

# Army Guide monthly



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## Defence Industry

### PRC 3088 Hand Held Transceiver



AT Communication is proud to announce the launch of the PRC-3088 VHF Hand Held Low Band Tactical Transceiver.

The PRC-3088 is a state of the art communicator ideally suited to squad and brigade level communications. Three versions are available with increasing levels of communications security.

The PRC-3088 can be used in hand held configuration with the built in waterproof speaker and microphone or with a headset and remote PTT. The PRC-3088 is fully compatible with Legacy PRC-77 radios.

The PRC-3088 offers a convenient field repeater mode which provide simple range extension without any additional hardware.

For further technical information on the PRC-3088, please visit [http://vhf-military-tactical-radio.at-communication.com/en/at/tactical\\_vhf\\_handheld\\_transceiver\\_military\\_prc-3088.html](http://vhf-military-tactical-radio.at-communication.com/en/at/tactical_vhf_handheld_transceiver_military_prc-3088.html).

objectives to provide networking capabilities that enhance situational awareness and speed decision-making.

"Harris is collaborating with the Australian Department of Defence and the program team on this very important program that will lead to an operational, networked Australian brigade in 2013," said Andy Start, president, International business, Harris RF Communications. "We're also excited to expand international use of our JTRS-approved Falcon III radio systems. These systems form the basis for secure networked military communications, providing significantly better information gathering and dissemination at the tactical edge - where the battle is fought."

The largest part of the order is for the Falcon III AN/PRC-152(C), the most-widely deployed JTRS-approved handheld radio. The AN/PRC-152(C), in dismounted configuration, will connect soldiers to the ADF's central Battle Management System and serve as a hub for other soldier-carried C4 devices.

Harris also will supply its Falcon III AN/PRC-117G wideband manpack radio, Falcon II AN/PRC-117F multiband manpack radio and Falcon II AN/PRC-150(C) high-frequency manpack radio. In addition, Harris is providing the AN/PRC-152 in vehicular amplifier adapters to support the installation of equipment in more than 1,000 armored vehicles.

As part of the agreement with the ADF, Harris will be establishing a customer service and support center in Brisbane. Harris is working closely with prime contractor Elbit Systems on the communications modernization programs.

## Contracts

### Harris Receives \$112 M from Australian DoD

Company's Falcon III Technology Will Create High-Speed Connectivity Between Australian Commanders and Deployed Forces.

Brisbane, Australia / Rochester, NY. -- Harris Corporation, an international communications and information technology company, has received a US\$112 million (AUD\$135 million) order for Falcon(r) tactical radio systems that will provide battlefield networking capabilities to the Australian Department of Defence. The order consists primarily of Harris Falcon III(r) AN/PRC-152(C) multiband handheld radios, but also includes Harris Falcon III(r) AN/PRC-117G wideband, AN/PRC-117F multiband and AN/PRC-150(C) high-frequency (HF) manpack radios.

Harris radio systems will serve as the secure communications backbone for the Australian Defence Forces (ADF) Land 75, Land 125 and Joint Project 2072 communications modernization programs. The systems wirelessly connect soldiers to each other, their commanders and other devices in the field. The Harris systems, which include Type 1 security devices, antennas and power amplifiers, will allow the ADF to meet its

## Contracts

### Force Protection Awarded \$82.3 Million for Independent Suspension Upgrades

Ladson, SC -- Force Protection, Inc., a leading designer, developer and manufacturer of survivability solutions and provider of total life cycle support for those products, today announced it has received an \$82.3 million modification to contract M67854-07-D-5031 from the United States Marine Corps Systems Command for independent suspension system (ISS) kits for Cougar vehicles.

The modification is subject to definitization. Work will be performed at the MRAP Sustainment Facility (MSF) in Kuwait and is expected to be completed by December 31, 2010.

Randy Hutcherson, Chief Operating Officer for Force Protection, said, "This award is important to the performance of ongoing difficult but important missions in Afghanistan. We are extremely proud of the proven performance and continued durability of our Cougar fleet and look forward to maintaining this important asset in the years to come. Our ability to stand up service operations forward into Kuwait and now Afghanistan enables us to provide the best possible service to the war fighter at a critical time for operations in the Middle

East. We are happy to receive this order which demonstrates continued demand for modernization of the vehicles and bodes well for a strong second half of the year, however we will continue to see unevenness in our quarterly financial results with the first quarter proving to be challenging.”



### Defence Industry

## Oshkosh Defense Receives Four Awards Valued at \$19 Million to Refurbish Vehicles In-Theater

OSHKOSH, Wis. -- Oshkosh Defense, a division of Oshkosh Corporation, announced today it has received four awards valued at more than \$19 million from the TACOM Life Cycle Management Command (LCMC) for additional work to be included under its Theater-Provided Equipment Refurbishment (TPER) program with the U.S. military.

This work includes the delivery of nearly 200 refurbished heavy and line-haul vehicles, and will extend the Oshkosh Defense TPER work at its Kuwait facility to January 2011.

Oshkosh will deliver more than 140 refurbished Family of Heavy Tactical Vehicles (FHTV), including the Oshkosh® Heavy Expanded Mobility Tactical Truck (HEMTT), Palletized Load System (PLS) and Heavy Equipment Transporter (HET), as well as the HET M1000 trailer. The company also will deliver more than 50 refurbished line-haul vehicles. Oshkosh has the in-theater capabilities, including a multifaceted supply-chain management approach, to repair and refurbish non-Oshkosh products such as the trailers and line-haul vehicles.

“Oshkosh Defense and our partners in the military undertook a groundbreaking operation with the TPER program, and it has significantly benefitted fleet sustainment,” said Andy Hove, Oshkosh Corporation executive vice president and president, Defense. “Whether it’s routine service or vehicle upgrades, our extensive repair and recapitalization capabilities ensure mission-ready vehicles are affordably and efficiently delivered to meet the Warfighters’ needs.”

The TPER program is the result of an urgent requirement to repair and refurbish tactical wheeled vehicles operating in both Iraq and Afghanistan. The program brings vehicles that have become worn from extreme in-theater conditions back to full mission operability. Performing the work in-theater minimizes refurbishment costs, reduces maintenance cycle time and quickly returns vehicles to service. Upon completion of these efforts, more than 1,850 vehicles and trailers will have been repaired and returned to U.S. forces through the TPER program.



### Contracts

## General Dynamics Awarded \$29 Million for RG-31 MRAP Upgrades



LONDON, Ontario, Canada -- U.S. Marine Corps Systems Command (MCSC) has awarded General Dynamics Land Systems-Canada a USD\$28.6 million delivery order modification for proposed vehicle engineering upgrades and associated non-recurring engineering costs in support of RG-31 Mk5E vehicles under the Mine Resistant Ambush Protected (MRAP) vehicle program.

General Dynamics Land Systems, the Canadian company’s parent corporation, is a business unit of General Dynamics.

These upgrades will support vehicles that are being manufactured under a delivery order awarded to General Dynamics Land Systems-Canada on February 17, 2010, for 250 RG-31 Mk5E vehicles for the MRAP program.

The contract was signed through the Canadian Commercial Corporation, a Crown Agency of the Canadian Government.



### Robots

## Northrop Grumman Launches Next Generation of Wheelbarrow Bomb Disposal Vehicle



LONDON -- Northrop Grumman Corporation has launched the latest enhanced version of its industry-leading Wheelbarrow unmanned ground vehicle for the remote handling and surveillance of hazardous threats.

The Wheelbarrow Mk9 vehicle, designed, developed and manufactured by Northrop Grumman in the UK, includes significant advances in technology and performance and a range of new features that will improve its capabilities for both civil security and defence applications.

The Wheelbarrow Mk9 will be on display in Northrop Grumman's exhibit at Counter Terror Expo, the international exhibition and conference dedicated to

addressing the continuing worldwide threat from terrorism. Counter Terror Expo takes place at the National Hall, Olympia, London from 14-15 April.

"We are continually developing and expanding our products and their capabilities to meet the evolving needs of our military and civil security customers in detecting and disposing of improvised explosive devices and handling hazardous threats," said Kevin Rooney, managing director Unmanned Ground Vehicles for Northrop Grumman's Information Systems sector in Europe. "This latest design of our well proven Wheelbarrow vehicle combines greater speed, mobility, exceptional payload and reach capabilities with the latest control, communications and camera specifications to offer unsurpassed performance."

Key features of the Wheelbarrow Mk9 include: digital communications for improved quality and greater security; enhanced user-friendly command console with touch-screen facility and joystick control; wireless hand controller for local remote control and; greater functionality including preset positions. The vehicle also has a dedicated separate data channel for additional sensor integration. Its performance characteristics rank it among the most capable vehicles available in its class: it can climb a 45-degree stairway; has a modular telescopic arm with 7-degrees of freedom and a maximum reach of more than 6m; a maximum speed of 5km/hour; and a lift capacity of 150kg.

Wheelbarrow is one of the most capable and reliable unmanned ground vehicles in its class available today and has a proven record of success. It is recognised as the benchmark vehicle for remote disposal of improvised explosive devices and is product of choice for users around the world. Wheelbarrow was first used by British Army bomb disposal teams in the 1970s and since then it has gone through a number of design upgrades to extend capabilities and meet changing needs.

Northrop Grumman is the sole supplier to the UK MoD for this size of vehicle and is a partner to Police and military user organisations world-wide. The company has more than 2,000 unmanned ground vehicles in operation around the world.

Northrop Grumman's unmanned ground vehicle business has been established in Coventry for more than 20-years. Today the company designs, develops and manufactures some of the most capable and reliable unmanned ground vehicles available, from the Wheelbarrow bomb disposal robot to CUTLASS, the latest vehicle for hazardous operations in development for the MoD. Its wide range of vehicles can be configured according to the operational requirements of the user including explosive ordnance disposal, ground surveillance, hazardous material and chemical, biological, radiological, and nuclear (CBRN) missions. The vehicles are capable of full integration with command control system applications.

Northrop Grumman in the UK operates from a number of locations providing avionics, communications, electronic warfare systems, marine navigation systems, robotics, C4ISR solutions and mission planning, airport

security, aircraft whole life support, IT systems and software development.

Northrop Grumman Corporation is a leading global security company whose 120,000 employees provide innovative systems, products, and solutions in aerospace, electronics, information systems, shipbuilding and technical services to government and commercial customers worldwide.

## Contracts

### Contract Valued at MNOK 590 for the Crows Programme

KONGSBERG has booked an order valued at NOK 590 millions from the US Army. The order is part of the increase of the Common Remotely Operated Weapon Stations (CROWS) framework agreement for up to 10.349 systems signed in December 2009.

The initial CROWS II framework agreement was disclosed to the Oslo Stock Exchange on 22 August 2007.

CROWS is a joint acquisition programme for weapon stations for the US Army's vehicle programmes. A common solution will result in substantial efficiency gains in respect of protection, training, support and further development.

## Defence Industry

### General Dynamics Introduces New Tadpole® TOPAZ Rugged Notebook; High-end Computing and Graphics Display at a COTS Price

The Tadpole TOPAZ is ruggedized for superior performance in the most demanding command, control, communication and computing environments.

Cupertino, Calif. – The new rugged Tadpole® TOPAZ notebook computer by General Dynamics is now available for military power-users, first responders and federal agents who require workstation-class applications with mobile-server performance. Built from commercial-off-the-shelf technology, the lightweight, compact-sized Tadpole TOPAZ also supports network connectivity at multiple security levels and interoperability with computers and radios currently fielded by the U.S. military.

"The military rugged Tadpole TOPAZ delivers the performance and reliability needed for users in highly specialized environments. For instance, warfighters responsible for battlespace air traffic control need the computing horse-power to support airspace management programs with a workstation display that supports 3D imagery and mapping without scrolling around to see the entire picture," said David Miles, marketing manager for Tadpole products.

The rugged Tadpole TOPAZ has passed rigorous military-standard tests including exposure to high and



low temperatures, shock and vibration extremes and water resistance. For users, three segregated Ethernet ports enable Tadpole TOPAZ operators to gain access to multiple networks operating at different levels of information security.

Tadpole TOPAZ highlights:

- Intel® Core™2 Duo® Mobile Processor (T9400) and up to 8 GB DDR3 SDRAM
- 15.1-inch DynaVue® daylight viewable display with optional touch screen
- Compatible with Windows®, Linux™ and Solaris™ applications
- Three segregated Gigabit Ethernet ports
- Integrated Trusted Platform Module (TPM) V1.2
- Passes military-standard tests MIL-STD-810F and MIL-STD-461E
- Type I, II, and III PCCARD/PCMCIA expansion slots
- Size and weight: 2.4 inches high x 15 inches wide x 12.4 inches deep; 11 lbs with battery

Tadpole is a part of General Dynamics Itronix, a leading developer of wireless, rugged computing solutions for mobile workers, offering a full range of field computing systems including laptops, ultra mobile notebook PCs and tablet PCs. General Dynamics Itronix is part of General Dynamics C4 Systems, a business unit of General Dynamics.



## Future Technologies

### Harris Corporation and LG Electronics Demonstrate Scalable Full-Channel Mobile DTV Technology

LAS VEGAS -- With an eye on the future for spectrum owners interested in reaching millions of mobile TV viewers, Harris Corporation took the wraps off its latest technological innovation developed with LG Electronics — mobile digital television delivered in Scalable Full-Channel Mobile Mode.

The demonstration features functioning hardware for both transmission and reception of mobile DTV signals using enhanced technology.

The new system enables as many as 16 different video programs to be sent in the same 6 MHz bandwidth utilized by a TV broadcaster. It has been proposed for standardization to the Advanced Television Systems Committee (ATSC) and is being unveiled this week at the 2010 National Association of Broadcasters (NAB) convention.

Current TV broadcasters are required by the Federal Communications Commission to offer at least one standard-definition digital TV program in their 19.4 Mbps broadcast bitstream. Owners of other 700 MHz spectrum, however, have more flexibility. The Harris/LG demonstration will show spectrum owners and all terrestrial broadcasters how to maximize spectrum use with a greater variety of TV programs to reach mobile viewers "on the go" as viewing habits change.

This demonstration can be seen in the ATSC-OMVC Mobile Digital TV Pavilion (Booth SU5217A, South

Hall, Las Vegas Convention Center) during the entire 2010 NAB Show.

### Multiple Mobile Programs on One Channel

To achieve its robust approach to Scalable Full-Channel Mobile Mode, LG and Harris engineers have trimmed the main digital program to enable a mere trickle of data — enough to advertise available mobile programs on the service to in-home viewers. Most of the 19.4 Mbps bitstream in the 6 MHz TV channel is then cleared for transmission of various mobile programs, which can all be beamed from the same broadcast infrastructure.

"We realize there are applications for digital broadcasting that go far beyond the services transmitted by TV stations," said Dr. Jong Kim, president of LG Electronics' U.S. R&D lab. "Companies that own 700 MHz spectrum are beginning to ask how they might put the power of ATSC mobile digital broadcasting to use, and we're responding by creating a new method of utilizing digital transmission to transmit even more programs. With our Scalable Full-Channel Mobile Mode system, we can offer multiple programs for mobile devices and a 'barker program' that can be seen by in-home viewers."

The LG-Harris Scalable Full-Channel Mobile Mode is designed to be compatible with the ATSC A/153 Mobile DTV Standard adopted by the ATSC last October. It will offer non-traditional broadcasters an effective way to reach millions of mobile, portable and handheld devices.

"LG is committed to providing reception chips to equip receiving devices for Scalable Full-Channel Mobile Mode within four months of standard adoption," Dr. Kim said. "Co-developed by LG, Zenith and Harris, this technology shows how Mobile DTV can be applied to help non-traditional broadcasters reach the viewing public. We're using commercially available Harris transmission equipment and LG Mobile Digital TV receivers — such as portable TVs, netbook computers and prototype mobile phones — to show how spectrum owners might offer multiple programs of diversified content."

### Significant Progress Toward Commercialization

While the demonstration is a prototype, "the finished product will require nothing more than a software upgrade" for Harris Mobile DTV equipment owners, according to Jay Adrick, vice president of broadcast technology for Harris Corporation.

"We're already working with a customer, and there are others operating in the 700 MHz spectrum who plan to launch mobile services that are compatible with the ATSC transmission system," Adrick said. "We believe that Scalable Full-Channel Mobile Mode transmission will come to market rather quickly, once it is standardized. These are changing times for broadcasters, and they need every tool that they can get to be competitive and to move toward the types of services that people want in the future."

"This is an extension of the ATSC A/153 Mobile DTV standard, so there's a lot of commonality with what

broadcasters are already planning to do," Adrick added. "To achieve the Scalable Full-Channel Mobile Mode, there are, however, some significant changes in coding rate and in the block formats that are used to generate the various segments of the mobile signal."

The technology developed by Harris, LG and Zenith is a leading contender in the ATSC Scalable Full-Channel Mobile Mode standardization process. An ATSC "Candidate Standard" could be adopted in the next several months.



**Defence Industry**

**AT VAS-1 VoIP PABX Telecommunication Server**



AT Communication is proud to announce the launch of the AT VAS-1 VoIP PABX and Telecommunications Server.

The AT VAS-1 is a military/industrial grade field hub for Voice and Data communications. Using a web based setup tool the system can be easily configured to provide a multifaceted communications from simple analog telephony through to complex IP routing and video conferencing. Once the system is configured – reconnection is automatic.

The core software is run on a highly stable Linux operating system and intelligently provides automatic reorganisation in the event of link failure.

The AT VAS-1 system can be operated from external batteries or from a DC power source.

For further technical information on the AT VAS-1, please visit [http://encryption-product.at-communication.com/en/at/military\\_voip\\_pabx\\_telecommunication\\_server\\_atvas1.html](http://encryption-product.at-communication.com/en/at/military_voip_pabx_telecommunication_server_atvas1.html).



**Army**

**Pentagon Buys MRAPs With Improved Suspension**



The improved suspension is aimed at providing better off-road capability in the rough.

The Pentagon has ordered more than 1,300 new Mine

Resistant Ambush Protected vehicles, or MRAPs, with newly built independent suspension systems designed to improve the blast-protected vehicles' off-road performance in Afghanistan.

The improved suspension is aimed at providing better off-road capability in the rough Afghan terrain. The reconfigured MRAPs are being sent based on feedback from theater commanders and results from ongoing testing, according to Barbara Hamby, MRAP Joint Program Office spokeswoman.

The improved suspension is also being built into the designs for several variants of battle-tested MRAPs. The lighter weight, more mobile MRAPs, which also have improved suspension systems, are slated to arrive in Afghanistan alongside Category I MRAPs that have been configured with a new suspension system.

The contracts, approved in a January memo from Pentagon procurement chief Ashton Carter, ordered 1,050 MaxxPro Dash vehicles from Navistar International, 250 RG 31 MRAPs from General Dynamics Land Systems, Canada, and 58 RG 33 MRAPs from BAE Systems. An order for 1,420 more MRAP All Terrain Vehicles was placed with Oshkosh Defense.

The contracts reflect the latest series of upgrades and improvements being made to the MRAP fleet in response to the lessons learned in combat. "We have and continue to actively pursue vehicle upgrades to meet emerging threats, enhance vehicle mobility and improve automotive performance," said Hamby.



**Defence Industry**

**SPV400 contender for UK MoD Light Protected Patrol Vehicle Programme unveiled**



The Supacat Protected Vehicle (SPV400) today received its International Media Launch at the Long Valley Test Ground, Aldershot, UK.

The SPV400 is the contender from British high mobility vehicle specialist, Supacat, for the UK Ministry of Defence's Light Protected Patrol Vehicle (LPPV) programme. Under an Urgent Operational Requirement the UK MoD is expected to order an initial batch of 200 vehicles to enter service in early 2011.

The all-new, all-British SPV400 will give British troops the protection and mobility they need against the threat from Improvised Explosive Devices (IEDs) on operations in Afghanistan. It combines an integrated blast and ballistic protection system, including all composite protected crew pod and V-shaped hull, with

exceptional cross country mobility and the agility to manoeuvre in tight urban environments.

“The SPV400 is purpose designed for LPPV and offers a 21 century solution for 21st century operations. Its clean sheet design is ‘future-proofed’ and can be upgraded to exceed the present LPPV requirements for protection and mobility”, said Nick Ames, Managing Director of Supacat Ltd.

The SPV400 is designed by Devon based Supacat, the world leader in high mobility, all terrain vehicles. Its armour protection partner is Coventry based NP Aerospace, which has designed the composite crew pod and protection system with access to the UK’s classified armour technology. Supacat and NP Aerospace have formalised their Alliance Agreement under which volume production will be conducted through the Alliance at NP Aerospace’s Coventry facility.

Supacat and NP Aerospace have proven track records in supplying and supporting vehicles in service with British Forces in Afghanistan, with Supacat responsible for Jackal and Coyote and NP Aerospace for Mastiff and Ridgback.

With the Design Authority for the SPV400 being UK based, all Intellectual Property Rights for the SPV400 automotive and protection systems reside with Supacat and NP Aerospace. This means the UK retains full control over future design upgrades and the SPV400 is free from US ITAR restrictions.

The selection of the SPV400 for LPPV would strengthen the UK’s innovation and engineering skills base, support manufacturing jobs and ensure potential export revenues are retained in the UK. The SPV400 bid will sustain and protect between 1000 and 1200 jobs throughout the UK.

“The UK MoD’s selection of a vehicle for the LPPV programme is being closely followed by several countries, underlining the considerable export potential for a vehicle in this class”, said Nick Ames.

### **The SPV400 Series**

The SPV400’s modular design optimises survivability and mobility within the LPPV specification for a 7.5 ton vehicle carrying a crew of six (2 +4).

The SPV400 has an armoured steel V-shaped hull that deflects the blast away from the crew pod which is blast and ballistic protected using the latest composite and ceramic armour systems. The crew pod is constructed as a separate module, sealed off from potential secondary projectiles, such as kit and electronic devices, which are housed in a rear compartment. All seats are mine blast protected.

Additional protection is provided by the front and rear axles, which are mounted on detachable ‘sacrificial’ sub-frames to absorb and deflect a blast away from the crew pod if a wheel strikes an explosive device. To enable this approach, the engine and transmission are separated to ensure the crew pod is not impacted should the front sub-frame detach. This modular approach also enables rapid in-theatre repair should a vehicle be involved in an incident. The affected module(s) can be quickly replaced enhancing the availability and

maintainability of deployed platforms.

The SPV400’s speed and all terrain mobility is comparable to Jackal and it is capable of 80mph on desert plain. Air suspension provides troops with a smooth ride, reducing crew fatigue, and the manoeuvrability has been optimised to allow troops to operate in the tightest of terrain.

### **SPV400 Series Programme Status**

The first SPV 400 prototype was subjected in December 2009 to two days of blast trials, which included a ‘significant’ under vehicle mine blast simulation as well as a “huge” Vehicle Borne Improvised Explosive Device (VBIED) simulation. The second and third SPV400 prototypes were completed at Supacat’s Dunkswell, Devon, facility in January 2010 and following initial company trials are participating in the UK MoD’s full trials programme. A further two prototypes are being completed with one due to undergo further blast tests.



## **Contracts**

### **Oshkosh Defense Awarded \$11 Million for In Theater MRAP Support**

OSHKOSH, Wis. — April 15, 2010 — Oshkosh Defense, a division of Oshkosh Corporation, announced today that it has received a purchase order for more than \$11 million from Force Protection Industries, Inc. (FPII) to extend an existing contract and retain approximately 100 Oshkosh field service representatives (FSR) in Kuwait for an additional four months.

The FSRs will continue support of FPII and the military with installation of the Oshkosh TAK-4® independent suspension systems on FPII Mine Resistant Ambush Protected (MRAP) vehicles, known as Cougars, which started in July 2009. The extension will allow Oshkosh FSRs to continue work in Kuwait through June of this year.

Oshkosh Defense is working with multiple manufacturers of legacy MRAPs and has received orders to retrofit more than 2,500 vehicles with the Oshkosh TAK-4 independent suspension systems. Vehicles outfitted with the TAK-4 system have greater mobility with 16 inches of independent wheel travel to provide advanced off-road capabilities necessary for Afghanistan’s mountainous terrain and unimproved roads. The system also greatly reduces shock and vibration, resulting in longer component life and less wear-and-tear on soldiers and Marines so they can be better prepared for their missions.

“We’ve had great success in retrofitting legacy MRAPs with our TAK-4 independent suspension system, enabling the military’s current fleet to deliver exceptional off-road performance and crew comfort,” said Andy Hove, Oshkosh Corporation executive vice president and president, Defense. “These improvements allow our troops to operate in Afghanistan’s extreme environments, so it’s important to get these upgrades in the field as fast as possible. Our FSRs allow us to move



quickly by working in theater with our troops, bringing Oshkosh technology and support directly to our warfighters.”

The Oshkosh TAK-4 independent suspension system has undergone more than 500,000 miles of government testing and is used on the Oshkosh® MRAP All-Terrain Vehicle (M-ATV). The system also is featured on more than 10,000 Medium Tactical Vehicle Replacements (MTVR) used by the U.S. Marine Corps and Navy Seabees, as well as on the Army's next-generation Palletized Load System (PLS) and the Marine Corps' Logistics Vehicle System Replacement (LVSr).

Oshkosh FSRs are currently working in the United Kingdom, Egypt and Germany, in addition to FSRs deployed in Afghanistan, Kuwait and Iraq to provide in-field support and enhance military mobility.



## Defence Industry

### Lockheed Martin Delivers First JLTV Technology Development Vehicles for Testing Ahead of Schedule



SEALY, TX -- Lockheed Martin today delivered the first two of seven operational Joint Light Tactical Vehicles (JLTV), and one companion trailer, to the U.S. Army and Marine Corps for Technology Development (TD) phase testing.

The vehicles, two JLTV Category B Infantry Carriers, feature a curb weight of 15,500 pounds and were signed over to the Department of Defense, ahead of schedule, in an acceptance ceremony today.

Within days, Lockheed Martin plans to deliver two JLTV Category A General Purpose vehicles, each weighing in at less than 13,000 pounds (curb weight), one more Category B Infantry Carrier, one Category B Command and Control On-The-Move vehicle, one Category C Utility Carrier, and three more companion trailers. These vehicles are undergoing final acceptance preparation and will be delivered next week, also ahead of schedule.

The U.S. military services will conduct a 12-month test and evaluation effort at Aberdeen Proving Grounds, MD, and Yuma Proving Grounds in Yuma, AZ, as part of the 27-month JLTV TD phase.

“Today's ceremony commemorates our commitment to provide the Warfighter with the lowest-risk, most technically innovative, survivable and affordable vehicle possible,” said Steve Ramsey, vice president of Ground Vehicles at Lockheed Martin. “We are delighted to deliver mature, tested and fully capable vehicles to the

Government ahead of schedule.”

Lt. Col. Wolfgang Petermann, the U.S. Army's product manager for JLTV, was on-site during the vehicle delivery, reiterating the importance of the TD phase. “The TD phase will demonstrate the integration of mature technologies as a complete system, providing the Services with an assessment of the technical and performance risks relevant to entering the Engineering Manufacturing Development (EMD) Phase, and it will establish an achievable set of requirements for the JLTV Program,” he said.

Also present for the ceremony was a representative from the Australian Department of Defence. In January 2009 Australia entered into a Land Force Capability Modernization (LFCM) Project Arrangement (PA) for the TD phase of the JLTV program, enabling tactical vehicle interoperability and integration between U.S. future forces and Australian land forces.

Since October 2007, Lockheed Martin-Team JLTV has invested in and built five test vehicles: the original JLTV Category B variant, which is designed as an infantry carrier, was unveiled in October 2007; the Utility Vehicle Light Category C variant, which is designed with a focus on payload, was introduced in February 2008; the General Purpose Mobility Category A variant, which is designed for logistical support, was unveiled in October 2008; our second generation Infantry Carrier Category B variant; and the ‘Command and Control on the Move’ Category B variant, which made its public debut in February 2010.

“Our Lockheed Martin test vehicles have undergone extensive testing and have accumulated more than 70,000 combined test miles, more than half of which have been conducted off-road to simulate mission conditions. This prior experience with Lockheed Martin-owned vehicles helped ensure the vehicles we begin delivering under contract to the Government today are ready for rigorous Government testing,” added Ramsey.

The Lockheed Martin-led JLTV Team includes:

- BAE Systems, providing advanced armor solutions and production facilities for high volume assembly;
- Alcoa Defense, supplying materials experience, design services and aluminum components that give the vehicle its structural strength at reduced weight; and
- JWF – Defense Systems, offering state-of-the-art machining and cost-effective fabrication.
- Lockheed Martin serves as the prime contractor and design agent, providing systems engineering, platform integration, design expertise, advanced systems, and program and supply chain management.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2009 sales of \$45.2 billion.





## Army

## M-ATVs to replace Humvees in Afghanistan, U.S. Army Vice COS says



WASHINGTON -- The mine-resistant ambush-protected all-terrain vehicle, or M-ATV, is on its way to Afghanistan to replace many of the up-armored Humvees.

"It will not be too long before we will be able to get everybody who can be out of the up-armored Humvee into the MRAP ATV," said Vice Chief of Staff of the Army Gen. General Peter W. Chiarelli.

Chiarelli spoke April 14 before the Senate Armed Services Committee readiness and management support subcommittee. The general, along with vice chiefs from the Navy, Air Force and Marine Corps, testified before the subcommittee regarding the current readiness of U.S. forces.

The general said the M-ATV offers Soldiers more protection than the up-armored Humvee. Third Army is now in the process of moving equipment such as M-ATVs out of Iraq as part of the drawdown, resetting that equipment, and sending what is needed to Afghanistan.

"We have had great success getting equipment into Afghanistan thanks to the great work of Third Army," he said.

While the Army isn't finished with the Humvee, it did recently announce that it has reached its "acquisition objective" for the vehicles -- meaning that it had finally received as many as it had planned to buy. The last purchase of Humvees comes to about 2,662 of the vehicles, Chiarelli said.

Last week, the Department of Defense sent Congress a reprogramming request for Fiscal Year 2010. Included in that request was a \$573-million reduction in the \$1.3-billion Humvee procurement funding Congress initially approved for the Army. Chiarelli said with the remaining money, the Army will buy more Humvees, but he also said the Army will begin to recapitalize -- make like-new -- the Humvees it already has.

Chiarelli said the Army plans to recapitalize 5,046 unarmored Humvees, at a cost of about \$55,000 per vehicle, and will recapitalize 4,270 up-armored Humvees in FY 2011 at a cost of about \$105-\$130,000 per vehicle.

The general also told senators the Army expects to reach its dwell goals for Soldiers in most military occupational specialties by 2012, but said the Army is aware that for Soldiers, it's critical that success in achieving dwell goals applies to individual Soldiers --

not to units.

"The only thing that counts is individual dwell," he said. "Keeping track of an inanimate object, like a flag, means nothing. It's the individual that's critical. We do not allow anybody to redeploy that doesn't have 12 months of dwell time."

One senator asked the vice chief about the increasing number of non-deployable Soldiers. The general said the reasons for non-deployable Soldiers can be attributed to the loss of "Stop Loss" in January, and also to medical concerns.

"One of the reasons we've seen it go up is because the Army has taken units off Stop Loss since the first of the year," Chiarelli said. "That alone, given the fact we can only give them a 90-day drop on their contract, we have to hold onto them until they reach that point -- which drives up the non-deployable rate."

Also, the general said, there are medical reasons the non-deployable numbers are rising.

"After three rotations, the knee operation they needed after the first rotation won't wait until after the fourth rotation," he said. "We owe it to them to make sure they have the opportunity to be taken care of."

The general said the largest increase in non-deployable Soldiers has been from those held back due to medical reasons.

"It's because many of those muscular skeletal kinds of issues that arise," he said.

He also said he's seen an increase in individuals that are left behind when their unit deploys. Those individuals would have recently transitioned to a unit that is deploying, and would themselves not have had a full 12 months of dwell time. They eventually deploy to their unit when they reach a full 12 months dwell, the general said.

For injured Soldiers, Chiarelli said, the Army is putting Soldiers with a single disqualifying injury of 30 percent or greater into the Army Wounded Warrior program.

"Of that population, 56 percent have either post-traumatic stress or traumatic brain injury," Chiarelli told senators. "We are instituting new protocols in theater that require Soldiers that are either in a vehicle that is within 50 meters of a blast or in a building with an explosion to go through an evaluation for a concussion as soon after the event as possible and 24 hours later."

He said Soldiers that pass such an evaluation return to duty. Those that don't are treated by a doctor until their brain has had an opportunity to heal.

Addressing post-traumatic stress, the general said the Army is concerned with Soldiers both at home and downrange. The Army is training medics to better identify PTS when it occurs downrange, and is using telemedicine to evaluate every Soldier that comes back to the United States, he said. So far, Chiarelli said, two units have gone through the evaluations, one battalion in Hawaii and one brigade in Alaska.

"The results using this telemedicine are very, very encouraging," he said.

The vice chief also addressed the cost of reset for the

Army -- a concern for Chief of Staff of the Army Gen. George W. Casey Jr. In the next three years, the Army expects reset to cost between \$30-36 billion, Chiarelli said. That includes close to \$11 billion for both FY 2010 and 2011.

The general also said that currently, active-duty components that are not deployed are equipped at a level of about 80 percent, whereas National Guard units are equipped at about 75 percent.

"But critical dual-use equipment is at 83 percent and is expected to make it to 87 percent in the next six months," he said.

## Contracts

### Boeing Receives Joint Tactical Radio System Service Support Contract

HUNTINGTON BEACH -- The Boeing Company announced today that it has received a two-year, \$21.4 million contract from the U.S. Navy for the Joint Tactical Radio System (JTRS) Enterprise Network Manager Software in Service Support (JENM SwISS) program.

JENM SwISS is an indefinite delivery, indefinite quantity contract with a total program value of up to \$54.8 million if all options are exercised.

Under the terms of the contract, Boeing Phantom Works will draw on its tactical network management and program management expertise to deliver technical support, maintenance and upgrades for the JENM software. The program will integrate existing JTRS waveform network management systems into a single user-friendly, plug-and-play environment for network planning and monitoring across the JTRS networks.

The Department of the Navy, Space and Naval Warfare Systems Center, Pacific awarded the JENM SwISS contract on behalf of the Joint Program Executive Office for the Joint Tactical Radio System (JPEO JTRS), Network Enterprise Domain (NED) Program Office

"We will rely on our experience in developing secure, networked mobile communications systems and our understanding of the complexities involved in managing them across battle space domains," said Alex Lopez, vice president for Advanced Network and Space Systems (AN&SS), a division within Boeing Phantom Works. "By using service-oriented architecture concepts, we will help the JTRS Program Executive Office implement a unified, secure network management tool for JTRS."

Boeing has invested many years and millions of dollars into Internal Research and Development (IR&D) in the area of Network Management for tactical warfighters in the battlefield. Networks are critical in a wireless environment where the enemy constantly tries to intercept and disable them. Boeing's Network Management concepts have been prototyped and field tested, serving as the baseline for the JENM architecture.

"As JTRS radios continue to be developed, the JENM SwISS program will ensure effective JTRS enterprise network management," said U.S. Navy Cmdr. Mark

Kempf, JENM product manager, JTRS NED.

In addition to serving as prime contractor for JENM SwISS, Boeing remains the prime contractor for the JTRS Ground Mobile Radios program and led the development of the Wideband Networking Waveform under contract to the JTRS NED program.

A unit of The Boeing Company, Boeing Defense, Space & Security is one of the world's largest defense, space and security businesses specializing in innovative and capabilities-driven customer solutions, and the world's largest and most versatile manufacturer of military aircraft. Headquartered in St. Louis, Boeing Defense, Space & Security is a \$34 billion business with 68,000 employees worldwide.

## Defence Industry

### Finnish army places new order for MATIS HH thermal imagers by Sagem



After an international competition organized by NAMS (Nato Maintenance and Supply Agency), Sagem won the order for a new series of MATIS HH (Handheld) thermal imagers for the Finnish Defense Forces.

The contract, having a total value of several millions of euros, includes a significant amount of thermal imagers. The contract also includes complete maintenance services for these imagers, to be provided in Finland.

These new MATIS HH imagers will join the previous MATIS imagers already deployed by the Finnish army.

Featuring an ergonomic design for tactical efficiency, Matis HH adds new functions to its infrared vision, namely stabilized observation and image recording. It also incorporates the latest technologies developed by Sagem for the JIM LR long-range multifunction binoculars, which includes video, laser range-finding, North seeker and GPS functions in addition to its infrared vision.

The performances of the MATIS HH thermal imager enables night time detection of an armored vehicle at a range of over 8 kilometers, and a soldier at over 5 kilometers. MATIS HH gives armies outstanding day/night operational capabilities, in terms of detection and identification of enemy activities, encompassing vehicles, landing craft, aircraft and foot soldiers. It is integrated in pointing systems for artillery pieces.

Nato armed forces have already ordered several thousand MATIS thermal imagers, and deploy them in zone protection, air defense, intelligence, forward observation and combat support missions.

**Contracts**

**Oshkosh Defense Awarded \$6 Million for FHTV Parts**

OSHKOSH, Wis. -- Oshkosh Defense, a division of Oshkosh Corporation, has received an award of more than \$6 million from the Defense Logistics Agency (DLA) to supply 600 axles for the Heavy Expanded Mobility Tactical Truck (HEMTT) A4, part of the U.S. Army's Family of Heavy Tactical Vehicles (FHTV). Production is expected to begin in October 2010 and be completed by January 2011.

A 13-ton payload and off-road capabilities make the Oshkosh® HEMTT the backbone of the U.S. Army's logistics fleet. Improvements to the HEMTT A4 include: a more powerful drivetrain; improved suspension; a fully air-conditioned and armor-ready cab; and other structural changes to make in-field installation of add-on armor quicker and easier. The HEMTT A4 is built with maximum common parts across its variants.

Oshkosh has produced more than 70,000 military-class vehicles at its facilities, including more than 30,000 FHTVs. In addition, the company has begun work on the Army's Family of Medium Tactical Vehicles (FMTV) and is currently working on an initial FMTV delivery order valued at \$280.9 million for the production and delivery of 2,568 trucks and trailers. Oshkosh has the available capacity, highly skilled workforce and proven manufacturing capability to deliver these and any other vehicle orders for all Army and Defense programs, including the MRAP All Terrain Vehicle (M-ATV).



**Defence Industry**

**Metal Storm Awarded Major US Marines Non-Lethal Weapon Contract**

Brisbane, Australia -- Further to the Company's announcement earlier today, Metal Storm Limited advises that it was in the process of confirming additional details and completing its usual approval protocol to announce the material that had been received overnight, when it was informed that details of the contract award were available on a US website which the Company does not control. In that circumstance the Company immediately released the facts available.

The Company now provides further detail on the US\$1,477,860 contract awarded today to Metal Storm Inc (MSI) by the United States Marine Corps for the Mission Payload Module - Non Lethal Weapon System program.

The Mission Payload Module - Non Lethal Weapon System (MPM-NLWS) is a new weapon system that is to provide the Marine Corps with improved counter-personnel, non-lethal capabilities.

The weapon is to launch a new non-lethal munition that will incapacitate personnel through light, sound and pressure stimuli. It will provide a longer range, greater area coverage, extended duration, and better scalability of effects than current non-lethal weapon systems. It is to be mounted onto the Marine Corps Transparent Armor

Gun Shield (MCTAGS), on the HMMWV "Humvee" vehicle.

MSI will be taking advantage of the configurability of its FireStorm(tm) architecture and Metal Storm's unique, patented stacked projectile technology to deliver a lightweight, multi-barrel weapon and munition system to meet the unique needs of the program.

The MPM-NLWS will be used for controlling crowds, denying/defending areas, controlling access and engaging threats. It will incapacitate its targets and provide increased standoff distance for the protection of friendly forces.

The initial award is a Cost Plus Fixed Fee Contract for Technology Development Phase, which will evaluate demonstrated payload effectiveness, munitions fusing/functioning and weapon platform compatibility.

Metal Storm Limited CEO Dr Lee Finniear noted how important this contract was to the Company as it forms part of a funded US DOD weapon procurement program.

"We congratulate MSI on winning this contract against full and open competition", Dr Finniear said. "Metal Storm technology is ideally suited to the delivery of a high volume of munitions from lightweight vehicle mounted launchers, and we believe MSI can deliver a highly differentiated solution to meet MPM-NLWS requirements"

"We understand that if successful the Technology Development Phase will be followed by future phases including the production of MPM-NLWS systems for deployment to warfighters" he said. The contract will be delivered over 12 months. Further information will be released to the market once approval by the customer is received.



**Contracts**

**Oshkosh Defense Receives \$44 Million Award for MTRV Upgrade Kits**

OSHKOSH, Wis. -- Oshkosh Defense, a division of Oshkosh Corporation, announced today it has received an award valued at more than \$44 million, but not to exceed more than \$89 million, from the U.S. Marine Corps Systems Command (MARCORSYSCOM) for more than 5,750 upgrade kits for the Medium Tactical Vehicle Replacement (MTRV).

Work is expected to be completed in September 2010.

Oshkosh will deliver more than 950 weapons-mount kits that allow the installation of motorized Marine Corps Transparent Armor Gun Shields (MCTAGS), which replace the gunner protection kits on up-armored vehicles. Oshkosh Defense also will supply 2,000 door-upgrade kits to support MTRV non-reducible-height armor kits used on trucks that were armored in 2005 to 2007. The kits will make the doors common with those on MTRVs using the reducible-height armor kits, which Oshkosh began producing in 2008.

Additionally, Oshkosh will deliver MTRV Troop Carrier upgrades. This upgrade includes 800 dual-ladder



kits, which can be installed in place of single ladders for improved ingress and egress, as well as more than more than 1,000 seatbelt kits to support the Troop Carrier's occupants and more than 1,000 lift-point kits for improved transportability. The MTRV Troop Carriers and non-reducible-height armor kits were developed and installed on vehicles beginning in 2005 following an urgent need from the field.

The Oshkosh® MTRV is an all-terrain, multipurpose tactical vehicle used by the Marines and Navy Seabees. The MTRV is available in several variants for the transportation of troops, materials or equipment. The vehicle features an off-road 7.1-ton payload capacity and an on-road 15-ton payload capacity. The vehicle uses the Oshkosh-patented TAK-4® independent suspension system, which has undergone more than 500,000 miles of government testing and helps the vehicle achieve a 70 percent off-road profile capability. Oshkosh has delivered more than 10,000 MTRVs.



## Defence Industry

### EADS & Thales to supply Deployable Geographic Modules for French Army



A new method of comprehending the environment in a theatre of operations through autonomous mobile modules.

EADS Defence & Security (DS) and Thales have received a contract worth 26.1 million euros from the French defence procurement agency DGA (Direction Generale de l'Armement) to produce and support two sets of MGPs (Modules Géographiques Projétables - deployable geographic modules) for the 28th Geographic Group of the French Army. The operation, for which DS has been designated prime contractor, aims to develop a system that is deployable and reactive in terms of production, maintenance and distribution of military geography information. The MGP modules will be used to supply geographic data updated in the field to operational land forces via a single cartographic access point.

Complementing the DNG3D (Données Numériques Géographiques et 3 Dimensions - 3D Digital Geographical Data) programme, which has developed systems in France for mass production of geographical information, the MGP modules will make it possible to enrich the data directly in external theatres. They can be used to provide an operational land force with

appropriate geographical information in a reactive manner and in a timeframe that is compatible with operational requirements. In addition, they supply specialised support for decision-making by the General Staff.

EADS Defence & Security and Thales have elected to team up as co-contractors, in partnership with Magellium for its image-processing and geomatics know-how, Geo212 for its specialist expertise, and Euro Shelter for its mobile technical shelter know-how. On completion of the definition and production phase, DS and Thales will provide operational support for an initial period of six years. A prototype will be delivered by the end of the year and a complete MGP module is scheduled to be operational for use by the NATO Response Force (NRF) in 2012.

With the MGP modules, a veritable data production system will be employed in-theatre. Activities which until now have been restricted to France (SIG management, cartography, quality control, printing) will appear in-theatre, but with specific aspects related to the context of use: confined space, work under stressful conditions, large volumes of data to be stored and manipulated, reconfiguration capability. Used within the land forces, these modules will play a pivotal role in the provision of geographical data to satisfy as best as possible the following functions: geographical information gathering, source data transformation, product management and distribution to the forces.

Several modules can be deployed to different locations in the theatre of operations. Each module is autonomous and integrates all the equipment necessary to perform its mission (PCs, printers, storage units, etc.). The data that has been gathered can then be synchronised between the different modules and data consistency verified to produce maps that are fully up to date. This innovation will considerably change the operational forces' comprehension of their environment by enabling them to build up and manage a geographical knowledge base.

"This contract award illustrates the State's confidence in the capability of EADS Defence & Security (DS) to support the Army in its theatres of operations. DS' success in this project will confirm the group's determination to mobilise its know-how and experience in this particular domain of Military Geography and, more generally, in Intelligence, in accordance with the Defence White Paper," declared Herve Guillou, CEO of Defence and Communications Systems (DCS).

"This project is the missing link between the production of geographical reference data in France and the end-users in-theatre, particularly the SIOCs (Systemes d'Information Operationnel de Commandement - operational command information systems), two areas in which Thales has been very active for a number of years. This entire chain, from data acquisition to data utilisation in the forces, contributes to global information control, which is one of the major issues for the Armed Forces Staff," added Pascale Sourisse, Thales Senior Vice-President in charge of C4I systems for defence and security.

The completed system will interconnect with the network of the SIC Terre (Systemes d'Information et de Communications de l'armee de Terre francaise) Federation of French Army information and communications systems.

common solution will result in substantial efficiency gains in respect of protection, training, support and further development.

## Future Technologies

### Nordic Power and Marshall Land Systems Collaborate for Unique Fuel Cell Technology

Cambridge -- A new force in environmentally friendly, fuel cell technology has been established in the UK following the signing of a co-operation agreement between Marshall Land Systems of Cambridge, UK and Nordic Power Systems of Hoyanger, Norway.

The new team will be focussing on delivering high quality, efficient, ruggedised and silent diesel fuel cell generators for the land and naval defence environments in the UK. Development of the generators will take place in both Norway and the UK.

Tor Geir Engebretsen, Chief Executive of Nordic Power Systems, commented: "We are delighted to be teaming with Marshall Land Systems as they have both the technical skills and market knowledge to help us deliver our unique power solution to the UK. This agreement is a great vote of confidence in our company and our technology."

"Marshall Land Systems is always interested in new technologies and innovations, Nordic Power's fuel cell generators are a very good fit with our present solutions and we see many opportunities to exploit this technology in the defence market. Not only are the generators efficient but they significantly reduce logistic costs and are an excellent match for the needs of the armed forces," said Peter Callaghan, Chief Executive of Marshall Land Systems.

He added: "This announcement is confirmation of our commitments to provide the best solutions we can for the armed forces and to meet our Offset obligations in Norway and comes rapidly on the heels of our announcement of the establishment of a new office at Torp Airport in Norway."

The fuel cell generators are based on a patented Nordic Power technology, named "Cool Flame" and adapted for the demands of defence users. The generators will be capable of producing a range of power outputs to drive a wide variety of electronic equipment and provide auxiliary power units.

#### About Marshall Land Systems

Marshall Land Systems (MLS) is part of Marshall Group, a large (BJ750M) family owned independent group of companies involved in the automotive, aerospace and land systems areas. Headquartered in Cambridge UK, Marshall Group can trace its history back to 1909.

## Contracts

### GD Awarded \$24 M for 155mm M795 Metal Parts Ammunition Production

St. Petersburg, Fla. -- General Dynamics Ordnance and Tactical Systems has been awarded a \$23.9 million option on a previously awarded multi-year contract for production of M795 projectile metal parts.

The contract was awarded by the U.S. Army Joint Munitions & Lethality Life Cycle Management Command (JM&L LCMC) of Picatinny Arsenal, N.J. The multi-year contract has a total potential value of \$166.7 million if all options are exercised. The work on this contract will be performed at the company's Scranton Operations in Pennsylvania.

The 155mm M795 is a High Explosive/High Fragmentation artillery projectile that is fired from M777 and M198 towed howitzers and the M109A6 Paladin self-propelled howitzer. To date, General Dynamics has produced over one million 155mm M795 projectiles in support of the U.S. Marine Corps' Indirect Fire Mission.

"We are proud to continue to support the U.S. Marine Corps with superior artillery firepower for its combat mission," said Dr. Dean Bartles, vice president and general manager of large caliber ammunition for General Dynamics. "General Dynamics has a long legacy in supplying artillery ammunition and we look forward to continuing to support this Marines Corps capability."

## Contracts

### NOK 1.2 Billion CROWS Contract



CROWSKONGSBERG has booked an order valued at NOK 1.2 billion from the US Army. The order is part of the increase of the Common Remotely Operated Weapon Stations (CROWS) framework agreement for up to 10.349 systems signed in December 2009.

The initial CROWS II framework agreement was disclosed to the Oslo Stock Exchange on 22 August 2007.

CROWS is a joint acquisition programme for weapon stations for the US Army's vehicle programmes. A

## Army

in a large scale test later this year.

## Army Networks MRAPs, M-ATVs



The U.S. Army has outfitted a handful of MRAP vehicles with Network Integration Kits.

The U.S. Army has outfitted a handful of Mine Resistant Ambush Protected, more commonly referred to as MRAP, vehicles with Network Integration Kits designed to give the bomb-defeating vehicles the ability to share real-time information such as sensor data from robots and UAVs while on-the-move in combat, service officials said.

While NIK technology can be outfitted on most Army vehicles, MRAPs were chosen because of their high demand in Afghanistan, said Maj. Gen. Keith Walker, director of the Future Force Integration Directorate, Fort Bliss, Texas.

To date, five M-ATVs, and six MRAPs have been outfitted with NIKs, Army officials said; The MRAPs with NIKs will deploy to Afghanistan with the first unit equipped with Increment 1 technologies which includes the battlefield network, Unattended Ground Sensors, Class 1 UAS, and the Small Unmanned Ground Vehicle (SUGV).

The NIKs, now being built onto MRAPs and M-ATVs at Fort Bliss, Texas, are engineered with technology that can receive and distribute data, voice, video and images across the force using multiple high bandwidth waveforms; they consist of software-programmable Joint Tactical Radio Systems (JTRS) such as the Ground Mobile Radios (GMR), a "dual-enclave" Integrated Computer System (ICS) built to handle classified and unclassified information, and a Blue Force Tracking display screen. The software and operating systems are connected through use of a middle ware called System of Systems Common Operating Environment (SOSCOE).

By providing "networked" combat-relevant information such as sensor feeds from a UAV across the force in real time, the NIKs may help MRAPs overcome some of their mobility restrictions and provide increased awareness for Soldiers traveling in the vehicles.

"MRAPs are massive there are some places they can't go. If you want to do recon in some areas you have to dismount Soldiers and that involves a risk. However, if I can send a Class I UAS or SUGV [Small Unmanned Ground Vehicle], I can keep Soldiers inside the vehicle," said Jerry Tyree, director of White Sands Missile Range Operations for Program Executive Office Integration.

The networked MRAPs and M-ATVs will participate

## Contracts

### AS&E Receives US Government Award for ZBV Military Trailers



Billerica, Mass. -- American Science and Engineering, Inc. (AS&E(R)), a leading worldwide supplier of innovative X-ray detection solutions, announced today the receipt of a \$48.8 million U.S. government award for a significant quantity of ZBV(TM) Military Trailers (ZBV Mil Trailers).

AS&E has received the first ZBV Mil Trailer order for \$34 million and under the award the U.S. government has an option to procure up to \$14.8 million in additional units. The ZBV Mil Trailer is a ruggedized version of the Company's patented, top-selling Z Backscatter(TM) Van (ZBV) system and is ideal for screening vehicles for car and truck bombs. The easily relocatable ZBV Mil Trailer will be deployed by the U.S. government for counterterrorism missions in harsh environments.

"This sizable order follows the successful deployment of a significant number of ZBV Mil Trailers in support of the U.S. government's counterterrorism operations," said Anthony Fabiano, President and CEO. "With very high customer satisfaction ratings for quality and reliability, the ZBV Mil Trailer has a record of outstanding performance in harsh field environments -- a clear testament of the system's capability to meet the U.S. government's rigorous force protection and explosives detection requirements."

## Exhibitions

### Naza Bumar Unveils Rosomak 8x8 Amv At Dsa 2010



KUALA LUMPUR, 19th April 2010 – Naza Bumar, a subsidiary of Naza Defence unveiled its ROSOMAK 8x8 AMV (Armoured Modular Vehicle) on the opening day of the DSA (Defence Services Asia) 2010 exhibition at Putra World Trade Centre.

The ROSOMAK (which means 'Wolverine' in Polish)



was developed by Naza Bumar's partner Bumar Sp. zo.o of Poland and currently in production in Poland for its Land Forces. These vehicles are currently being used by Polish Contingents in Afghanistan, Chad and Iraq.

### MAIN CHARACTERISTICS OF ROSOMAK BASE VEHICLE

The main feature of the ROSOMAK 8x8 AMV is its modular design, which allows the incorporation of different turrets, weapons, sensors, and communications systems on the same platform. Where applicable and where specifications match the mission requirements, commercial off the shelf systems are fitted on the vehicles. The vehicle weighs between 18 and 26 tonnes depending on variants with different armour, turrets/weapons systems, ammunition and crew configurations.

One of the many outstanding features of the ROSOMAK is that it has a very good mine protection and can withstand explosions up to 10 kilograms (22 lb) TNT. It also has protection levels of up to 30 mm APFSDS (armour-piercing fin-stabilized discarding sabot), frontal arc.

Another important feature is its agile mobility, combining speed, agility, and crew comfort in all kinds of terrain and adverse climatic conditions, enabled by a sophisticated but rugged hydraulic suspension adjusting each wheel individually.

#### HULL

The vehicle is fitted with modular ballistic protection to the customer specification up to a protection level against 30mm armour piercing APFSDS rounds (at the least). The maximum internal volume of the 8x8 AMV vehicle is 13m, the combat weight up to 26 tonnes and the payload is 10 tonnes.

#### MANOEUVRABILITY

The maximum road speed of AMV is over 100km/h with an operating range 800km. The vehicle can negotiate 60% forward slopes, 30% side slopes, 0.7m steps and trenches up to 2.0m in width. The vehicle can ford water up to 1.5m in depth. The vehicle is fitted with two shrouded propellers, one on each side at the rear of the hull for amphibious capability. The swimming speed is 8km/h to 10km/h.

#### ENGINE

The dual power DI 12 Scania diesel engine produces 360kW and 1,974Nm torque. The drive system uses a ZF Ecomat 7HP902 automatic transmission with 7 +1 gears.

The driveline includes all-wheel drive, 14.00 R 20 tyres with run flat devices, disc brakes and central tyre inflation system (CTIS). The central tyre inflation capability gives reduced ground pressure. All wheels have independent suspension. In the suspension system there are hydro-pneumatic elements with optional vehicle ride height control.

#### SPECIFICATIONS OF BASE VEHICLE

- Weight : 16 to 26 tonnes
- Length : 7.8m
- Width : 2.8 m
- Height (over hull) : 2.4m
- Engine : SCANIA DI 12 56A03PE, max 360 kW

(480 hp)

- Power/weight : 15.6 kW/tonne (21.2 PS/tonne) (max weight)
- Torque output max : 1970 Nm
- Transmission model : ZF 7HP 902S Ecomat, 7 + 1 gears torque converter retarder CAN bus
- Suspension : Independent Suspension all wheels
- Operational range : 800 km (500 mi)
- Speed : over 100 km/h (60 mph) on land, up to 10 km/h (6.2 mph) in water

#### VARIANTS

##### Rosomak Infantry Fighting Vehicle (IFV)

Infantry fighting vehicle variant with Oto Melara Hitfist-30P gun turret armed with 30mm ATK Mk 44 chain gun and 7.62mm NATO round UKM-2000C machine gun. The turret has advanced fire control system with thermal sight and OBRA laser warning system connected to 76 mm Wegmann smoke grenade launchers.

##### Rosomak-M1

Infantry fighting vehicle variant modified for war, equipped with additional steel-composite armour, upgraded communications, wire cutters in front of driver and commander hatch, video cameras showing back and sides of vehicle on two LCD screens in troop compartment, Pilar system that detects the direction of fire.

##### Rosomak Armoured Personnel Carrier

Armoured personnel carrier variant modified for specific mission, equipped with similar task equipment (including additional armour) as IFV variant. The main difference is that this variant is equipped with OSS-D open turret with 40mm Mk-19 grenade launcher or .50 BMG or 12.7 x 107 mm WKM-B heavy machine gun.

##### Rosomak Medical Evacuation Vehicle

An armoured ambulance vehicle with crew of 3, capable to transport 3 injured in stretched position and additional four in sitting position.

##### Rosomak-S

Armoured personnel carrier variant for two anti-tank teams armed with Spike anti-tank guided missile.

##### Rosomak Command Vehicle

A command vehicle for battalion commander. Demo vehicle prepared by WB Electronics was unveiled in late 2008.

##### Rosomak Air Defence Command Vehicle

Air defence command vehicle equipped with Ełowcza (Loura) system. Similar to ZWD-10R Ełowcza-3 (Loura-3).

#### USERS

Operators include Croatia, Finland, Poland, Slovenia, South Africa and the United Arab Emirates.

#### Defence Industry

**Poised to become a complete supplier of protection technologies, Rheinmetall takes up a majority stake in Verseidag Ballistic Protection GmbH**

The Dusseldorf-based Rheinmetall Group has taken up a majority share in Verseidag Ballistic Protection GmbH of Krefeld, Germany, giving it future control of an important supplier of civilian and military protection technology.

This move is set to make Rheinmetall a complete supplier of protection systems for tactical vehicle manufacturers and carmakers.

Rheinmetall has now signed a contract with Jagenberg AG to take over a 51% share of Verseidag Ballistic Protection GmbH; Jagenberg will continue to hold a 49% stake in the company. The acquisition still requires approval from the competition authorities. The companies of Verseidag's "Personal Protection" division, based in Finland and the USA, will remain entirely in Jagenberg hands.

Already one of Europe's top suppliers of military equipment, the takeover reinforces Rheinmetall's expertise in the field of ballistic protection, which, in addition to vehicle armour, will now extend to systems for helicopters and ship superstructures. The buyout strengthens Rheinmetall's sales structure in this sector, giving the company greater access to important markets for protection technologies all over Europe.

Products from Verseidag Ballistic Protection GmbH make it possible to protect the crews of civilian and military vehicles, aircraft and ships from ballistic threats and explosive devices. The Krefeld-based company specializes in developing and producing advanced metal and ceramic materials as well as special textile fabrics specifically designed to deliver maximum survivability.

Among Verseidag Ballistic Protection GmbH's customers are well-known tactical vehicle and automobile makers from Germany and abroad. The company, which has 54 employees, generated sales in 2009 of around €21 million.

Rheinmetall is one of the most trusted names in the global defence and security sector. Last year, Rheinmetall Defence's 10,000-strong staff produced sales of approximately €1.9 billion.

Offering a wide array of protection technologies, Rheinmetall makes an important contribution to force protection. The spectrum ranges from passive protection systems (vehicle armour) and active protection solutions (decoys, multispectral decoy launchers) for ground, air and naval applications, through to armoured vehicles, systems for protecting high value infrastructure as well as sophisticated air defence solutions.

## Contracts

### Raytheon Awarded Contract for Integrated Standoff Inspection System

TEWKSBURY, Mass. -- The Defense Threat Reduction Agency (DTRA) has awarded Raytheon Company a \$20.5 million contract to research and develop an automated system for the standoff detection and identification of shielded special nuclear material.

The Integrated Standoff Inspection System, or ISIS, is

an active interrogation nuclear radiation detection system that will provide the government with an accurate and reliable inspection system that is fully integrated and automated.

"The need to effectively detect and track the movement of nuclear material increases every day," said Michael Del Checcolo, vice president of Engineering for Raytheon Integrated Defense Systems. "ISIS will enable our government to more effectively identify and classify nuclear materials to help prevent their unauthorized entry into this country."

Raytheon is using its OpenAIR™ business model, leveraging the best of large and small businesses, as well as academia and national laboratories, to develop the best-value solution for DTRA. The Raytheon-led team consists of Los Alamos National Laboratory, Los Alamos, N.M.; Oak Ridge National Laboratory, Oak Ridge, Tenn.; Lawrence Livermore National Laboratory, Livermore, Calif.; Idaho National Laboratory, Idaho Falls, Idaho; Advanced Energy Systems, Inc., Medford, N.Y.; Bubble Technology Industries, Chalk River, Ontario; and experts from the Massachusetts Institute of Technology.

Raytheon Company, with 2009 sales of \$25 billion, is a technology and innovation leader specializing in defense, homeland security and other government markets throughout the world. With a history of innovation spanning 88 years, Raytheon provides state-of-the-art electronics, mission systems integration and other capabilities in the areas of sensing; effects; and command, control, communications and intelligence systems, as well as a broad range of mission support services. With headquarters in Waltham, Mass., Raytheon employs 75,000 people worldwide.

## Exhibitions

### Rosoboronexport At DSA 2010: Coming To Discuss All Aspects Of Military Technical Cooperation

A delegation of the Federal state unitary enterprise (FSUE) Rosoboronexport comes to the capital of Malaysia, Kuala Lumpur, to take part in the 12th Defence Services Asia Exhibition and Conference (DSA 2010) held from 19th to 22nd April 2010.

The delegation intends to hold negotiations for all lines of military technical cooperation between Russia and Asia-Pacific Region countries including supplies of advanced air and air defence systems as well as ground equipment for armed forces and special-purpose weapons.

Nowadays the Asia-Pacific Region is the world's largest arms market where Russia established solid military technical ties with many states. Rosoboronexport strives to maintain long-term, fruitful and mutually beneficial cooperation with its regional partners.

By coming to the exhibition in Malaysia Rosoboronexport makes another important step towards

consolidation of the progress already made by Russia in the Asia-Pacific regional arms markets and exploration of new grounds there. Talks in Kuala Lumpur are expected to provide new powerful stimuli to the development of Russia's military technical cooperation with the countries of this region.

The DSA exhibition is organised under the auspices of the Malaysian Ministry of Defence, standing out as the largest regional venue for promotion of arms and military equipment to land, naval and air forces, air defence and special-operations units, as well as defence industry conversion products. It is actively visited by political, military and business leaders from states of the Asia-Pacific Region. According to DSA 2010's organisers regional countries are now more than ever in need of the latest technologies and equipment capable of ensuring their security against emerging threats.

This year the Malaysian exhibition will host over 700 companies with 27 national expositions including Russian one. Rosoboronexport has been a regular exhibitor at the DSA events since 1994. Constant interest in the exhibition is underpinned by plans of using this highly promising venue for promotion of Russian high technologies and products. There is a solid foundation already laid: it can be illustrated by many examples of successful interstate projects in the area of Russia's military technical cooperation with the countries of the region. For instance, everybody knows about the contract signed by Rosoboronexport in 2003 for supplying to Malaysia the Su-30MKM fighters and setting up support facilities required for their operation.

At DSA 2010 Rosoboronexport will present information about Russian-made military equipment that arouse the greatest interest among regional partners of the Enterprise. Some of them feature technical solutions unparalleled in the world's practice.

In particular, Rosoboronexport takes into account the nature of modern armed conflicts as well as requirements and potential of purchasing countries when offering its partners a range of advanced air defence systems required for reliable air defence of any type of targets such as large mineral fields production facilities, administrative and political bodies, troop formations and military bases. These systems include the Buk-M2E air defence missile system (ADMS), Tor-M2E SHORAD (short-range ADMS), Tunguska-M1 air defence gun/missile system, Igla-S MANPADS (man-portable ADMS), Pantsir-S1 air defence gun/missile system.

The Buk-M2E up-to-date highly mobile multifunctional multi-channel medium-range air defence missile system is widely known for its unique combat effectiveness. It is a follow-on development of the Kvadrat, Buk, Buk-M1 and Buk-M1-2 ADMSs. The Buk-M2E ADMS has substantially increased its combat capacity as compared to the preceding modification. For instance, thanks to integration of a target illumination and missile guidance radar into the system its fire performance has increased by four times and low-altitude air target detection range by 1.5 times. Main combat vehicles of the system can be supplied on the tracked as

well as on the wheeled chassis.

The Buk-M2E ADMS is designed to defeat strategic and tactical aircraft, helicopters (including hovering ones), cruise missiles and other aerodynamic targets within their practical operational envelopes, tactical ballistic missiles, air-launched missiles and guided aerial bombs, as well as to engage above-water and ground-based radio-contrast targets.

The Buk-M2E air defence system provides: simultaneous engagement of up to 24 air targets flying from any direction at a range of up to 45 km; high jamming resistance in conditions of intensive electronic countermeasures; effective protection against high precision munitions; all-weather capability, high survivability, mobility and cross-country capacity, low deployment time on any terrain; adaptability for integration into any air defence grouping; operability in different climatic conditions; missile storage without maintenance for the period of 10 years. On customer requests the Buk-M2E ADMS can be integrated into national air defence systems.

Specialists visiting the exhibition in Kuala Lumpur will be able to familiarise themselves with information on combat air systems such as the Mi-171Sh military transport helicopter, Mi-35M combat transport helicopter, Ka-52 reconnaissance-and-attack helicopter, Ka-31 radar picket helicopter, and others.

At the Rosoboronexport's stand due attention will also be paid to materials on naval systems such as Project 636 Kilo class large diesel-electric submarine, several types of small littoral submarines, Gepard-3.9 frigate, Project 20382 Tigr small patrol ship (corvette), Project 14310 Mirage patrol boat, Project 12322 Zubr air cushion landing craft, Pozitiv-MEK shipborne multifunctional electronic system as well as other specialised systems.

Rosoboronexport will also present at the exhibition various types of arms and military equipment intended for land forces, including the T-90S main battle tank (MBT), BMP-3M infantry combat vehicle (ICV), BTR-80 and BTR-80A armoured personnel carriers (APC), Smerch multiple launch rocket system (MLRS), Kornet-E and Metis-M1 antitank missile systems (ATMS), and many others. The BTR-80 APC is an amphibious combat vehicle designed to transport troops and provide fire support to them in combat. The BTR-80 APCs are in service with more than 35 countries. The BMP-3M highly manoeuvrable infantry combat vehicle will undoubtedly attract attention of specialists. The BMP-3M ICV is fitted with a new digital ballistic computer and a thermal vision targeting system with an automatic target tracker. As a result, combat effectiveness of its weapons system including the 100-mm smoothbore gun/missile launcher, 30-mm automatic cannon and 7.62-mm machine gun mounted in a single stabilised weapons module has substantially increased.

Participants in and guests of the DSA 2010 will be able to get clearer idea of the latest Russian T-90S missile/gun-armed tank. It is a small size-and-weight low-silhouette combat vehicle armed with gun/missile



armament and fitted with active and dynamic armour protection systems. It is one of the world's best tanks for the time being.

The Kornet-E and Metis-M1 antitank missile systems designed to destroy armoured materiel and fortifications have earned high reputation in all countries where these guided weapon systems are in service. Experts agree that Russian designers were able to make use of the immense experience accumulated at the antitank missile systems development and operation stages, and materialise it into the outstanding performance characteristics of the two systems mentioned above.

Experts will undoubtedly be interested in modernised Kalashnikov assault rifles of the hundredth series (namely the 5.56-mm AK-101 and AK-102, 7.62-mm AK-103 and AK-104), hand-held antitank grenade launchers, sniper rifles, radars, night vision devices as well as many other samples of Russian arms and military equipment incorporating advanced technologies. What's more, while promoting a wide range of Russian-made military-purpose products, Rosoboronexport proposes to organise training of personnel as well as repairing and upgrading of the earlier supplied systems.



### Exhibitions

#### Elbit Systems Will Present A Broad Array Of Next Generation Capabilities At IDEB 2010



Among the systems highlighted at the show: The Dominator® concept, Mini-UAS, solutions for Armored Fighting Vehicles, tactical radio systems, advanced thermal imaging and more.

Elbit Systems will present a vast array of advanced next-generation systems and solutions at the upcoming International Defence Exhibition Bratislava (IDEB), set to take place in Slovakia from 5-7 May, 2010.

The Company's exhibition booth (B1/227) will be the venue for a wide variety of advanced systems demonstrating leadership in all of its business areas, from tactical radio and communication systems to advanced avionics and electro-optic systems as well as a variety of the Company's UAS displayed in real-size at the outdoor presentation area facing the Company stand. IDEB will be an excellent opportunity for visitors to view displays and presentations of Elbit Systems' core technologies and cutting-edge solutions.

#### Land and C4I Systems:

Elbit Systems' C4I software solutions for the infantry

(C4I SW), together with the decades of communications experience of Tadiran Communications, offer extensive, battle-proven expertise for the most intense combat scenarios. It supports planning, situational awareness, target handling, devices connectivity as well as video and map displays. It also provides command and control functionalities for all levels of commands of light infantry forces along with interface to armored units, artillery and close air support. Interfacing and operating with all existing communication equipment, Elbit Systems equips infantry soldiers with highly-advanced, miniaturized high-tech tools mounted on backs or helmets for enhanced situational awareness, quicker response and ultimately increased efficiency in mission performance.

#### Dominator® Integrated Infantry Combat System (IICS)

Dominator® empowers infantry units with full situational awareness, networking them into integrated information systems. Land warriors can send and receive information in real time, view up-to-the-minute situation pictures (hostile and own forces) on personal displays as well as live video from either external or on body sensors and transmit images and positions back to command units.

The following are part of the Dominator® IICS gear:

**PDU** – Personal Digital Unit- a ruggedized, tactical powerful computer especially designed for the individual infantry warrior. The compact, energy-efficient, computer empowers the soldier with data processing and storage capabilities, includes an integrated GPS and the Integrated Infantry Combat System C2 application, and the TIGER® system.

**TIGER®** (Tactical Intranet Geographic Dissemination in Real-time) enhances real-time decision making at all force levels by unifying all channels, integrating them into one dynamic tactical intranet and creating interest-based, geographic data dissemination.

**Eyepiece**- a high quality display for the C4I picture and live video and built-in LOS (Line Of Sight) sensors, the eyepiece may be mounted on a helmet, on the warrior's vest or as part of the weapon-mounted Fire Control System.

**Hand-held Display**- a compact portable display, sunlight readable, 5.6" or 8" touch panel screen and operation function keys. This display is designed to display the C2 application and streaming video.



**MaXess®** - Elbit Systems' Advanced broadband Military Wireless LAN supporting live video

transmission and reception, based on advanced ad-hoc networking protocols, enabling the land warrior to efficiently close the sensor to shooter loop.

Tadiran PRC-710 MB, an advanced, secured multi-band (30-512 MHz), frequency-hopping hand-held radio, covering VHF and UHF tactical bands, facilitates voice and data communications between air, ground and naval forces. Compact and lightweight, the PRC-710 enables communications from the palm of the hand and integrates into C4I systems.

Tadiran PNR-500 (Personal Net Radio, 410-450 MHz) is a fully-functioning UHF communicator enabling 3-way conferencing on a single channel. Rugged and software-based, the PNR-500 supports air, sea and ground communications, with its Always Available feature facilitating the delivery of mission-critical messages. The radio can also be used as the wireless unit in Tadiran's vehicular intercom system.

VIC-500 Digital Intercom for tanks and other military vehicles is a digital wireless intercom system that links the on-board crew members among themselves as well as with the external world. With this system, each crew member can dismount the vehicle and move on foot unencumbered to a distances of up to 800 meters from the vehicle, while remaining in touch with all of the other mounted or dismounted crew members as well as with other forces and radio stations. The VIC-500's unique full-duplex conference communicating capability allows two crew members to speak simultaneously, while an unlimited number of personnel listen in, improving coordination and reducing operational errors.

Armored Fighting Vehicle Upgrade Systems:

Elbit Systems is a pioneer in Combat Vehicle integrated systems. Its Land and C4I – Tadiran Division, one of the world's largest developers, producers and integrators of such systems, has supplied more than 7,000 systems and sub-systems for new Main Battle Tanks and Light Armored Vehicles as well as for upgrade programs worldwide. Elbit Systems' development, manufacturing, integration and support capabilities enable it to provide customized solutions for virtually every type of armored vehicle in service worldwide. Its advanced integrated combat systems for armored vehicles are designed to maximize first-round-hit probability, acquire targets at day and night, and increase survivability and protection - even in the harshest conditions.

"LEGATUS" - Light Tactical Reconnaissance AI-Terrain Armored Vehicle integrated on AM General's HMMWV ("Humvee") platform:



"LEGATUS" is equipped with a full protection and

detection suit, primarily including the following latest generation systems: second generation 12.7 mm Overhead Remote Control Weapon Station–Medium (ORCWS-M), Mast-mounted Stabilized Observation System, Thermal Driving Camera, GPS Navigation and North Finding System, Digital Crew Intercom, VHF/UHF Radio and, Laser Warning System combined with protective Smoke Grenade Launchers, full spectrum Camouflage Net and other features. It also includes a Life Support System made by Kinetics (a wholly owned subsidiary of Elbit Systems) consisting of a NBC protection system combined with Air Conditioning, Automatic Fire Suppression System. The Humvee's Armor Protection suit is designed and produced by Plasan.

Weapon Integrated Battle Management System (WIN BMS) An essential add-on to virtually any combat vehicle's mounted sensor or weapon system, forming well-coordinated battle teams that perform their tasks with optimum speed and precision. WINBMS supports the full spectrum of battalion-and-below tactical units requirements meeting their operational needs, including direct fire engagement and troops maneuvering, indirect fire support, intelligence and logistics. In addition to its combat networking capabilities, this integrating "super" system provides commanders and crewmen with simplified operational man-machine interface, enhanced situational awareness and data communication capabilities.

Unmanned Turret Systems and Overhead Remote Control Weapon Stations:

Elbit Systems offers Unmanned Turrets and Remote Control Weapon Stations ranging from 7.62 mm. up to 30 mm. The systems are fully stabilized and designed for optimal integration on-board various platforms with no deck penetration. The lightweight systems have extremely very low silhouette, thus rendering it very effective for armored personnel carriers, AFVs, tanks, tactical vehicles and unmanned ground vehicles.

Kinetics Auxiliary Power Unit (APU)

The Auxiliary Power Unit (APU) by Elbit Systems-Kinetics is an add-on integrated Hi-Power System that supports the extensive power demand of Main Battle Tanks (MBT) & Armored Fighting Vehicles (AFV). The system functions as an additional source of energy, supplying power to all onboard systems while enabling silent mode operation of the vehicle's low noise and thermal signatures. The APU can be installed externally or internally on any military vehicular platform and is tailored according to customer demands.

Kinetics Life Support System (LSS)

The Life Support System (LSS) by Elbit Systems-Kinetics is an integrated solution providing NBC/CBRN Protection & Detection & Heating, Ventilation & Air-Conditioning (HVAC) for Armored Fighting Vehicles (AFV). The LSS can also include Fire Suppression System, and its integrated Chemical & Radiation Detectors enable alarm in case of external or internal detection and automatic operation of the NBC/CBRN protection.

### Electro-Optics:

Elbit Systems, through its wholly-owned subsidiary Elbit Systems Electro-Optics - Elop Ltd. (Elop), is a globally recognized multidisciplinary electro-optics systems house – incorporating the full range of related technologies and facilities in the areas of Observation and Surveillance Payloads, Space and Airborne IMINT, Lasers, Thermal Imaging, Electro-Optic Countermeasures, Head-Up Displays, Integrated Sights for Ground Forces and Homeland Security.

CORAL Hand-held 3-5 μm FPA Thermal Imaging Camera

A high resolution hand held Dual FOV personal Thermal Imaging camera, CORAL is lightweight, easy to operate and provides excellent picture quality. The system's applications include infantry, scout and perimeter defense missions. It features continuous X1 – X4 electronic zoom.

CORAL-LS - Hand-held 3-5 μm FPA Thermal Imaging Camera. Based on the operationally proven CORAL, the CORAL-LS is a thermal imaging camera with integral 1.06μm imaging capability, incorporating a See Spot Camera. Lightweight, compact and equipped with a continuous zoom, the camera is suitable for close air support and forward observers, night sight laser designator units and ground laser designators.

LILY is a new family of lightweight Thermal Imaging Weapon Sights (TWS) designed for use by individual infantry soldiers, which provides significant advantages for operations in total darkness and in even the most difficult environmental conditions. LILY significantly contribute to the ability to acquire targets and increase first-hit capability and enables soldiers to more easily discriminate between false and valid targets in rough environmental conditions.

### ELISRA – An Elbit Systems Company

Counter\_IED\_Systems\_for\_LIC:

With more than three decades of recognized leading RF solutions, Elisra is a world leader in Counter IED (Improvised Explosive Devices). Elisra's unique, innovative and sophisticated Electronic Jammers Against Bombs (EJAB) family is designed closely with operational units of the IDF, to provide a wide range of combat-tested LIC (Low Intensity Conflicts) uses for today's conflict zones. The EJAB family is offered in several configurations including man-packed, vehicle mounted and portable rolling case versions for use with both military and police forces, and EJAB VIP, a vehicle mounted light, mobile communications jamming system, designed to protect VIP and civilian vehicles. The easily programmable EJAB family of systems is being used on missions with a number of NATO countries.

Elisra's\_UAS\_Solutions:

Supporting all types of manned and unmanned airborne platforms, applications and uses, Elisra's systemic solutions are ideal for Intelligence, EW and homeland security applications – including rapid and precise information gathering, targeting, and self-protection. Elisra's families of advanced ELINT, EW solutions – including weapons systems and

electro-optics – support the smooth integration of information dissemination with C4I capabilities – assuring the most effective utilization of fire power.

### Future Technologies

## Lockheed Martin Receives \$1.5 Million Contract for Lightweight Kinetic Energy Net Armor

DALLAS, TX -- The U.S. Army Applied Aviation Technology Directorate has awarded Lockheed Martin a \$1.5 million contract that continues development of the Kinetic Energy Net (KEN) armor design. KEN is a modular composite armor system developed by Lockheed Martin that is lighter than current aircraft armor, but offers comparable protection.

“Kinetic Energy Net is a new direction in armor that doesn't trade weight for strength,” said Glenn Miller, vice president of Technical Operations and Applied Research at Lockheed Martin Missiles and Fire Control. “Aircrews operate in some of the most exposed places on the battlefield, but due to weight constraints users don't have as much armor protection as they'd like. We developed KEN armor so it can also be integrated directly into the aircraft structure instead of attaching plates to the fuselage, which adds weight.”

Tests have confirmed that the KEN system offers more protection than steel plates, and it has a significant weight advantage. Additionally, Lockheed Martin realized a 13 percent reduction in weight against advanced ceramic and composite armor designs. The company's goal in the next phase of the program is to cut total weight by over 40 percent, all without losing protective capability.

“Our passion for invention is making a world of difference for the people on the other side of that armor,” said Gil Metzger, director of Force Projection & Power Management Systems at Lockheed Martin Missiles and Fire Control. “The Lockheed Martin development team comprises some of the best innovators in the advanced materials and armor industries. We are moving forward and improving an already impressive design to realize the lightest, most effective armor technology known today.”

Lockheed Martin will further improve KEN armor performance by incorporating new forms of advanced ballistic materials and experimental strike faces. Future efforts may see armor applications transition from air vehicles to ground vehicles and even ground structures requiring lightweight ballistic protection.

KEN is an impressive addition to Lockheed Martin's armor family, which also includes TekShield™. The TekShield System of Survivability Solutions includes armor for ground vehicle applications, transparent armor, armor for buildings and reactive armor.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 136,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration

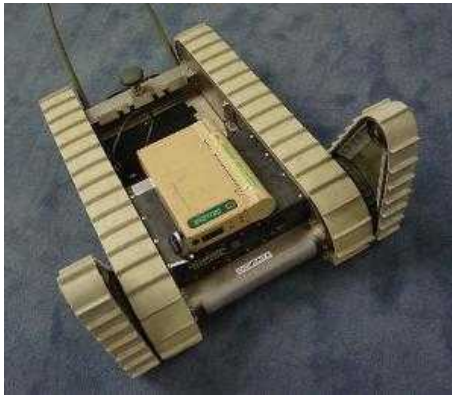


and sustainment of advanced technology systems, products and services. The Corporation reported 2009 sales of \$45.2 billion.

more than 1,750 add-on rocket-propelled grenade (RPG) protection kits and more than 1,000 kits to support remote weapon systems for the MRAP All-Terrain Vehicle (M-ATV).

### Future Technologies

## UltraCell Introduces "3-Up" Battery Charging System for Military Equipment



UltraCell has announced the availability of its 3-Up battery charging system for military devices and electronic equipment.

The 3-Up, which has already shipped to the U.S. military, operates as an integrated soldier portable power generator and battery charger, making it a military solution for remote, off-grid environments where powering electronic devices is crucial. The system combines UltraCell's existing reformed methanol fuel cell (RMFC) technology and extended runtime fuel tanks with a flexible nylon bundling system and an innovative power manager, called the Director.

The 3-Up is designed to deliver a modular, scalable portable power solution by combining various fuel cell platforms to operate as a customisable system based on the user's needs.

At the heart of the modular capability is the Director, which enables up to four UltraCell XX25 or XX55 UltraCell fuel cells to be linked together as a single device. The Director provides power management and system level control with a single user interface.

By utilising a "building block" approach, the 3-Up creates a portable and flexible power supply delivering a maximum peak power of 250 watts and continuous output from 50 to 225 watts. Additionally, the 3-Up delivers smart battery charging capabilities to safely charge military batteries such as the BB-2590 and Li-80/145.

Work for both orders is expected to be completed in September 2010.

The award for RPG protection kits is valued at more than \$68 million and installation will be completed in-theater. The award for remote weapon system kits is valued at more than \$11 million. Oshkosh will install these kits on the production lines and the Space and Naval Warfare Systems Command (SPAWAR) will install the kits on previously delivered vehicles. Remote weapon systems allow fighting crews to operate from within the vehicle, even when on the move.

"The M-ATV is designed to accept these kits and other add-on packages and still deliver exceptional survivability and performance capabilities for operations in Afghanistan," said Ken Juergens, Oshkosh Defense vice president and general manager, Joint Programs. "We are committed to working with our Armed Forces to ensure they have the most advanced, well-protected and mobile vehicles needed to carry out missions in challenging environments."

The Oshkosh® M-ATV uses the company's patented TAK-4® independent suspension system. The proven technology delivers superior off-road mobility and allows the M-ATV to accept heavier armor, such as add-on explosively formed penetrator (EFP) armor packages, while maintaining a full payload of 4,000 pounds. Additionally, the vehicle's bolt-on armor permits in-theater upgrades to meet mission demands and rapid repair of armor panels for quick turnaround times.

To date, Oshkosh has received awards valued at \$4.9 billion for 8,079 M-ATVs, as well as spare parts kits, upgrade kits and aftermarket support. Oshkosh also has leaned forward using its own time and resources to create an M-ATV family of vehicles with the ambulance and utility variants. The variants, built around the same highly mobile, well-protected platform, have the potential to deliver critical casualty care and resupply services in harsh environments like those found in Afghanistan.

### Defence Industry

## LM Delivers 10,000th GMLRS Rocket To US Army

Camden, Arkansas -- Lockheed Martin marked the delivery of the 10,000th Guided Multiple Launch Rocket System (GMLRS) rocket during a ceremony held at its Camden, AR, facility today.

GMLRS is an all-weather, precision strike, artillery rocket system that achieves greater range and precision accuracy requiring fewer rockets to defeat targets and limiting collateral damage.

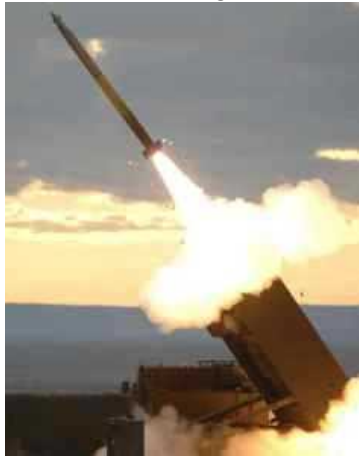
"The delivery of the 10,000th GMLRS marks a significant milestone in the program," said Col. David J. Rice, U.S. Army program manager for Precision Fires,

### Contracts

## Oshkosh Defense Receives \$79 Million for M-ATV Protection and Remote Weapon System Kits

OSHKOSH, Wis. -- Oshkosh Defense, a division of Oshkosh Corporation, has received two awards valued at more than \$79 million from the TACOM Life Cycle Management Command (LCMC) to supply

Rocket and Missile Systems. "This is a superior system that provides responsive, precision fires enabled by unsurpassed system reliability and maintainability. The team, led by Lockheed Martin, consisting of both government and industry partners, has worked diligently to ensure mission success through this technology."



The system is produced at the company's facilities in Camden, AR, and Dallas, TX.

"The success of this system speaks for the quality work that our team is doing every day," said Col. Tony Daskevich, Army capability manager for Field Artillery Rocket and Missiles. "We are a constant in this fight, always mission ready and on target. Precision is the name of the game when it comes to our missions, and that is why our soldiers and leaders so appreciate this system."

GMLRS provides the Joint Warfighter with persistent, responsive, long-range precision strike capability against traditional and hybrid threats. GMLRS' reliability rate exceeds 98 percent and, to date, more than 1,500 rockets have been successfully fired in combat.

"This production milestone was made possible through the commitment of our hardworking employees here in Camden who are proud to provide this combat proven capability to the U.S. Army, the U.S. Marine Corps, and our allied forces," said Scott Arnold, vice president for Precision Fires at Lockheed Martin Missiles and Fire Control.

Guided Unitary is the newest variant of MLRS rockets which integrates a unitary warhead with a multi-mode fuze to expand the MLRS target set to include point targets within urban and complex environments, significantly minimizing collateral damage. In January 2005, the U.S. Army issued an Urgent Needs Statement for acceleration of Guided Unitary deliveries in support of ongoing operations. Lockheed Martin delivered the first 72 GMLRS Unitary rockets in June 2005 satisfying the requirements of the Urgent Needs Statement. The first 900-plus rockets were delivered to the U.S. in 2005 and 2006.

Camden Operations produces the combat-proven High Mobility Artillery Rocket System (HIMARS) launcher and a family of munitions, which includes the Guided MLRS Rocket.

## Defence Industry

### Force Protection Announces Sale of Two Ocelot Vehicles to United Kingdom Ministry of Defence



Ladson, SC -- Force Protection, Inc., a leading designer, developer and manufacturer of survivability solutions and provider of total life cycle support for those products, today announced that Force Protection Europe, a wholly owned subsidiary of Force Protection Industries, Inc., received a contract from the United Kingdom Ministry of Defence (MoD) for the purchase of two Ocelot vehicles for further testing in respect of the Light Protected Patrol Vehicle (LPPV) program.

Ocelot has been designed by Force Protection Europe and Ricardo, plc, a UK based automotive engineering company.

David Hind, Managing Director of Force Protection Europe, said: "We are very pleased with how our own testing and development schedule has been progressing. Ocelot has been performing well in tests since the middle of last year and has demonstrated that it offers unprecedented levels of survivability and maneuverability for a vehicle of this size and weight."

Graeme Rumbol, Global Vehicle Product Group Director for Ricardo plc, added: "The MoD has already completed a number of their own tests on two of our vehicles so we're delighted that they are now investing in these vehicles so that they can carry out further trials. Ocelot is building upon our existing long-standing relationship with the UK MoD which has most recently seen Ricardo carrying out extensive fleet upgrades to create the new RWMIK Plus standard of WMIK vehicle."

Ocelot has the flexibility to perform a range of roles including patrol, fire support and protected logistics. Innovative features include role-specific pods which can be fitted quickly to the core automotive armored V-shaped hull in the field. The armored hull houses the main fuel tank, drive line, batteries and generator as well as the power pack, which includes the engine, gearbox, auxiliary fuel tank and associated ECUs (electronic control units). The vehicle has been designed from the outset to be easily repaired and maintainable in the austere environment of a forward operating base. Commercial off the shelf (COTS) components have been used to ensure maximum availability of spares worldwide.

Ocelot is equally suited to operations in desert, jungle, mountainous or urban environments and meets the needs of military and internal security forces around the world.

The excellence of Force Protection's survivability

technologies are amply demonstrated by the performance of the company's Mastiff and Ridgback Mine Resistant Ambush Protected (MRAP) vehicles. The Cougar vehicles upon which they are based are recognized around the world as offering the highest levels of survivability. Ricardo is a leading independent technology provider and strategic consultant to the world's transportation and clean energy sectors. Ricardo's highly successful defense vehicle engineering operations in both the UK and North America are based upon the company's thorough understanding of vehicle operational requirements and access to the very latest in automotive technology.



## Defence Industry

### GTV Delivers JLTV Technology Development Vehicles Ahead of Schedule



LIVONIA, Mich. -- The General Tactical Vehicles (GTV) team of General Dynamics Land Systems and AM General delivered today seven Joint Light Tactical Vehicles (JLTVs), four trailers and supporting equipment ahead of schedule to the U.S. Army and U.S. Marine Corps for Technology Development (TD) phase testing.

The TD phase includes a 12-month test and evaluation process at Aberdeen Proving Grounds, in Aberdeen, Md., and at the Yuma Proving Grounds in Yuma, Ariz. This follows GTV's previous ahead-of-schedule deliveries of armor samples, ballistic hulls and spare parts.

"Our GTV JLTVs provide increased protection, payload and performance for the Soldiers and Marines," said Don Howe, GTV senior program director. "I am very proud of the effort demonstrated by our GTV team, including our supplier network, to deliver a balanced solution that meets or exceeds the technical and programmatic challenges of the very demanding JLTV program.

"The GTV team's significant experience with deployed global forces gives us unique and valuable insight into the needs of the warfighter," added Howe. "Delivering ahead of schedule, within budget and under-weight underlines our proven track record of dependability and performance."

Drawing from the combined experience of General Dynamics and AM General in building and supporting tactical and combat vehicles, GTV's vehicle design provides an armored crew capsule with an optimized V-shaped hull for protection against mines and IEDs, a

state-of-the art C4 architecture that accommodates future force technology capabilities, high-performance and off-road mobility and deployability by land, sea and air.

"Our robust, disciplined and focused system-engineering approach placed the warfighter at the center of product design. GTV has developed an innovative family of vehicles and trailers that meet weight, transportability, survivability and mobility requirements while achieving greater than 95 percent commonality of components to reduce parts, maintenance and training needs," said David Caldwell, GTV deputy program director.

LTC Wolfgang Petermann, U.S. Army JLTV product manager, took delivery of the GTV JLTV vehicles. Petermann said, "The JLTV Technology Development (TD) phase is intended to validate the integration of mature technologies as a complete vehicle system, rebalancing payload, protection and performance while maintaining transportability and expeditionary capabilities. The JLTV TD phase is accomplishing what it was intended to do, giving the Army, Marine Corps and the Australian Army an accurate assessment of the technical and performance capabilities and risks associated with entering the Engineering and Manufacturing Development (EMD) Phase. The TD phase will establish a realistic set of requirements for the JLTV, which our warfighters need."

An official from the Australian Department of Defence also attended the ceremony. In January 2009, Australia entered into a Land Force Capability Modernization Project Arrangement for the TD phase of the JLTV program, enabling tactical vehicle interoperability and integration between U.S. and Australian forces.

GTV has invested in additional JLTV vehicles and trailers as part of its independent R&D program. "We are continuing our own extensive testing for reliability and durability to complement the government effort and prepare for the next phase of the JLTV development program," said Howe. "We're also continuing to evaluate emerging technologies – taking advantage of our JLTV's built-in capacity for technology insertion, growth opportunities and product improvements."



## Contracts

### Contract of MNOK 330 for CROWS Programme

KONGSBERG has booked an order valued at NOK 330 millions from the US Army.

The order is part of the increase of the Common Remotely Operated Weapon Stations (CROWS) framework agreement for up to 10.349 systems signed in December 2009.

The initial CROWS II framework agreement was disclosed to the Oslo Stock Exchange on 22 August 2007.

CROWS is a joint acquisition programme for weapon



stations for the US Army`s vehicle programmes. A common solution will result in substantial efficiency gains in respect of protection, training, support and further development.

