U.S. Army Tank Automotive Research, Development and Engineering Center, the U.S. Army Armaments Research, Development and Engineering Center, Natick Soldier Research, Development and Engineering Center, Edgewood Chemical Biological Center, Joint Program Executive Office for Chemical and Biological Defense, Program Executive Office Integration and Army Contracting Center - Warren.

Our mission is to develop, acquire, field, and sustain soldier and ground systems for the warfighter through the integration of effective and timely acquisition, logistics, and cutting-edge technology. We support a diverse set of products throughout their life cycles - from combat and tactical vehicles, armaments, watercraft, fuel and water distribution equipment - to soldier, biological and chemical equipment.

Our LCMC is engaged in all areas of the Army transformation - from resetting, repairing, rebuilding, and overhauling soldier and ground systems returning from Iraq and Afghanistan...to planning for the future capability needs of our forces.

Q: From a tactical ground vehicle perspective, how is the TACOM LCMC addressing issues regarding long-term platform sustainment?

A: The TACOM LCMC and the Program Management Office for Tactical Vehicles continuously seek better and more economical methods for sustainment of our weapon systems. For example, regarding the High Mobility Multi-purpose Wheeled Vehicle (HMMWV), two of our major efforts are the reset and recapitalization programs. Reset programs rebuild and repair equipment to a 10/20 plus Delayed Desert Damage & Degradation (4D) Maintenance Standard, effectively reversing the effects of a SWA deployment. The recapitalization effort restores the vehicle to as close to “zero hour/zero mile” status as can be economically attained.

In many cases, recapitalization also serves as the program to perform the conversion or upgrade of the weapon system to the most current configuration. The Utility HMMWV recapitalization program converts base utility variants to the M1097R1 configuration, increasing payload capability and improving vehicle performance. This program was based on a one-for-one vehicle exchange with the ACOMs. More than 46,000 light-skinned cargo utility vehicles have processed through this effort to date. Our pilot Up-Armored HMMWV (UAH) recapitalization program for 340 vehicles was completed in 2011 and proved to be very successful. The UAH recapitalization program incorporates technical upgrades and safety enhancements and converts vehicles to the most current production configuration.

The same holds true for our Heavy Expanded Mobility Tactical Truck (HEMTT) fleet. We struggled to meet readiness goals in the mid-to-late 1990’s following the introduction of the first HEMTT in 1984. As the fleet aged, recapitalization became a much desired method of revitalizing the fleet. The HEMTT recapitalization program began in 2001. We subsequently recapped over 2,400 A0/A1 basic series HEMTTs to the A2R1 configuration concurrent with new production in CY2002-2008. That effort is continuing with the rebuild and upgrade of all remaining 4,600 A0/A1s to the current A4 series configuration.

The value is evident as our current monthly reported operational readiness rates are in the 90% – 96% range. Recapitalization improvements to the Caterpillar C15 engine, Allison GEN IV transmission, ABS brakes, air ride suspension, Fuel Tank Self Sealing (FTSS) system, and the Long Term Armor Strategy (LTAS) compliant cabs have brought solid benefits to Soldiers. The latest LTAS enhancement provides MRAP equivalent protection.

Q: How is the TACOM LCMC addressing the need to prepare soldiers for greater systems interoperability and joint force integration?

A: The TACOM Life Cycle Management Command unites all of the organizations that focus on soldier and ground systems throughout the entire life cycle, from research and development activities through final disposal. One of those organizations is the Program Executive Office (PEO) Soldier. PEO Soldier was created by the Army with one primary purpose: to develop the best equipment and field it as quickly as possible so our Soldiers can successfully execute missions across the full spectrum of military operations.

The development of the Optimized Gunner Restraint System for the Stryker Infantry Carrier Vehicle (ICV) is an excellent example of the collaborative work within the TACOM LCMC. The currently fielded gunner-restraint system (GRS) allows Stryker gunners to be partially or fully ejected by underbody improvised explosive device (IED) and vehicle rollover events. Several research, development and engineering labs will evaluate the currently fielded gunner-restraint system (GRS) design and prototype possible Optimized GRS solutions. The labs will work collaboratively with PEO Soldier to ensure that the possible solutions will fit with the current gunner’s uniform and equipment. Efforts must also be aligned with PM Stryker to ensure the solution does not impede the gunner’s mission
performance. Stryker ICVs must then be retrofitted with the solution. Finally, the TACOM LCMC will develop an informational video on the use of the new system and will release this in conjunction with a safety of use message.

Providing a unified solution for the safety of our Soldiers in the performance of their duties will be a collaborative effort carried out by numerous organizations within the TACOM LCMC.

Q: From an enterprise perspective, how is the TACOM LCMC working to promote partnering with industry in the delivery of more effective and efficient know-how to the Army?

A: We have a number of avenues in place for businesses to connect with us regarding what they have to offer. The private sector’s cutting edge ideas, innovations, and solutions are difference makers on the battlefield. It’s essential that we make it easier for industry to work with us in order to give our warfighters the tools and support they need.

One avenue is the Expedited Modernization Initiative Procedure (EMIP) that applies to our current and future tactical vehicle systems. EMIP is a continuous market survey program built around industry demonstrations of new technologies and improved products to Army observation teams. The teams are comprised of engineers, logisticians, program managers, and end-user representatives. These subject matter experts have the opportunity to see new items and technologies available from the private sector in the areas of vehicle safety, survivability, mobility, and reliability / maintainability / sustainability. EMIP sessions take place every quarter, generally in the Detroit area. Interested private sector business representatives can simply enter “EMIP” in the Google search engine and download the starter package directly from the website. It’s that simple.

Another avenue is the unsolicited proposal process conducted by our Tank Automotive Research, Development and Engineering Center (TARDEC). TARDEC welcomes valid unsolicited proposals and appreciates the contribution these proposals may make toward ensuring the continued technological superiority of the U.S. Army. Unsolicited proposals provide TARDEC with innovative and unique ideas and concepts from individuals, businesses, and universities. These proposals address many TARDEC vehicle technology areas, including mobility, survivability, intelligent systems, fuel and lubrication, and advanced concepts.

The TACOM LCMC also conducts numerous business fairs throughout the year. These fairs provide advance planning information to industry, promote transparency, and serve as a forum to inform our private sector industry partners regarding new guidance and procedures for doing business with us. The industry

Gamber-Johnson introduces a new type of computer docking station for tactical applications. The RECON dock is designed to work with the Panasonic Toughbook 19 computer.

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Q: What are some of the key challenges you see facing the TACOM LCMC looking ahead?

A: As a high tech, global organization, the TACOM LCMC is well equipped and prepared to face future challenges and changes in threat, technology, and mission. Some of the operational challenges include reduced supplemental funding. We also face industrial base challenges, including requirements in the out years, workload alignment, balancing commercial and organic capabilities, and rightsizing the industrial base.

There are strategic challenges as well, including the U.S. military posture in the world, our national economy, and the ongoing availability of critical commodities such as water, steel, and oil.

I feel confident that by working closely with all of our partners we will be able to provide solutions to the challenges the TACOM LCMC will face in the years ahead. We will continue to build bridges with the private sector, other government agencies, academia, local communities, and civic organizations. We will always work to ensure that our warfighters possess unsurpassed mobility, lethality, and survivability to help prepare them for the challenges the future may bring.

Q: Feel free to discuss any accomplishments or objectives the TACOM LCMC has achieved or is currently working to bring to fruition.

A: TACOM LCMC teammates have worked hard to accomplish a number of good things for soldiers during my year and a half as Commander, TACOM LCMC.

We facilitated end-of-life assessments on combat vehicle systems which resulted in 6,500 vehicles being declared excess by the Army. The vehicles were offered to foreign military sales customers. This served to strengthen our nation’s foreign policy goals and also enabled the demilitarization of a large number of vehicle systems... reducing our storage costs. We established Deep Dive Readiness Reviews with task forces deployed to OEF, reversing negative operational readiness trends and contributing to the lethality and survivability of the force. We established a forward support area at Bagram Air Base (Afghanistan) to rapidly recover and perform maintenance on force provider equipment. Through this effort, over six million dollars in damaged materials were repaired on site and immediately returned to users in theater. These actions decreased the demand on the wholesale system, reduced costs, and returned quality equipment to warfighters promptly.

On the contracting front, the TACOM LCMC supported the initial industry response to the second ground combat vehicle request for proposal. We worked with the senior solicitation authority, the contracting officer, and the program manager to help guide the team effort toward eventual contract award. We also led the cost analysis for the Paladin Integrated Management program transition to an ACAT I program. As part of our ongoing efforts to increase overall competition and small business participation in our work, we hosted another well attended, successful Advanced Planning Briefing for Industry conference.

The TACOM LCMC led the fielding and new equipment training execution for the entire Program Manager, Heavy Brigade Combat Team portfolio. The combined efforts of our team resulted in successful OCONUS and CONUS fieldings of Bradley Fighting Vehicles, Abrams tanks, Knight Fire Support Vehicles, and M88 Recovery Vehicles.

In the technology arena, we successfully deployed the Logistics Modernization Program (LMP) across the TACOM LCMC. LMP uses a suite of software and business processes to perform all supply chain activities, including supply planning, production, inventory management, order processing, maintenance, overhaul, repair, distribution, and quality management. We developed the Robot Deployment System that enables a TALON robot to be remotely stowed and deployed while soldiers remain under armor during explosive ordnance disposal missions.

All of the initiatives I’ve noted above are part of our ongoing daily focus on providing the best possible products, service, and support to America’s warfighters.
The U.S. Marine Corps is continuing to field the next-generation in mobile tactical command and control (C2) to provide joint commanders with common operational data in real time.

By Mike Fallon, Director, Marine Corps Programs for General Dynamics C4 Systems

The U.S. Marine Corps’ Combat Operations Centers (COCs) have raised the bar for deployable, tactical command and control (C2) facilities for the U.S. military. The first operations center contract was awarded to General Dynamics C4 Systems in 2002. Since then, General Dynamics, the prime contractor for the program, has delivered more than 360 operations centers in support of Marine Corps training and readiness, operations in Iraq and Afghanistan as well as humanitarian and peacekeeping missions worldwide. COCs are scaled to the way Marines fight, using capability sets, or Cap Sets. The centers can be scaled to serve at the Battalion/Squadron, Regiment/Group and Division/Wing/Logistic group levels.

A system comprised hardware, software, tents, trailers, power and environmental control units, COCs are the focal point for information and decision-making within the Marine Air Ground Task Force (MAGTF). COCs are configured to provide a common operational picture for commanders and their staffs, along with the workspace needed to maintain persistent situational awareness that includes intelligence, surveillance and reconnaissance data from sensors including UAV video and imagery and other intelligence data and resources. The inner workings of the COC include the communications systems, comprising voice over Internet Protocol (VoIP), chat and email and Internet-like access to joint tactical networks and information that reaches across the battlespace and around the world.

The capability that separates the COC from other Marine Corps C2 systems is the development, integration and real-time management of the common tactical and common operational picture used at various levels of command. Input from a wide range of Marine Corps and military systems such as Command and Control Personal Computer (C2PC), Joint Tactical Workstation (JTWS) and Force XX1 Battle Command Brigade and Below (FBCB2) and others, continuously feed information to various operator stations within the COC. Visualization and collaboration tools are displayed on a large screen in the Battle Section so that staff members can be synchronized and able to see and focus on the same operational information or picture at the same time.

Efficient Evolution

Future COC improvements will exploit emerging technologies in hardware and software. Reducing size, weight and power consumption is a key focus as these systems evolve with the Marine Corps’ missions at home and abroad. For instance, solar panels are being considered for power generation, LEDs are replacing fluorescent lighting fixtures, and new thermal barrier materials are helping to reduce heating and cooling within the tent. General Dynamics C4 Systems has also developed a MAGTF C2 benchmarking environment in Scottsdale, AZ to speed innovation to new and fielded COCs.

The bottom line is that COCs are considered commercial-off-the-shelf (COTS) systems. Keeping the COC a COTS-based system helps keep it affordable and sustainable in the field. As we move forward, next generation COCs will focus on reducing size, weight and power while increasing the operation center’s capability to support evolving Marine Corps’ missions at home and abroad.

More info: www.generaldynamics.com
The Program Executive Office (PEO) Ground Combat Systems (GCS), under the authority of the office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA/AL&T), is responsible for providing world-class, affordable, relevant, sustainable and modernized ground combat equipment to joint warfighters.

Located in Warren, MI, just 20 miles north of Detroit, with additional offices situated 20 miles northeast on the Selfridge Air National Guard Base, PEO GCS executes the life cycle management of ground combat systems to ensure safe, effective and supportable capabilities while meeting cost, schedule and performance requirements.

PEOPLE AND SYSTEMS

PEO GCS retains more than 1,200 military and civilian employees comprised of core and matrix positions, liaison offices, fielding teams, and contractors. PEO GCS organizational structure is comprised of the Program Executive Officer (PEO), Deputy PEO, three board-selected Army project managers, one Marine Corps joint project manager, seven assistant program executive officers and numerous product managers, deputies, chiefs and staff. Project management offices include Heavy Brigade Combat Team (HBCT), Stryker Brigade Combat Team (SBCT), Ground Combat Vehicle (GCV), and Robotic Systems Joint Project Office (RS JPO).

With a multi-billion dollar annual budget, PEO GCS manages the development, systems integration, acquisition, testing, fielding, sustainment and modernization of the U.S. Army’s ground combat systems. These include four Acquisition Category I (ACAT I) programs (Abrams Tank, Bradley Fighting Vehicle, Ground Combat Vehicle, and Stryker Family of Vehicles), two ACAT II programs (Paladin and Armored Knight), and multiple ACAT III programs.

MODERNIZING THE FLEET

In order to support the Army’s goal of developing and fielding a versatile mix of the best equipment available to allow soldiers and units to succeed in both today’s and tomorrow’s full spectrum operations, PM HBCT has developed a modernization strategy to transform, replace and improve its fleet. Regaining space, weight, power and cooling (SWaP-C) on the Abrams main battle tank and the Bradley Non-Infantry Fighting Vehicle will enable future upgrades and ensure continued combat overmatch. The M113 was terminated, and the Ground Combat Vehicle (GCV) will replace the Bradley Infantry Fighting Vehicle. The Paladin PIM remains the sole modernization effort for the Army’s self-propelled howitzer systems, providing growth for improved force protection and technology insertion.

Additional HBCT modernization efforts will focus on investing in new capabilities which include maximizing commonality across the formation, leveraging mature technologies to improve capability gaps, and incorporating SWaP-C margins to meet unknowns on future battlefields.

PROTECTING THE FORCE

Force protection remains the highest priority when investing in ground combat systems. PEO GCS rapidly responds to the ever emerging need to protect the warfighter from the changing threat perspectives seen in the theater of operations. For example, Stryker has been the principal platform within the portfolio deployed to Iraq and Afghanistan. As a result of the need to better protect Stryker soldiers against mines and improvised explosive devices, the Stryker Double V-Hull (DVH) effort emerged. This robust program received the full support of the Army and Office of the Secretary of Defense and within one year’s time, 150 Stryker DVH vehicles were engineered, manufactured, tested and fielded. Additional upgrades to increase force protection include increased armor, improved suspension, a modernized braking system, a height management system and the design of blast-attenuating seats.

UNMANNED PRIORITIES

The management of unmanned ground systems has proven to be another area where PEO GCS has successfully
responded to the needs of the joint warfighter, thereby increasing the distance between the soldier or Marine and the potential threat. For example, the Mini-EOD – a portable robot used on dismounted patrols or in confined areas – assists explosive ordnance disposal teams and combat engineers with reconnaissance and enhanced surveillance missions. Approximately 2,600 Mini-EODs are deployed in support of Operation Enduring Freedom and Operation New Dawn as of April 2011. Robots are also particularly useful in helping to reduce the loads which the soldier or Marine is required to carry.

**FUTURE FOCUS**

Additional PEO GCS priorities are focused on the capacity to house the future network and countering obsolescence. When considering the configuration of new systems or modernizing existing systems, the vision of PEO GCS is to integrate common capabilities across the various platforms – to have a high degree of functional commonality between the Bradley, Abrams, Stryker and the Ground Combat Vehicle.
PEO GCS Program Manager Departments

Program Manager (PM) HEAVY BRIGADE COMBAT TEAM (HBCT)

PM HBCT delivers, sustains and modernizes combat power for the U.S. Army’s heavy force. PM HBCT is the Army’s executive agent for the life cycle management of the Abrams Tank, Bradley Fighting Vehicle, M113, Paladin, M88, and Armored Knight Family of Vehicles.

Program Manager (PM) STRYKER BRIGADE COMBAT TEAM (SBCT)


ROBOTIC SYSTEMS JOINT PROJECT OFFICE (RS JPO)

RS JPO leads the development, systems engineering, integration, acquisition, testing, fielding, sustainment and improvement of unmanned ground systems for the joint warfighter. RS JPO manages the Autonomous Navigation System, Common Mobility Platform, M160, MARCbot, PackBot Family, TALON Family, and Mini-EOD (SUGV-310).

Program Manager (PM) GROUND COMBAT VEHICLE (GCV)

PM GCV provides leadership, technical expertise and oversight for the design, development, integration and delivery of survivable, versatile, affordable and enduring ground combat capabilities. The Army’s initial Ground Combat Vehicle is an Infantry Fighting Vehicle designed to bring a full, nine-soldier squad to decisive locations on the battlefield to perform the full spectrum of missions required of America’s soldiers.

More info: Dami_peo-gcs-pao@conus.army.mil.

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For more information, contact Federal Business Council, Inc. at 800-878-2940 x283 or visit www.fbcinc.com.
The U.S. Army is in the process of fielding stabilized sensor system technology for its common remotely-operated weapons station (CROWS) program that significantly improves lethality and force protection for tactical ground vehicle crews.

By Kevin Hunter, A&M Editor

This past February, Army officials requested additional production of its M153 Common Remotely Operated Weapon Station (CROWS). CROWS turns ‘area’ weapons into precision engagement weapons that employ the full capabilities of mounted machine guns. Effective day or night, or on-the-move, the system allows soldiers to operate machine guns and surveillance equipment from inside the protective armor of a vehicle.

In late 2011, Product Manager Crew Served Weapons (PM CSW) will begin a full and open competition to increase the Army CROWS fleet. To date, more than 11,000 CROWS systems have been ordered and more than 8,500 systems have been delivered by Kongsberg Defence & Aerospace AS. PM CSW has configured the CROWS for at least a dozen vehicle platforms with more likely to come.

“Soldier demand has driven the success of the CROWS program,” said Lt. Col. Thomas Ryan, Product Manager, PM CSW. “Operational needs statements continue to come in from the field demanding the CROWS’ capability.”

The upcoming competition will be managed as an Indefinite Delivery/Indefinite Quantity (IDIQ) multiple award contract. Orders will be issued against the contract, with each winning contractor having the ability to compete on manufacturing new systems and
parts, conducting overhaul and repairs, and providing engineering services for product improvements.

The draft “Request for Proposal” (RFP) was released on July 1 and a pre-solicitation conference will follow late this summer. The final RFP will be released later in 2011 with a contract award anticipated 12 months from release of the final RFP.

**CRS3/LRAS3**

A new augmentation to Army CROWS and currently-fielded mounted Long Range Advanced Scout Surveillance (LRAS3) and Fire Support Sensor System (FS3) sensors is the Common Remote Stabilized Sensor System or CRS3, a product of DRS Technologies, Inc. With LRAS3 sensors currently mounted on the U.S. Army’s Armored Knight, Stryker Fire Support Vehicle (FSV) and Stryker Reconnaissance Vehicle (RV), but not coupled with stabilized support technology, CRS3 technology is based around an on-the-move Targeting Under Armor (TUA) capability designed for reconnaissance and fires elements of tactical maneuver operations forces.

“The new system extends the current capabilities of the LRAS3/FS3 by stabilizing it for on the move use and relocating the soldier interface inside the vehicle, enabling crew force protection and more effective sensor system operation while protected under armor,” said John Fitzpatrick, vice president of programs, DRS. “Currently the LRAS3 / FS3 operator must expose himself through the opened turret hatch for sensor operations.”

CRS3 is a kitted subsystem of the Armored Knight TUA upgrade, which is currently at Technology Readiness Level (TRL) 8 and expected to reach Production Decision/Contract Award in 2012. The CRS3 kit is applicable to a variety of platforms, variants, and missions across Heavy, Stryker, Infantry Brigade Combat Teams and Battlefield Surveillance Brigades. The full TUA system integrates the CRS3, M153 CROWS, and additional unique fire support equipment on a single synchronized turret.

DRS leveraged the Armored Knight TUA program to further develop a CRS3 kit as a retrofittable or field installable kit. This approach reduced the weight, space claim, and power draw of the system while making it “kit-able” on a number of vehicles in hours, leaving its core capabilities intact, and leaving the architecture for added capabilities.

**Flexible Applications and User Feedback**

The prime system developer and integrator for the present Knight / Stryker FSV Mission Equipment Packages (MEP), DRS is currently also engaged in Knight RESET efforts. In early 2011, DRS obtained CRS3 kit design feedback from two Stryker reconnaissance units. The feedback led to kit enhancements for more user-friendly and compatible functionality with Stryker ICV, RV, FSV, and double V hull (DVH) Infantry Carrier Vehicle (ICV).

“...The CRS3 Stabilized Sensor Mount (SSM) provides a stabilized platform for the LRAS3 / FS3 that allows for both remote operation (within the vehicle) and for 360° continuous operation on the move,” said Fitzpatrick. “The operator now remains seated at a control and observation station. All other aspects of the system remain intact with this enhancement.”

In April 2011, CRS3 was demonstrated on an M-ATV at the annual Reconnaissance Summit and received strong interest in this configuration as a potential reconnaissance vehicle. In addition, the system was previously mounted on the Armored Security Vehicle (ASV) and is poised for mounting on other potential reconnaissance or fires platforms.

**Plans for Capability Growth**

DRS is developing key capability improvements identified by the user community into the CRS3. One such is the “Slew to Cue” or S2C. S2C allows the LRAS3, RWS, and FBCB2 to instantly swap target information in “hunter-killer” mode. This capability has been drawing interest from the reconnaissance and fires community.

DRS is also working internally to stabilize prototype 3rd generation FLIRs using the CRS3 SSM with as little change as possible to the existing CRS3 workstation infrastructure. A decision to further decrease CRS3 size/weight, combined with the reduced profiles of 3rd generation FLIRs, has been made to enable the Army’s long standing requirement for mastless reconnaissance and targeting.

**Ahead**

“What vehicle gunners will see in the future will be a mix of CROWS and Gunner Protection Kits,” said Art Fiorellini, Remote Weapons Station Division Chief, PM Crew Served Weapons. “Training and Doctrine Command is currently staffing the decision as to what the optimum mix of CROWS capability will be across the Army. A decision is expected in the next several months.”

More than 200 personnel support PM CSW in managing and executing the CROWS program at a variety of organizations in the U.S. and abroad, including: Armament Research, Development and Engineering Center (ARDEC) at Picatinny Arsenal, N.J.; Tank-automotive and Armaments Command (TACOM) at Rock Island, Ill. and Warren, MI; Red River Army Depot, Texarkana, TX.; Tobyhanna Army Depot, Tobyhanna, PA.; and PEO Simulation Training and Instrumentation, Orlando, FL.

www.tacticaldefensemedia.com

**Contact**

contact@tacticaldefensemedia.com
Globally integrated on thousands of fielded ground and naval platforms, Rafael's SAMSON family of advanced RWS utilizes more than 90% tested and qualified Manufacturer Off-the-Shelf (MOTS) hardware and software.

“The SAMSON design takes into account crew survivability and safety,” said Giora Katz, corporate vice president and general manager, Land and Naval Sector, Rafael. “Reduced environmental emissions and a low noise level inside the crew compartment ensure better crew workload performance.”

Just recently, Rafael introduced the new Samson Dual with Rafael's unparalleled under-armor reloading system which boosts lethality and crew protection over traditional turret designs. The system’s main advantages include a robust design for wheeled and trucked vehicles without modifications, accommodation of multiple weapons (Eastern and Western), proven first-hit accuracy, and lightweight.

**INERTIAL AND VIDEO**

Rafael RWS stabilization capabilities include inertial & video stabilization. “Together with an integrated Automatic Target Tracking (ATT) for accurate shooting on the move and/or moving targets, these capabilities enable the operator to have a clearer view of the battlefield under any conditions and especially while on the move and when operating the gun,” said Katz. An anti-collision system (ACS) and fire inhibit system (FIS) keep users safe yet lethal inside the vehicle cockpit.

SAMSON is interfaceable with C4I and external sensors (including hostile fire indicators) for superior 360° situational awareness and comes in Jr., Mini, Dual, and 30mm variations.
U.S. Army Brigade Combat Teams are fielding a small unmanned ground vehicle (SUGV), the XM1216, to perform critical surveillance and reconnaissance missions, keeping warfighters out of harm’s way.

Submitted by Unmanned Ground Vehicles Product Management Office, PEO GCS

U.S. Army Brigade Combat Teams are fielding the Small Unmanned Ground Vehicle (SUGV) officially known as the XM1216. The SUGV has been developed to perform critical surveillance and reconnaissance missions to increase the distance between the warfighter and the potential threat.

SUGV Go Ahead

In February 2011, the Defense Acquisition Board formalized approval to purchase additional SUGVs under the U.S. Army’s Brigade Combat Team Modernization (BCTM) program. The delivery of two additional infantry brigade sets, 76 total SUGVs, is currently scheduled for FY12. The manufacturer of the SUGV, iRobot Corporation, delivered 38 robots in FY11 to the first unit, 3rd Brigade, 1st Armored Division, as part of the Army’s Low Rate Initial Production contract under the BCTM effort. This initial fielding, along with a conditional material release, was historic as it is the Army’s first official small unmanned robot program of record. An additional 10 SUGVs will be delivered to the Training and Doctrine Command (TRADOC) to facilitate training on the product.

“The Army has successfully fielded and trained the soldiers of the 3rd Brigade, 1st Armored Division, to deploy the XM1216 SUGV,” LTC Jay Ferreira, Product Manager, Unmanned Ground Vehicles, said. “The Brigade has completed its first major training exercise with the robot at the National Training Center. The comments from soldiers are positive and reinforce the message that UGVs provide value added, protect the force and are a welcomed capability by the soldier to help defeat threats.”

ROBUST AND LOAD READY

The XM1216 SUGV has a rugged design that allows it to operate in all-weather conditions, while performing tactical maneuvers necessary to compliment the activities of the warfighter on the ground. The system’s maneuverability, coupled with its day/night cameras, range finder, live and still imagery and audio capabilities, make it the first robot able to meet the demanding requirements of infantry missions. Weighing about 32.5 pounds without payload, the XM1216 SUGV is lightweight and compact, fitting easily in a Modular Lightweight Load-carrying Equipment (MOLLE) backpack to be transported by the soldier.

Adaptable and expandable, the XM1216 SUGV is designed to accommodate a variety of optional payloads and sensors. The simplicity of the design ensures it is well positioned to take advantage of new developments in robotic technology, including the integration of additional sensors, manipulator arms and other payloads as a result of changes to warfighter requested and DOD approved requirements. As the needs of the warfighter evolves, so too will the Army’s platforms.

“We will continue seeking innovative solutions for the warfighter to assist in overcoming the challenges faced by our military personnel on the battlefield,” Ferreira said.

Through the Brigade Combat Team Modernization (BCTM) program, the Army is continuing to develop a follow-on variant of the XM 1216 SUGV. This future SUGV variant will provide enhanced processing, sensor, communications and payload capabilities. It is currently planned to be available in the 2013 timeframe.

More info: www.peogcs.army.mil

www.tacticaldefensemedia.com Armor & Mobility August 2011 | 27
The world of tactical military lighting has changed significantly with the discovery of high-output, phosphorus-based light-emitting diode (LED) technology.

By Kevin Hunter, A&M Editor

If there is one quality the infantry soldier needs in equipment, it is ruggedness. Equipment has to function despite the shocks of being transported by ship, motor vehicle, helicopter, or even parachute. When the light emitting diode (LED) was first developed, it had characteristics that were of interest to the soldier. LEDs were vibration-resistant, used little power, and lasted a long time. But it was not until the discovery of High-Output Phosphorus-base LED technology that LEDs could provide the bright light necessary for the technology to be adopted in the world of tactical military lighting.

"LEDs last many times longer than typical incandescent bulbs, and are far more shock-resistant," said LTC Chris Schneider Product Manager Soldier Maneuver Sensors (PM SMS). "These characteristics, when coupled with a bright light, have led to the displacement of incandescent technology by LEDs in many applications."

Accordingly, LEDs have been adopted for use in our Family of Flashlights (FoF). The Weapon Mounted Light, Hands-Free Helmet Mounted Light (HFHL) and Handheld Tactical Light (HHTL) all use LEDs.

"The high intensity light makes all the difference," said Schneider. "Today's Marines and soldiers carry a lot of kit. They appreciate the smaller size and lighter weight of LED-based systems and really like the fact that their low power consumption means they don't have to carry so many batteries."

**MORE ILLUMINATION, LONGER DURATION**

For many years now, incandescent lighting has been the standard in commercial markets, industrial applications, law enforcement, and other products finding crossover into the military. Incandescents provide good light throw, or beam distance, and are a capable lighting source. That’s changed with the advancement of light-emitting diode, or LED, technology and reflector capabilities. With the recognition of a need for better power and less weight per unit, military experts are looking for ways to maximize these aspects of battery reliance so as to minimize the footprint battery reliance brings to a mission.

A lighting provider for DoD, Streamlight, Inc. is working to supply LED lighting solutions to provide better power and maximize battery life, giving the user, in some cases, 4-5 days of very usable light from a single charge (or battery). Members oft Streamlight’s C4® LED family of tactical lighting products, the Knucklehead® and the Survivor® are dual-powered, giving the user the ability to use AA or rechargeable batteries, while also providing vehicle mount options. Low light filters and switches allow users to select from among several lighting modes, including a very low power output (1 lumen), and built-in IR LEDs provide covert usage.

"C4 LEDs provide a long reaching beam with excellent peripheral visibility,” said Matt Baker, Director – Military and Federal Sales, Streamlight, Inc. “Products like the SuperTAC X, a handheld tactical light that weighs just 7 ounces, will give 400 meters of downrange light, provide a one-handed tactical strobe setting and deliver 50 hours of runtime on low. The superior light output is a function of C4 technology, coupled with the unique way in which Streamlight “drives” the light."

In another application, Streamlight’s TLR-VIR® weapon mounted light is a compact sized tactical light that can be switched from M4/M16 mounted and to M9 pistol mounted in a matter of seconds. The white visible beam easily identifies downrange targets, and the dedicated IR LED beam operates with a flip of the switch. This eliminates the need for a snap on filter. The light also it increases overall runtime from a set of 3 V CR123A lithium batteries, reducing the number of spare parts carried by the user.

**FROM ZENON TO POWER ON**

ExtremeBeam Alpha-TAC technology, introduced in 2006, created a product line that bridged the gap from traditional Zenon incandescent world to a bulb with 3 times the projection range and nearly 10 times the efficiency. With the added output efficiency, soldiers were no longer required to carry extra loads of batteries as in times past.

Until recently, there was one disadvantage in the use of LED technology: the inability to utilize infrared (IR) lenses. ExtremeBeam once again overcame this problem with its focused projection systems allowing for the use of IR filters on their SX21R Ballistic and TAC-24 lights.

With beam ranges well over 350 meters according to FL1 ANSI standards, ExtremeBeam’s 50Cal Anti-recoil lights offer greater light output with less power input than traditional Zenon lights which require frequent battery changes and offer less light projection.

"What made the change most significant was the extreme durability of the Alpha-TAC-ExtremeBeam technology,” said David
Wilson, western regional president, ExtremeBeam. “The SX21 and SX21R lights, for example, have been crushed by walls and dropped numerous times from a 3-story building during durability presentations, proving their unusual strength and survivability.”

**LIGHTER AND BRIGHTER**

Tactical portable lighting is critical for our military. Incandescent lighting or one-time-use flares are costly, cumbersome and inefficient from a logistics standpoint. The military's transition to LEDs gives them the upper hand in theater operations. PowerFlare, Inc. uses LED technology to the warfighter's benefit: lighter, longer-lasting, cost effective, high-brightness, low-power, durable and rugged.

“Tactical Infrared LEDs are used both offensively and defensively in covert operations,” said John Dunning, President, PF Distribution Center, Inc. - World Wide Distributor of PowerFlare products. “PowerFlares are used to mark targets and create emergency landing zones by throwing the device to the contact area from a protected zone.

These lightweight hockey-puck-size beacons are used on Aerostat anchor lines to alert aircraft to the cables. The lights act as beacons used for instant runway lights and rendezvous points. Conveys are identified using the IR version. Marking IED locations is another critical use. Base operations use PowerFlares to mark perimeters and guy wires. Visible LED versions are used for quick ammo drops and for checkpoints. A Vehicle MultiPack24 is available with 4 each of 6 different LED colors, including IR. An 8-pack is available for LZ's and checkpoints.

“For individual warfighters, ease of use and flexibility are vital,” said Dunning. “The PowerFlare has a single tactical flash that can be used to avoid friendly fire. This quick blink has also been used to signal helo rescues or an urgent need for ammo.” A 2-Pack molle strap pouch is available for carrying one IR and one Visible LED PowerFlare for maximum soldier flexibility.

**ON THE ROAD, IN COMBAT**

The recent adaptation of LED (Light Emitting Diodes) technology to stringent military prerequisites is attracting the interest of the armed forces and defense industry manufacturers.

LED lights allow flexible and compact design, easily fitting into the constrained spaces of military vehicles and equipment. The benefits of LED technology are known and proven: low power consumption, superior mechanical and environmental durability and extended life cycle.

Israel Defense Forces (IDF) was the first army that developed an Armored Personnal Carrier (the MERKAVA NAMER) that was “fully LED” including headlamps, rear lamps and interior lights. These vehicles use state-of-the-art LED technology and are combat proven in Gaza Strip and the northern borders of Israel for 3 years. Today, additional armies have adopted this technology and they are looking for LED Lights for both tracked and wheeled vehicles.

“Using LED Lights in combat vehicles has many benefits to the army utilizing this new technology” says Boaz Weiss, VP Marketing of IMCO Industries Ltd., the sole provider of IDF for LED Lights for the NAMER MERKAVA. “The LED Lights have high resistance to vibration and impact, they significantly consume less energy, have long operative lifetime, and the “Total Cost of Ownership” is much more cost-effective”

IMCO provides a family of off-the-shelf LED lights including Front LED Lamp with High-Beam, Low Beam, IR & Tactical Lights, Rear Lamp (including Parking Lamp & Cat-Eye), Rear Braking Lamp including Tactical lighting, Rear Work Lamp, Internal Dome Light including map light, blackout, “low battery indication and “battery backup” features, Internal Crew Compartment Dome Light, IR LED Illumination Module, Cabin LED Light, Gooseneck LED Mini-Lamp and Mobile Shelters LED Light.

**Editor's Note:** Military comment in this article does not reflect a direct endorsement of industry product references.
2005 BRAC Commission Recommendations relocated five C4ISR organizations from Fort Monmouth and other sites to Aberdeen Proving Ground, Md.: the U.S. Army Communications-Electronics Command (CECOM) and associated contracting center; the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC); the Program Executive Officer for Command, Control, Communications-Tactical (PEO C3T); and the Program Executive Officer for Intelligence, Electronic Warfare and Sensors (PEO IEW&S).

The move established a C4ISR Center of Excellence (CoE) at Aberdeen Proving Ground (APG), MD to focus life cycle management activity in command, control, communications, computers, intelligence, surveillance and reconnaissance, accelerating the transition to the DoD transformational objective of network-centric Warfare. The completion date for actions related to the establishment of the C4ISR CoE is September 15, 2011.

Q: Detail the aspects of the 2005 BRAC recommendations for CECOM’s move to APG, specifically the integration of C4I components and the dates of final element consolidation at APG.

A: The closure of Ft. Monmouth, NJ, allows the Army to pursue transformational and base closure objectives to retain military installations with the most flexible capability to accept new missions and to consolidate or co-locate common business functions to provide better level of services at a reduced cost. It has been a catalyst for change.

The BRAC Commission stated that the solution to the significant challenges of realizing the potential of network-centric warfare for land combat forces requires integrated capabilities in C4ISR technologies. This action preserves the Army’s life cycle management business model by closely collocating research, development, acquisition, and sustainment functions. The closure and realignment process required the movement of some 7,260 workforce positions, 120 laboratories, and 80,000 pieces of equipment (equating to 950 moving truck loads).

Q: Regarding new facilities at APG, how is the CECOM C4ISR Materiel Enterprise streamlining departmental missions to better achieve mission success for the deployed warfighter?

A: The Army CECOM C4ISR CoE is comprised of primarily six independent and interdependent organizations that are collectively responsible for the lifecycle of C4ISR systems. The team originates from a partnership between the U.S. Army Materiel Command and the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA/ALT). It’s this partnership and collaboration which enables life cycle support for C4ISR systems. Together, these organizations develop, acquire, provide, field and sustain C4ISR systems and battle command capabilities for the joint warfighter.

MG Randolph P. Strong, CECOM Commander, explained that the Army’s C4ISR Materiel Enterprise will optimize support for warfighters and other customers by synchronizing materiel lifecycle functions in support of Army Force Generation (ARFORGEN) planning and strategy. MG Strong said the organizations will link together in effective and efficient mission domains that will pull together acquisition, project management, research and development, and sustainment functions across the life cycle of systems and equipment.

Where once the organizations were spread over 75 buildings at Ft. Monmouth in addition to locations at Ft. Belvoir, Va., Ft. Huachuca, Ariz., and Redstone Arsenal, Ala., on the C4ISR CoE campus the five organizations are working together in a close-knit environment of no more than 14 state-of-the-art buildings within walking distance of each other.

The C4ISR CoE campus is an $800 million construction project that encompasses 2.5 million square feet of office, laboratory and administrative space for more than 7,200 personnel. The campus was designed around a domain concept, where personnel belonging to different organizations are co-located according to the functional areas to which they belong. This organization is meant to encourage collaborative innovations and streamline services. The idea is to create synergy among the organizations by centrally locating them with other organizations working on different phases of the same or similar weapon systems.

Team C4ISR leadership see the move to APG as not only an opportunity to configure new buildings for maximum efficiency, but to maximize organizational synergy as well. The intent is to position
functional areas, or domains, to better track products through their entire lifecycles, from concept to combat. These domain structures are built around C4ISR systems versus organizations, so the concept has placed personnel working on similar projects in the same locations.

There are 13 domains total, covering the full-spectrum of C4ISR support. For example, all personnel who work with sensors are co-located so the sustainers can have dialogue with the research and development experts. This provides better communication avenues between the organizations and ultimately delivers a better product to the warfighter faster. “Co-location allows them to rapidly share ideas and lessons learned, while efficiently executing processes to increase the delivery of products to the warfighter,” said BG N. Lee S. Price, PEO C3T.

The main intent for the move and the creation of this collaborative environment was to achieve faster, more coordinated and cost-effective support to the warfighter. The Army C4ISR Materiel Enterprise now has the opportunity to speak with one, more coordinated voice.

Q: Tell readers about any example programs/initiatives that have been spurred on by the APG relocation or successes because of the relocation.

A: A good example of this collaboration is the ARFORGEN Integrated Process Team (IPT), made up of members of all of the organizational elements of the C4ISR Materiel Enterprise all working toward a common purpose. This IPT provides a model of what the Enterprise is striving to become across all C4ISR elements with its Domain construct. ARFORGEN IPT members put aside their organizational banner and instead focus on providing the best systems the quickest way possible to the soldiers that are in the operational units. It provides a mechanism for quickly identifying areas that need additional command emphasis or rapid decisions affecting fielding operations across all components of the Army.

Q: Tell readers about any current/forward-looking objectives that the C4ISR Materiel Enterprise has planned for the short/long term enabled by the APG move.

A: Maturing the CoE and ensuring its success, will involve a concerted effort by leadership to instill a cultural change. Rather than thinking organizationally, people will have to focus on providing the best C4ISR systems to the warfighter in the quickest way possible. The C4ISR organizational team will hold a Materiel Enterprise Strategic Review later this summer as a participative forum that will emphasize critical, strategic-level issues and challenges to the development, acquisition and sustainment of C4ISR weapons systems, and establishing a common operating picture across the material enterprise.

Q: Tell readers about any example programs/initiatives that have been spurred on by the APG relocation or successes because of the relocation.

A: One advantage of CERDEC’s location at APG has been the proximity to the U.S. Army Test and Evaluation Command (ATEC). In a recent effort involving a robotically-controlled vehicle, CERDEC was able to work closely with ATEC to develop and assess this technology more quickly than might have been the case in the past.

In April 2011, iRobot unveiled pre-production prototypes of the 110 FirstLook unmanned ground vehicle. While the robot’s small size, ruggedness and state-of-the-art capabilities make it suitable for a range of infantry missions and special operations, the “bot” will not be available for delivery to customers until 2012 and is currently in customer demo phase.

Weighing less than 5 pounds with a length of 10 inches, 9 inches in width and 4 inches tall, the small, light and throwable robot stores in a standard load-out and is man-portable, making it easy to access and utilize in the field.

“The 110 is capable of surviving 15-foot drops onto concrete and waterproof to water depths of 3 feet, the 110 is maneuverable in a variety of environments,” said Robert L. Moses, Captain, U.S. Navy (ret) and president, Government & Industrial Robots Division, iRobot. “It can climb steps up to 8 inches high, overcome curbs and other obstacles, turn in place and self-right when flipped over.”

With 6 hours of runtime on a typical mission and the capability to travel up to 3.4 miles per hour, the design was created for accessing extremely confined spaces. FirstLook facilitates integration of specialized cameras, thermal imagers, chem-bio-radiation sensors and other payloads weighing up to a half pound.

For more info: www.cecom.army.mil

www.tacticaldefensemedia.com
**Tactical 4x4 Capability**

BAE Systems’ business division in South Africa has developed a purpose built RG35 RPU vehicle that delivers the crucial balance between firepower, proven survivability and tactical mobility troops currently need and will require in the future.

A tactical, mine protected, multi-mission 4x4 wheeled vehicle quipped with light and medium turrets, as well as direct and indirect-fire weapons, the RG35 RPU can easily be modified a number of ways to transport cargo, conduct routine patrols, or be outfitted with cameras and other electronics for surveillance missions. Built with an open architecture, the platform measures approximately 5.2 meters in length, 2.6 meters in width, and 2.5 meters in height, and has a ground clearance of 414 millimeters. Gross vehicle mass is 21,000kg and seats driver plus 9 crew members.

More info: www.baesystems.com

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**All-Purpose Tactical Jacket**

Massif®, a producer wearable tactical gear, has announced the launch of its Integrated Tactical Jacket™, the first in a line of performance gear made for missions that do not require flame resistance (FR).

Designed for seamless compatibility with armor, the Integrated Tactical Jacket is constructed with a lightweight 5.5 ounce stretch woven fabric with exceptional breathability. Sleeve and yoke utilize a wind resistant 6.5 ounce fabric treated with DWR for wet conditions. The Integrated Tactical Jacket features mesh-lined pockets for variable ventilation; large zippered shoulder pockets with secure, internal cell phone sleeves; a high collar that protects against wind, gun slings, and hot brass; and chest pockets that are easily accessible under armor.

More info: www.massif.com/integrated-tactical-jacket

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**Audible Diagnostics**

Tracer Products, a provider of fluorescent dyes for leak detection, has introduced the Tracerline® Marksman™ ultrasonic diagnostic tool, a highly accurate instrument that converts and amplifies inaudible ultrasonic sound into audible “natural” sound. Now, service technicians can easily hear sounds that signify problems such as air brake leaks, gear and bearing wear, as well as vacuum, EVAP system, exhaust refrigerant and passenger compartment leaks.

The Marksman uses a two-tiered process to ensure accurate diagnosis. When attached to the receiver, the 12-inch hollow probe accentuates air sounds, while the solid contact probe accentuates sounds of wear or grinding inside gears. Standard 9-volt alkaline batteries are included for both the receiver and the emitter. All components are packed in a sturdy storage case with foam insert. A 10-bar LED display indicates the intensity of incoming signals from the problem source to ensure error-free diagnosis.

More info: www.tracerline.com

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**Smartphones for Top Command**

The U.S. Air Force is receiving 300 rugged Sectéra® Edge™ Smartphones for General Dynamics C4 Systems for use by senior leadership at the air staff and major command levels. The Smartphones are part of a broader Air Force plan to integrate Secure Mobile Environment – Portable Electronic Devices (SME-PED) like the Sectéra Edge into its consolidated enterprise network.

Capable of operating on existing Global System for Mobile (GSM) communications and Code Division Multiple Access (CDMA) commercial cellular networks, the Sectéra Edge is WiFi compatible as well. Interoperable with over 350,000 fielded Secure Communications Interoperability Protocol (SCIP) devices, the Sectéra Edge provides secure data communications classified Secret and below and secure wireless voice communications classified Top Secret and below.

More info: www.gdc4.com

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**Tough Tower**

A Box 4 U, a leader in blast/ballistic resistant portable shelters, will be rolling out a ruggedized tower design at the 2nd Annual Training Support Systems TSS workshop in Dallas, TX August 15th thru the 19th. This product addition is a natural fit with A Box 4 U's core competencies in the design, engineering, construction, testing, delivery and service of blast and ballistic protective structures.

A Box 4 U is a leading supplier for Force Protection shelters producing ruggedized soldier protective custom solutions such as entry check points, environmentally-protected workstations, forward operating bases, hardened guard booths, tactical operation centers, towers, and walk thru security stations housing non-intrusive inspection systems.

More info: www.abox4u.net or govsales@abox4u.net
**Radar Integration**

Mercury Computer Systems, Inc., a provider of systems integration products, has announced it is delivering integrated Application Ready Subsystems™ (ARS™) and system integration services to BAE Systems Mission Systems for its Advanced Radar Target Indication Situational Awareness and Navigation (ARTISAN) 3D Naval Radar Program. ARTISAN 3D radar is a leading-edge, maritime MRR designed to improve the performance of primary naval sensing capabilities, particularly when operating in a complex littoral, or shoreline, environment.

“ARTISAN is designed as a main surveillance and target indication radar for surface vessels, from offshore patrol vessels to major warships. Additionally, it is designed to be future-proof and to meet the same stringent SWaP (size, weight and power) requirements of the system it is replacing,” said Chris Jones, ARTISAN Project Team Leader, BAE Systems Mission Systems.

More info: www.mc.com

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**Pocket-sized Computing**

General Dynamics Itronix has introduced the new, fully rugged, pocket-sized GD2000. About the size of two stacked paperback books, the GD2000 provides the ultra-mobility of a handheld computer with the powerful performance of a full-sized notebook. The ideal combination of size, weight and power, the GD2000 weighs just over two pounds and comes equipped with the Intel® Ultra Low Voltage Core™ Solo processor, highly sensitive GPS and a 5.6-inch daylight-viewable DynaVue® touch-screen display.

Mark Johnston, director of Strategic Computing Solutions for General Dynamics Itronix, said, “The GD2000 is designed for the most extreme work environments. For example, after jumping from a plane with the GD2000 strapped to their chests, military paratroopers can pinpoint or change their landing location as well as receive updated mission information while in flight and after they land.”

More info: www.gdit.com

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**Multi-comms Capability**

DeLorme, the innovation leader in navigation technology, today announced the Fall 2011 release of the DeLorme® inReach™, the first Iridium-based personal communicator to deliver truly global two-way satellite text messaging; delivery confirmations; SOS capabilities; remote tracking, and an Android smartphone interface.

Users can send pre-loaded text messages to designated recipients, and activate remote tracking, allowing others to follow their travels online via a continually-updated “bread crumb” trail. The application also provides delivery confirmation via flashing LED lights. In case of emergency, an SOS key can be triggered. The SOS key is protected by a “safety” to prevent false alarms.

The core communications component of the inReach is the Iridium 9602 short-burst data (SBD) transceiver, which provides a unique, two-way communications connection through pole-to-pole global coverage.

More info: www.delorme.com

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**UAV Control Station Milestone**

ChandlerMay’s UAS Division recently delivered the 300th Ground Control Station (GCS) subsystem to AAI Corporation. ChandlerMay’s UAS division builds major subsystems for the Army’s One System® Ground Control Station (OSGCS), which flies several Unmanned Air Systems including AAI’s very successful Shadow® TUAS (Tactical Unmanned Aircraft System). AAI has logged more than 600,000 flight hours in support of the Shadow TUAS, and is expanding the GCS into other UAS platforms, including the U.S. Army’s new Extended Range/MultiPurpose (ER/MP) Gray Eagle Unmanned Air System for which ChandlerMay was selected as GCS supplier. The One System® and its earlier variants are currently operational in several military deployments.

More info: www.chandlermay.com or www.aaicorp.com
Enemy fire, or “shot” detection, on the battlefield remains a largely acoustic-based technology. An inevitable transition to electro-optic systems, however, is poised to enable warfighters to “see” the enemy long before they become audibly apparent.

By Kevin Hunter, A&M Editor

Mechanized warfare is particularly complex. Sniper fire, rocket-propelled grenade rockets, and, in particular anti-tank missiles, are lethal threats to the various types of tactical vehicles moving across the battlefield. Inability to detect threats and locate the position of the firing enemy causes numerous causalities, leading to massive, inaccurate, and wasteful fire by our forces. Most importantly, it lets the enemy retain the initiative in the battlefield.

“DoD and the U.S. Army in particular have been interested in capabilities for electro optic fire or “shot” detection,” said Lt. Col. William Russell, Product Manager Forward Looking Infrared (PM FLIR). “Various capabilities have been offered using ultra-violet, infrared, and visible band solutions. Most require high frame rate, non-imaging sensors, with none yet at a high degree of maturity.”

Gunshot detection began as a quick reaction capability (QRC) to address an immediate warfighter need. It was validated as an Enduring Capability (EC) in 2007, and codified in a Capability Production Document (CPD) in 2009. The Product Manager, Forward Looking Infrared (PM FLIR) is currently leading the initiative to move the program from a QRC to a Program of Record (POR).

“To date, gunshot detection technologies have been based on acoustic principles and are thereby limited by the speed of sound,” said Lt. Col. Russell. “In light of this, one advantage that electro-optic sensors bring would be an improved reaction time since they are based on the speed of light.”

EO/IR Camera Imaging

For many years, electro-optic sensors have been used to provide base defense against incoming rocket and mortar attacks. Axsys Technologies, a division of General Dynamics Advanced Information Systems and provider of camera systems for high-definition movies and documentaries, is today providing some of the most widely-deployed camera systems that use electro-optical capabilities paired with infrared sensors. These systems are being used to provide continuous monitoring of forward operating base perimeters. They also are used to interrogate
areas determined to be the source of rocket and mortar fire.

“Users want to identify a target before it’s a threat,” said Bob McGill, vice president and general manager of Axsys Technologies. “If you’ve ever watched the BBC’s Planet Earth on The Discovery Channel or the documentary series Life, you’ve seen the visual clarity, accuracy and stability of our camera and pointing systems. High-fidelity imagery is essential to capturing images of animals from great distances without being detected or disturbing their natural habitats. The same high-quality, stabilized imagery is being used by the U.S. defense, homeland security and law enforcement communities, allowing warfighters, border patrol agents and officers to quickly and accurately detect, recognize and identify targets.”

Axsys has also introduced its IronSight system to enhance users’ ability to detect concealed threats that often go undetected by standard camera systems. IronSight uses specialized imaging to accurately identify and track man-made objects and other targets of interest that standard camera systems can’t detect. Engineers at General Dynamics developed IronSight after recognizing that light reflects off man-made surfaces in a different way than it does off natural surfaces. The IronSight camera system highlights this visual anomaly, easily recognizing footprints left behind in the dirt or objects hidden under camouflage. The camera’s specialized imaging provides users with an edge in detecting concealed threats, protecting borders and perimeters and zeroing in on the threat during wide-area surveillance.

**Multi-direction Detection**

Rafael, Inc. offers advanced techniques to neutralize potential threats such as in sniper fire detection. SpotLite is a family of electro-optical products that accurately detect and locate enemy fire sources beyond their operational effective range, and allows the swift closure of sensor-to-shooter loop so as to neutralize the threat and keep the control of the battlefield.

The system is omni-directional firing detecting for positioning, classifying and observation. The system operates either in the 3-5m spectral range or any other sensors, depending on required detection ranges, threats and system cost. Special attention carried on signal processing algorithms that were designed to enhance detection and reduce false alarm rate.

There are various battlefield scenarios in which SpotLite technology can be used:

- Combat unit protection
- Urban warfare
- Necessary/essential passages
- Marines threats, integrated to a navy boat

The first product to be unveiled about 4 years ago was the SpotLite P, fast deployable, man-portable system that detects and locates enemy shooting small arms, day and night. It immediately investigates the target to verify that it is indeed a terrorist, and quickly sends the target data to snipers or any other relevant shooters that can neutralize the source of fire. Since the system is man-portable and battery-operated it has great operational flexibility and can be positioned inside buildings as well as in areas impassible by vehicle.

**Missile Detection**

Spotlite-M is an electro-optical system installed on ACVs and other vehicles that detects and locates an enemy firing small arms, RPG bombs, anti-tank missiles, and rockets, in motion, day and night, at a coverage of up to 360°.

These system capabilities allow our forces to perform several operations concurrently:

- At platform level, immediate use of jammers/smoke screens, barrel slaving to the location point and prompt firing, and immediate backward/forward withdrawal
- At tactical unit level (platoon, company, battalion) the enemy location coordinates is in the unit computer within seconds. It is then sent through the C2 networks to relevant clients, to various shooters who can receive the target coordinates and quickly and accurately slave their sights to these coordinates, or to Special Forces active in the area of the incident.

A Hummer vehicle outfitted with Rafael’s Mini-SAMSON system provides war-fighters with a stabilized sensor for conducting targeting operations. (Rafael photo)
All of this in order to destroy/neutralize the enemy and retain the operational initiative in our hands. The system has several, unique technical capabilities that have a direct effect on the level of success in battle:

**Locating (Extracting Coordinates of) Firing Enemy in Motion**

This capability enables the threatened platform to continue moving while performing combat drills and techniques and using jamming means. Other technologies, unlike SpotLite – M, require the platform to stop (for ranging) which is inconceivable when the platform is threatened by an approaching anti-tank missile.

**Locating the Firing Enemy Beyond the Effective Range of the Fired Munitions**

This capability (in addition to the ability to extract the coordinates of the firing enemy) allows not only to defend the maneuvering platform but also to neutralize the fire source by sending the targets through the C2 networks to various sources of precise fire such as electro-optical missiles (the Spike family), precise artillery, attack helicopters, and fighter aircraft.

**Indicated Capabilities Can Be Implemented Day and Night**

For the first time, the SpotLite family enables our forces to go from the defensive during planned/surprise fire to keeping the offensive initiative. At any point in time, the SpotLite family (P + M) generates in real time and with precision the “red map” which helps our forces determine battle outcome.

*Editor’s Note: Military comment in this article does not reflect a direct endorsement of industry product references.*

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**High-Performance Optical Systems**

The ability to quickly and accurately detect, recognize and identify threats is critical to today’s warfighter.

Axsys Technologies’ optical systems are custom designed to provide superior imaging for targeting, navigation and surveillance missions. Our field-proven thermal imaging systems deliver clear images day or night and in the harshest environments.

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The U.S. Army is vigorously immersed in an ambitious, far-reaching Network Integration Evaluation (NIE) at White Sands Missile Range, NM, designed to simultaneously test programs of record and assess a host of emerging network technologies, the services’ senior leaders said.

The NIE, which includes five programs of record going through formal Limited User Tests (LUT) and a host of emerging or developmental technologies undergoing various evaluations, is a key part of the Army’s overarching Network Strategy; the NIE, which began the first week of June, is structured to assess the scope and readiness of emerging technologies and, in cases where appropriate, integrate new capability before sending it down range to Soldiers in combat.

**FULL SPECTRUM**

At the heart of the exercise in an overarching effort to develop a single battlefield network able to push key information to the Soldier, linking him or her to command posts, vehicles on-the-move and higher headquarters; the idea is to use the best available technologies so as to move information, voice, video, data and images faster, further and more efficiently across the force.

“The network will literally redefine how we fight,” said Gen. Peter Chiarelli, Vice Chief of Staff of the Army. “Ultimately the network will connect leaders and soldiers, sailors, airmen, Marines at all levels, at every echelon of command, in any information, in any formation, and across the entire team, with the right information quickly and seamlessly - and in doing so - I am confident it will make our various formations more lethal, faster, and more survivable in today’s battlefield.”

Central to the NIE is the continued evaluation of non-proprietary, high bandwidth waveforms such as Soldier Radio Waveform (SRW) and Wideband Networking Waveform (WNW) -- which use a larger portion of the available bandwidth spectrum than legacy waveforms to move voice, video, images and data in real-time across multiple nodes in the force.

The waveforms, and indeed many of the technologies, are designed with standards aimed at meeting the needs of all the services in order to accommodate the potential for “Joint-Service” involvement in the network.

“We’re working very close with partners up at OSD [Office of the Secretary of Defense] in laying this out. I’ve invited them all[other Services] out to see what we’re doing. I see this evolving very, very quickly into a test-bed that can be used not just by the United State Army but by all services,” Chiarelli explained.

**MULTI-MEDIA APPLICATION**

Overall, the technologies being evaluated include a wide range of capability such as software programmable radio, satellites, sensors and smart phones. The programs undergoing formal LUTs are:

- Joint Tactical Radio Systems (JTRS) Handheld Manpack Small Form Fit, or HMS - A multi-channel, Soldier-mounted software-programmable radio able to transmit voice, video, data and images using high band-width waveforms such as SRW.
Joint Capabilities Release, or JCR – a next-generation software for Force Battle Command Brigade and Below, or FBCB2 display screens, featuring Army-Marine Corps interoperability and advanced mapping tool kits.

Mounted Soldier System, or MSS – a combat-vehicle Soldier ensemble which integrates advanced gear such as a helmet-mounted display and body cooling devices.

Network Integration Kit (NIK) - a vehicle-mounted communications and computing hub

SPIDER – a remote munition delivery system

**TACTICAL NETWORK FIRST**

The NIE is the first in a series of semi-annual evaluations designed to integrate and mature the Army's tactical network. In addition to the five systems undergoing formal LUTs, the NIE is also experimenting with 29 emerging technologies – such as smart phones, PDA’s and complex vehicle-based company command posts – in order to zero in on the best emerging technologies able to deliver networked capabilities to Soldiers on the move in combat.

“The reality is these NIEs are as much about learning as they are about testing. After all, the only way to fix problems is to accurately identify them. Likewise, the most effective means for developing new, relevant doctrine and tactics is to conduct integrated network-enabled training exercises,” said Chiarelli.

The rationale for the NIE is to evaluate all of these technologies in relation to one another by placing them in various scenarios in a combat-like environment like White Sands Missile Range, N.M., complete with vast mountains and desert-like terrain.

“We can evaluate new capabilities across the potential spectrum of conflict. We can evaluate them in terrain that our units are really having to deal with today in line-of-sight and non-line-of-sight challenges,” said Maj. Gen. Keith Walker, Commander, Brigade Modernization Command. “If there is a capability that has merit, we can evaluate it and get feedback, not just on the material, the technical material piece, but what are the implications of this equipment on our doctrine, on how we organize, how we train and how we develop leaders.”

**SYSTEM-OF-SYSTEMS**

NIE provides Army testers and program managers the advantage of assessing how new and emerging technologies work in relation to one another from a system-of-systems perspective. The NIE is aimed at refining the acquisition of new technologies and blending programs of record with Commercial-Off-the-Shelf solutions as part of an agile process designed to keep pace with rapid technological change, Army leaders explained.

Recently, the Army issued notification that it is seeking interested industry sources with mature networked technology solutions to potentially participate in one of two upcoming Network Integration Evaluation events to be held in the Fall of 2011 and the Spring of 2012. In what is termed a Sources Sought notification, the Army, through Program Executive Office Integration, is seeking interested industry partners who would like to demonstrate mature networked technologies to enhance tactical network capability. The purpose of the Sources Sought notice is to identify emerging capabilities to be evaluated against a set of entrance criteria and to provide an opportunity for selected mature capabilities to participate in future Network Integration Evaluations.

In the notice, the Army is seeking solutions that address specific network capabilities that are at the representative model or prototype system stage and that have been tested in a relevant environment. According to Colonel Dan Hughes, Director of Systems Integration, Program Executive Office Integration, “To ensure that the Army only delivers the best integrated network capabilities to our Soldiers, we are only seeking mature capabilities for possible entrance into this evaluation cycle. This represents a major step up in the capabilities’ demonstrated readiness, including prototypes that have been tested in a high-fidelity laboratory environment or in simulated operational environment.”

**AHEAD**

The NIE – and subsequent semi-annual exercises planned through 2012 – are geared toward speeding up and improving the way new networking technologies are delivered to Soldiers, in part by ensuring that the integration of new capability is properly solidified before items are sent into combat.

“The Army will buy what it needs, when it need it, for those that need it. This allows us to buy less, more often, and incrementally improve network capability over time. Simply stated, I see these NIEs not as evolutionary events but as representing a revolutionary new approach that will potentially change how we provide new capabilities in the future,” said Chiarelli.

More info: www.bctmod.army.mil
NDIA DEFENSE EXHIBIT GUIDE

Maximize Your Reach & Budget!

America’s Top Rated Defense Exhibitions For 2012 (as of June 25, 2011)

Aug 29-Sept 1, 2011 ▶ Miami, FL
Exhibit POC: Sam Campagna, 703-247-2544
Meeting POC: Taryn Crowder, 703-247-2566

26th International Ballistics Symposium & Exhibition – 1210
Sept 12-16, 2011 ▶ Miami, FL
Exhibit POC: Sam Campagna, 703-247-2544
Meeting POC: Kari King, 703-247-2588

2011 US Coast Guard Innovation Expo – 2230
Oct 25-27, 2011 ▶ Tampa, FL
Exhibit POC: Luellen Hoffman, 703-247-9460
Meeting POC: Angie DeKleine, 703-247-2599

49th Air Targets, UAVs & Range Operations Symposium & Exhibition – 2410
Oct 25-27, 2011 ▶ Ft. Walton Beach, FL
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Meredith Geary, 703-247-2596

I/ITSEC
Nov 28-Dec 1, 2011 ▶ Orlando, FL
Exhibit POC: Debbie Dyson, 703-247-9480
Meeting POC: Samantha Reimer, 703-247-9490

23rd Annual SO/LIC Symposium & Exhibition – 2880
Feb 6-8, 2012 ▶ Washington, DC
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Meredith, 703-247-9476

2012 Joint CBRN Conference & Exhibition – 2300
March 12-14, 2012 ▶ Baltimore, MD
Exhibit POC: Luellen Hoffman, 703-247-9460
Meeting POC: Julie Veldenkamp, 703-247-2577

2012 Pacific Operational Science & Technology Conference – 2540
March 18-22, 2012 ▶ Honolulu, HI
Exhibit POC: Luellen Hoffman, 703-247-9460
Meeting POC: Tia Pitt, 703-247-9467

Ground Robotics Capabilities Conference & Exhibition – 2380
March 21-23, 2012 ▶ San Diego, CA
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Mike Dauth, 703-247-2593

28th Annual National Logistics Conference & Exhibition – 2730
March 26-29, 2012 ▶ Miami, FL
Exhibit POC: Luellen Hoffman, 703-247-9460
Meeting POC: Taryn Crowder, 703-247-2566

13th Annual Science & Engineering Technology Conference/Dod Tech Exposition – 2720
April 17-19, 2012 ▶ Charleston, SC
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Mary Anna Christiansen, 703-247-2596

Joint Armaments Conference, Exhibition & Firing Demonstration – 2610
May 14-17, 2012 ▶ Seattle, WA
Exhibit POC: Alden Hitchner, 703-247-2573
Meeting POC: Kelly Seymour, 703-247-2583

Global Explosive Ordinance Disposal – 2950
May 1-3, 2012 ▶ Ft. Walton Beach, FL
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Mary Anna Christiansen, 703-247-2596

2012 Environment, Energy & Sustainability Symposium & Exhibition - E2S2 – 2440
May 21-24, 2012 ▶ New Orleans, LA
Exhibit POC: Allison Hitchner, 703-247-2573
Meeting POC: Kari King, 703-247-2588

SOFIC Conference & Exhibition – 2890
May 22-24, 2012 ▶ Tampa, F
Exhibit POC: Alden Davidson, 703-247-2582
Meeting POC: Meredith Geary, 703-247-9476

The DLA Industry Conference & Exhibition – 2780
June 11-14, 2012 ▶ Columbus, OH
Exhibit POC: Allison Hitchner, 703-247-2573
Meeting POC: Allison Doherty, 703-247-2570

POC: Luellen Hoffman, Director of Exhibits 703-247-9460

Reserve online at www.ndia.org/exhibits
Features

On Solid Ground
DoD is employing the latest in soil stabilization technology to provide warfighters with reliable vehiclet traffic surfaces for ensuring transport mission efficiency.

Tactical Transport
The U.S. Army’s second-generation Heavy Expanded Mobility Tactical Truck (HEMTT) is poised to eliminate mobility limitations experienced by earlier HEMTT platforms.

USMC LAV Upgrades
The U.S. Marine Corps’ LAV-AT Modernization Program is fully integrating common remote weapon station (CRWS) and improved target acquisition system (ITAS) enhancements.

High on NIE
Joint force commanders will soon have the capabilities of a developmental vehicle-mounted command post system poised to eliminate “fog of war” comms challenges.

Recurring Highlights

Industry Partner
Minds of the Military

Strategic Leadership:
PEO Land Systems (USMC)

BRAC Spotlight: HQ TRADOC Joint Base Langley-Eustis, Ft. Eustis VA

Unmanned & Beyond: Hand-launched UAVs

Asymmetric Warfare Developments:
EO/IR Thermal Imaging

Rugged on the Move: Handheld Comms

Calendar of Events

Aug 23 – 25
LandWarNet
Tampa, FL
www.Afcea.org

Aug 30 – Sep 2
EMS World
Las Vegas, NV
www.emsworld.com

Sep 13 – 15
Infantry Warfighter
Columbus, GA
www.fbcinc.com

Sep 27 – 29
MDM
Quantico
www.marinexpo.com

Aug 27 – 29
NGAUS
Milwaukee, WI
www.ngaus.org

Aug 30 – Sep 2
Enforcement Expo
Las Vegas, NV
www.enforcementExpo.com

Sep 20 – 23
NTOA
Richmond, VA
www.ntoa.org

Oct 10 – 12
AUSA Annual
Washington, DC
www.ausa.org
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