

# Army Guide monthly



## # 4 (43) April 2008

- **BAE Systems Wins Additional M777 Howitzer Order From The U.S. Armed Forces**
- **BAE Systems Receives \$7 Million Contract To Upgrade 51 Bradley Training Systems**
- **Lockheed Martin Team Awarded \$766M AMF JTRS Contract to Provide Tactical Communications and Networking Solutions**
- **CACI Awarded \$26.8 Million Task Order With U.S. Army C4ISR On-The-Move Product Management Office**
- **Macroswiss Selected Be The U.S AAEF And REF As Their Unmanned Ground Vehicles Provider**
- **BAE Systems Receives \$132 Million U.S. Army Production Contract For Medium Mine Protected Vehicles**
- **Lockheed Martin Awarded UK Ministry of Defense LEAPP Contract**
- **Ultra Electronics Tactical Communication Systems awarded a radio contract for TRC190 communication shelters for the U.S. Army s WIN-T Program**
- **BAE Systems Awarded \$19.7 Million Contract Modification To Support 57 M88A1 Medium Recovery Vehicles**
- **Stewart & Stevenson Tactical Vehicle Systems Awarded a Contract for Trucks**
- **Patria Weapon Systems Oy merged to Patria Vehicles Oy and Patria Vehicles Oy's company name changed to Patria Land & Armament Oy**
- **First Fuchs Transport Vehicle with Improved Mine and IED Protection Handed Over to the Troops**
- **Harris Corporation Wins \$97 Million Contract to Accelerate U.S. Marine Corps Transition to Multiband JTRS-Approved Radio Soluti**
- **Bental Industries to Supply Motors for NBC systems for the Mine Resistant Ambush Protected (MRAP) Project**

## Contracts

### BAE Systems Wins Additional M777 Howitzer Order From The U.S. Armed Forces



HATTIESBURG, Mississippi -- BAE Systems has received a new order from the U.S. Department of Defense for 87 additional M777A2 155mm towed howitzers, valued at \$176 million. The order adds to the 589 M777A2 howitzers already on order for the U.S. armed forces, of which more than 300 have been delivered.

The 155mm towed howitzers purchased under this contract will be delivered in 2010.

“This order has been achieved as a result of benchmark standard teamwork between the U.S. Army, the U.S. Marine Corps, the Light Weight 155mm Office, and the BAE Systems project team, due to our strong delivery performance and the reliability,” said Jim Imrie, BAE Systems’ Land Systems Weapons and Vehicles managing director. “The M777A2 is exceeding the customer’s expectations in terms of performance, and this has helped build the case for additional orders. The M777 is proving to be an exceptional piece of kit, praised by the artillery community for its reliability, ease of use and accuracy.”

The M777 effort is managed by the Light Weight 155mm Joint Program office at Picatinny Arsenal, New Jersey. BAE Systems’ facilities at Barrow-in-Furness, UK and Hattiesburg, Mississippi, manufacture, integrate and test the guns. BAE Systems also provides support, training, maintenance and spares for the guns currently in service all around the world.

The M777 howitzer is the world's first artillery system to incorporate large-scale use of titanium and aluminum alloys; weighing less than 10,000 lbs (4220 kilograms) it is the world's lightest 155mm howitzer, resulting in a field gun that is half the weight of a conventional 155mm system. The light weight enables rapid deployment of M777 into any theater of operation. The gun is now being deployed using the new M982 Excalibur guided ammunition, developed by Raytheon and BAE Systems, which delivers a maximum range of 40km with an accuracy of 10 meters.

M777 is currently in service with the U.S. Army and U.S. Marine Corps in both Afghanistan and Iraq. Canada also has 12 M777 howitzers in service, with potential requirements for an additional 22 howitzers. The Canadian Royal Horse Artillery has a number of M777s operational in Afghanistan where the gun is known by local insurgents as the ‘Desert Dragon’.

## Training And Simulators

### BAE Systems Receives \$7 Million Contract To Upgrade 51 Bradley Training Systems



ORLANDO, Florida -- BAE Systems has been awarded a US \$7 million U.S. Army contract to upgrade 34 previously fielded Bradley Advanced Training Systems (BATS) along with the 17 systems currently being manufactured.

The contract provides upgrades to the command and control function, integrates the latest Bradley tactical code, and incorporates functionality to support the new soldier’s manual. These upgraded devices will help train Bradley commanders and gunners, and to develop and maintain crew coordination skills within desert, urban and woodland terrain environments.

“These advanced training devices give our soldiers unique training for the Bradley Fighting Vehicles in urban operations,” says Mark Russell, director of Training Systems for BAE Systems. “Now soldiers can train in a safe yet very realistic environment before meeting the challenges of today’s battlefield.”

The award brings the total contract value for Bradley Training Systems from the U.S. Army Program Executive Office of Simulation, Training and Instrumentation to US \$34.4 million.

BAE Systems will perform the pre-planned product improvement work effort for the Bradley Advanced Training Systems, software and hardware upgrades at its Orlando, Florida facility.

BAE Systems in Orlando is a full service virtual, live, and constructive training systems provider for the U.S. military and homeland security personnel. In addition to the Bradley Training Systems, the group also develops training for the Future Combat Systems program.

## Defence Industry

### Lockheed Martin Team Awarded \$766M AMF JTRS Contract to Provide Tactical Communications and Networking Solutions

Chantilly, Va., -- Lockheed Martin announced today that it has been selected by the Joint Tactical Radio System (JTRS) Joint Program Executive Office to provide the tactical communications and networking solutions for the Air Force, Army, Navy and other users.

The Lockheed Martin Airborne and Maritime/Fixed Stations (AMF) JTRS team will design, develop,

integrate, test and deliver advanced, reliable, tactical networked communications solutions providing joint interoperability with secure information flow. AMF JTRS is an essential element in the Tactical Global Information Grid strategy to provide secure data, voice, and video to the right people, in the right place, at the right time. The initial System Development and Demonstration (SDD) contract value is \$766 million.



"Lockheed Martin is honored and excited to provide affordable, open, network-enabled, communications out to the tactical edge," said John Mengucci, president of Mission & Combat Support Solutions for Lockheed Martin's Information Systems & Global Services. "AMF JTRS extends net-centric warfare beyond the command center so this system is crucial to support information sharing and combat readiness, a must for today's warfighters."

AMF JTRS will network enable and provide interoperable communications for more than 160 platform types including fixed and rotary wing aircraft, submarines and surface ships, and fixed stations world-wide. The Lockheed Martin team's successful Network Centric Operations Live Flight Demonstration at the end of the Pre-SDD Phase of the Program showed a glimpse of the future with improved situational awareness, tactical voice, video and data interoperability, and communications automation.

The Lockheed Martin AMF JTRS team includes BAE Systems, General Dynamics, Northrop Grumman, and Raytheon. Work will be conducted at locations in Scottsdale, Ariz.; San Diego, Calif.; Tampa, Fla.; Fort Wayne, Ind.; Gaithersburg, Md.; St. Paul, Minn.; Wayne, N.J.; Charleston, S.C.; and Chantilly and Reston, Va.

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### Defence Industry

#### **CACI Awarded \$26.8 Million Task Order With U.S. Army C4ISR On-The-Move Product Management Office**

Arlington, Va., April 1, 2008 -- CACI International Inc (NYSE:CAI) announced today that it has been awarded a \$26.8 million task order contract by the U.S. Army's Research, Development and Engineering Command to provide engineering support for the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) On-The-Move Product Management Office.

CACI competed for this four-year award (one base year, three option years) through the Strategic Services

Sourcing (S3) contract vehicle the company holds with the U.S. Army. With the award, CACI continues growing its core business in C4ISR solutions.

The C4ISR On-The-Move Product Management Office provides a relevant environment/venue to assess emerging C4ISR technologies in a network-centric environment in order to reduce and mitigate risk for Future Combat Systems (FCS) concepts and to accelerate technology insertion into the current force.

Activities that Team CACI supports range from large-scale demonstrations and explorations conducted at Fort Dix, NJ; the Naval Air Engineering Station, Lakehurst NJ; and other installations as needed; as well as other smaller-scale technical explorations and tests. During these activities, technology developers from governmental agencies, academia, and the commercial sector are provided an opportunity to evaluate the performance of their systems in a structured, low-risk manner, in conditions not ordinarily available within their development environment. These technologies include unmanned air systems and ground vehicles, unattended ground sensors, battle command systems, and next-generation voice and data communications systems. Throughout, CACI and its teammates continue to focus on providing technical, systems engineering, analysis, and program management support that enable these events to meet U.S. Army standards of timeliness, accuracy, and efficiency.

CACI President of U.S. Operations Bill Fairl said, "CACI is pleased to continue providing the C4ISR On-The-Move Product Management Office with low-risk, high-quality technical and management support to help assess emerging technologies. We have assembled a world-class team and offer a seamless transition of personnel and services. We provide proven processes for evaluating technologies quickly and effectively, and can facilitate technology maturation and ultimate fielding to the warfighter."

According to Paul Cofoni, CACI's President and Chief Executive Officer, "CACI has designed our comprehensive services and solutions to support national security and defense needs at every level. This includes providing innovative approaches to help the U.S. Army get the best and most up-to-date technologies to our troops. CACI's support for C4ISR technologies helps our military stay one step ahead of our adversaries, by continually enhancing the government's ability to gather and act on vital information."

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### Robots

#### **Macroswiss Selected Be The U.S AAEF And REF As Their Unmanned Ground Vehicles Provider**

Macroswiss S.A, the growing leader in Defence robotics innovation, has now entered the U.S market by being selected as the capability provider of UGVs for use in combat by the U.S Army Airborne Expeditionary Force (AAEF) and the Rapid Equipping Force (REF).

The Macroswiss Micro SpyRobot will be supplied with a soldier worn control system to provide a UGV capability down to squad level, putting into the hands of fighting units the ability to carry out close target reconnaissance of a target pre assault and allowing the commander and soldiers to make informed decisions, by providing a preview of enclosed spaces (particularly in the urban environment), which will significantly increase their Situational Awareness (SA).



The Macroswiss Micro SpyRobot is a unique, highly maneuverable, sensor delivery system, that is highly capable to cross country, and extraordinarily lightweight, putting a UGV capability into light ground forces operating without significant based or vehicle support.

#### **REF'S SPYROBOT 6x6 UGV**

As well as the AAEF, the U.S Army Rapid Equipping Force (REF) has also selected Macroswiss for the development of a groundbreaking UGV called SpyRobot 6x6, which is an evolution of the SpyRobot 4WD seen in ELROB 2006.

This new UGV consists of 6 of the Macroswiss state-of-the-art patented flapper wheels, with all terrain capabilities and improved payload capacity. It can also carry up to 4 times its own weight and it's totally foot soldier portable.

The Macroswiss SpyRobot 6x6 has been thought as a key aid for detection, recognition and identification of targets from a distance of several hundreds of meters, using different traditional payloads such as thermo and optic sensors as well as new generation ones.

#### **Contracts**

### **BAE Systems Receives \$132 Million U.S. Army Production Contract For Medium Mine Protected Vehicles**

YORK, Pennsylvania -- BAE Systems has received a \$132 million production contract from the U.S. Army TACOM Life Cycle Management Command for 179 Medium Mine Protected Vehicles (MMPV).

In December 2007, BAE Systems was selected as the prime contractor for the MMPV program, worth up to \$2.2 billion to produce up to 2,500 vehicles through 2015, for Army Engineers and Explosive Ordnance

Disposal teams.

Twenty-four of 179 vehicles ordered will include a remotely controlled interrogator arm. MMPV is a multi-purpose, mine protected, 6x6 wheeled vehicle based on BAE Systems' next generation RG33 family of vehicles. The contract brings the total amount awarded to date to \$152 million.

"MMPV provides invaluable protection to soldiers in the field," said Matt Riddle, vice president of Wheeled Vehicles Programs for BAE Systems. "As the sole producer of MMPV, BAE Systems will work closely with the U.S. Army to ensure these vehicles match the requirements and protect our soldiers in the field."

Under a strategic public/private partnership agreement, BAE Systems and the Letterkenny Army Depot will perform automotive and final assembly production operations of the vehicles in facilities on and adjacent to the Letterkenny Army Depot facilities in Pennsylvania. Deliveries are scheduled to begin in July 2008 and continue through April 2009.

U.S. Army engineers will use MMPVs to conduct route and area clearance missions, command and control, mount mine clearing systems, and conduct explosive hazards reconnaissance. MMPVs will also be used by Explosive Ordnance Disposal teams.

BAE Systems has over 2,000 employees in Pennsylvania, with facilities in Fayette, Jessup, Mechanicsburg and York.

#### **Future Technologies**

### **Lockheed Martin Awarded UK Ministry of Defense LEAPP Contract**

UK military commanders on the ground are set to benefit from a new system that will increase their ability to counter attacks from air threats and reduce friendly-fire incidents.

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The Land Environment Air Picture Provision (LEAPP) programme - a B100m contract between the Ministry of Defence and Lockheed Martin UK INSYS - will provide ground forces with a detailed local picture of activity in the air, allowing them to better coordinate airspace activity, leading to greater combat effectiveness and a reduced risk of 'friendly-fire' incidents.

Minister for Defence Equipment and Support, Baroness Taylor, said:

"LEAPP (Land Environment Air Picture Provision) is a new, world-class system that will give our commanders on the ground a detailed picture of activity in the air showing the location of allies in relation to opposing forces.

"It will improve commanders' ability to plan and strike effectively and help prevent 'friendly-fire' incidents. Battles of the future will benefit significantly from this system."

The system consists of ground based sensors connected to vehicle or trailer mounted equipment which combines the incoming data to produce the air picture that is then distributed within headquarters. The equipment can be deployed in different configurations to meet the requirements of a variety of military tasks. MOD's LEAPP project team leader, Steve Wyatt, said:

"We work closely with the Armed Forces and industry to deliver equipment that will give our troops the edge when they need it. This system will provide vital information for the land air defence missile systems our troops operate."

The contract which has been awarded to Lockheed Martin UK INSYS is expected to sustain up to 100 jobs at the contractor's facilities in Ampthill, Bedfordshire and at other sites in the UK. The LEAPP system is expected to enter service in 2012.



## BAE Systems Awarded \$19.7 Million Contract Modification To Support 57 M88A1 Medium Recovery Vehicles



ANNISTON, Alabama -- BAE Systems has been awarded a US \$19.7 million contract modification from U.S. Army's Anniston Army Depot to support, in partnership with the Depot, the reset to combat ready status of 57 Army-configured M88A1 medium recovery vehicles.

## Contracts

### Ultra Electronics Tactical Communication Systems awarded a radio contract for TRC190 communication shelters for the U.S. Army's WIN-T Program

Ultra Electronics Tactical Communication Systems is awarded a contract amendment valued at US \$30,000,000 for the supply of its AN/GRC-245A HCLOS™ radios and associated equipment for TRC190 communication shelters for the U.S. Army's WIN-T Program

Montreal -- Ultra Electronics Tactical Communication Systems Division (Ultra TCS) announces the award of contract modifications valued at more than US\$30,000,000 through the Canadian Commercial Corporation, for the supply of its AN/GRC-245 HCLOS™ radio and TRC190 V1 and V3 kits for the U.S. Army's WIN-T Program under contract no. DAAB07-98-C-F505.

"We are honoured to support the US's Army drive to modernize its tactical communications systems" states Alan Barker, president of Ultra Electronics Tactical Communication Systems Division. "The AN/GRC-245A HCLOS™ radio is currently deployed with the armies of several countries and we are absolutely delighted at the positive experiences reported by the soldiers using this radio."

The AN/GRC-245A HCLOS™ radio is a state-of-the-art Software Defined Radio (SDR) using the Software Communications Architecture (SCA) open framework. The HCLOS™ radio is currently shipping with 16Mb/s capacity but is softwareupgradeable to 34Mb/s full-duplex capacity. Ultra-TCS has already delivered thousands of HCLOS™ radio to North American and International customers, many of which are operating in the most demanding battlefield conditions. Many thousands more HCLOS™ radio are on order.



The contract contains an additional option worth US \$4.1 million to support the reset of up to 12 additional vehicles.

The contract brings the total number of M88A1 resets supported by BAE Systems since 2005 to 449 vehicles. When added with previous contracts, the total value of this effort to the company is US \$191.7 million.

"Our partnership with Anniston Army Depot is a great example of how public private partnerships can best meet the equipment needs of the U.S. Army, by leveraging the capabilities, technologies and experience of both the Depot and BAE Systems" said Andy Hove, vice president of Combat Systems Programs for BAE Systems.

Under the partnership, BAE Systems will perform disassembly, component overhaul and kitting, and Anniston Army Depot will conduct final assembly and test of the vehicles.

The M88A1 is a fully tracked armored vehicle with a mission to perform battlefield rescue and recovery missions. It can fulfill this mission on all types of terrain and during all weather conditions.

Work on the contract will be performed at BAE Systems' Anniston, Alabama facility beginning immediately and will continue through December 2008.

The Anniston facilities include a 450K square foot forge facility that is the U.S. industrial base for combat systems track, producing the majority of the forged track and suspension components for the U.S. inventory of tracked vehicles. Its 196K square foot Vehicle Upgrade and Overhaul facilities currently perform upgrades, overhauls and repair work on the M113 Family and the M88A1 medium recovery vehicles in partnership with the Anniston Army Depot.

BAE Systems employs more than 1,000 people in Alabama, with facilities in Anniston, Cordova, Geneva and Huntsville. The Geneva facility manufactures over 60,000 body armor components per month, including the Outer Tactical Vest conversion kits. The Huntsville facility is a leader in air and missile defense, joint interoperability, program management, quality assurance

engineering, test and evaluation, cost analysis, and business process reengineering. The Cordova facility manufactures the 155-mm Advanced Gun System magazine and the Mk 57 Vertical Launching Systems canisters for the U.S. Navy's newest class of destroyer, the DDG 1000.



**Defence Industry**

**Stewart & Stevenson Tactical Vehicle Systems Awarded a Contract for Trucks**



Stewart & Stevenson Tactical Vehicle Systems Limited Partnership, Sealy, Texas, was awarded on April 3, 2008, a \$6,096,214 firm-fixed price contract for 38 medium tactical vehicle 5-ton cargo trucks.

Work will be performed in Sealy, Texas, and is expected to be completed by November 15, 2008. Contract funds will not expire at the end of the current fiscal year. Two bids were solicited on August 15, 2002, and two bids were received. U.S. Army TACOM-Warren, Mich., is the contracting activity.



**Defence Industry**

**Patria Weapon Systems Oy merged to Patria Vehicles Oy and Patria Vehicles Oy's company name changed to Patria Land & Armament Oy**

Patria Weapon Systems Oy has been merged to Patria Vehicles Oy as of 31 March 2008 and the company name has been changed to Patria Land & Armament Oy as of the same date. Due to this arrangement, all Patria's Land & Armament Business Unit's operations are under one legal entity.

Patria Land & Armament Oy's Business ID is the same as Patria Vehicles Oy's, i.e. 0986818-0. The merger and the change of the company name do not affect any contracts or other commitments but their validity remains the same without any further action.



**Defence Industry**

**First Fuchs Transport Vehicle with Improved Mine and IED Protection Handed Over to the Troops**

Within the framework of an Immediate Operational Requirement, 21 Fuchs (fox) TPz armoured transport vehicles are being equipped with improved protection against mines and Improvised Explosive Devices (IED).



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On March 20, the first production vehicle fitted with the new equipment was presented by Rheinmetall in Kassel during a meeting of the steering committee of the future users working group. The other 20 vehicles are to be delivered by June 2008.

The Fuchs was developed in the 1970s, initially as a dedicated transport vehicle for the requirements of the German Federal Armed Forces. Altogether more than 1,000 vehicles were ultimately procured, and a wide range of variants was developed, including NBC reconnaissance, electronic warfare, radio and command post, and armoured ambulance.

By continuous technical development of the vehicle and of its logistic support, the Fuchs has remained in service alongside more recently-developed vehicle developments.

A previous upgrade package already improved the vehicle's ballistic protection, ergonomics and payload of a batch of 124 TPz Fuchs. The most recent protective improvements have increased the vehicle's potential for enhanced safety of the crews deployed in Afghanistan.

Further planned improvements under development include enhanced protection (jammer) and firepower (new weapon station).



**Defence Industry**

**Harris Corporation Wins \$97 Million Contract to Accelerate U.S. Marine Corps Transition to Multiband JTRS-Approved Radio Soluti**



ROCHESTER, NY -- Harris Corporation, an international communications and information technology company, has been awarded a \$96.7 million contract to continue upgrading U.S. Marine

Corps tactical radio communications with multiband, multimission JTRS-approved Falcon III® handheld and vehicular radio systems.

The Marine Corps is acquiring the radios through the previously announced \$2.7 billion Consolidated Interim Single Channel Handheld Radio (CISCHR) Indefinite Delivery, Indefinite Quantity contract awarded to Harris by the Joint Program Executive Office for the Joint Tactical Radio System.

Under this contract, Harris will provide the Marines with its multiband, multimission Falcon III AN/PRC-152(C), the most widely deployed JTRS-approved handheld radio, with more than 35,000 fielded worldwide. In addition to SINCGARS capability, the AN/PRC-152(C) offers ultra-high frequency (UHF) ground-to-ground line-of-sight communications, close-air support, tactical satellite communications and programmable encryption. The Marines also are acquiring Falcon III AN/VRC-110 high-performance multiband vehicular radio systems.

"The U.S. Marine Corps has recognized the clear benefits of investing in Falcon III JTRS-approved, multiband software-defined radios," said George Helm, vice president and general manager, U.S. Government Products, Harris RF Communications. "These radios offer a future-proof design by utilizing the JTRS Software Communications Architecture (SCA). They provide extended frequency range, significant reductions in weight and size, waveform upgradeability, programmable encryption and easy vehicle dismount. Our radios address the full range of mission requirements and are being widely deployed across the entire Marine Corps."

This is the second major contract from the U.S. Marines under its Tactical Handheld Radio (THHR) procurement program.

Harris RF Communications Division is a leading supplier of secure voice and data communications products, systems, and networks to military, government, and commercial organizations worldwide.

### Defence Industry

#### Bental Industries to Supply Motors for NBC systems for the Mine Resistant Ambush Protected (MRAP) Project

Israel -- Bental Industries Ltd., Israel's Motion Systems House for defense and commercial applications will supply motors for air-condition and NBC protection systems for the MRAP project.

The motors will be supplied by Bental Industries Ltd. throughout 2008, as additional orders to those supplied in 2007. Bental will supply, in total, more than \$18 million in motors under this project.

As one of the industry's leading suppliers of specialized motion systems for a wide range of armored military vehicles, Bental solutions meet the demands of the most rugged combat conditions. Shmuel Mandel, CEO of Bental Industries commented: "These orders are

a testimony not only to superior engineering capabilities, but also to our flexibility to offer the large-scale capacity needed for a project of this scope and our ability to overcome the ramp up need in the production within weeks. We supply over 200 sets a week. Bental have supplied motors and fans for NBC ventilation systems for armored vehicles for many years. This is where we offer a unique advantage, with the flexibility, strength and business expertise to handle projects of any size".

### Contracts

#### ATK Receives \$415.6 Million in Military Small-Caliber Ammunition Orders and Modernization Funding

MINNEAPOLIS -- Alliant Techsystems, the largest supplier of ammunition to the United States military, has received an additional \$415.6 million in military small-caliber ammunition orders and modernization funding for the Lake City Army Ammunition plant.

The contracts were awarded by the U.S. Army Sustainment Command, Rock Island, Ill.

In fiscal year 2008 ATK delivered 1.4 billion rounds of military small caliber ammunition, and expects to deliver roughly the same amount in FY09. ATK operates the U.S. Army's Lake City ammunition plant in Independence, Mo., where it produces a mix of 5.56mm, 7.62mm, .50-caliber and 20mm cartridges. Working in partnership with the Army, ATK has expanded the manufacturing capacity at the facility to 1.6 billion rounds and has continued to modernize the WWII-era plant.

"We are proud of the role we play in supporting the men and women in uniform," said ATK Armament Systems President Mark DeYoung, "and we're grateful to have the opportunity to continue to provide them with high quality ammunition they can count on."

### Army

#### Awesome firepower and agility puts Jackal in class of its own



The first of the UK military's tough new Jackal 4x4 patrol vehicles have been put through their paces in Helmand province, southern Afghanistan.

The introduction into service of up to 100 of the new

vehicles will mark a significant improvement on the capabilities of the current weapons platform, the Land Rover-based Weapons Mounted Installation Kit (WMIK), for UK forces on the front line.

Offering increased mobility, protection and agility, Jackal's 5.9 litre engine is capable of maintaining off-road speeds of up to 80km/h and can reach a top speed of 130km/h. The vehicle's extended range and ability to operate across a variety of terrain in extreme environments give it a huge advantage over its WMIK predecessor.

A unique airbag suspension system allows a smooth ride over the roughest terrain and provides a more stable firing platform while the vehicle is in motion.

The revolutionary system can also raise the seven-tonne beast by more than a metre, allowing the vehicle to clear large obstacles or its occupants to gain a better view of the field of operations.

But this vehicle, procured in just seven months, was originally designed as a purpose-built weapons platform, and that is where Jackal comes into its own.



Capable of carrying combinations of .50 calibre (12.7mm) machine guns, Heckler & Koch 40mm grenade launchers and General Purpose Machine Guns, Jackal's agility, range and awesome firepower will offer front line commanders greater flexibility in the conduct of ground operations.

Major Tom Wood, part of the team that produced the vehicle, said:

"I don't think we, as an Army, have ever bought such an incredible piece of kit before. It packs as much power as some of our tanks!"

Although incorporating a fully-integrated protection system and reinforced armour plating, Jackal's main defences are its mobility and agility. This makes Jackal perfectly suited to the operational terrain of southern Afghanistan, where speed and manoeuvrability are essential.

A number of the 200 vehicles procured will form part of the training fleet allowing troops to gain experience driving and maintaining the vehicles before they deploy on operations. Army driver Warrant Officer Nick Hartley has completed the training:

"It's awesome," he said. "It does exactly what it says on the tin! Troops will be able to go deep into Taliban territory and hunt them down. There's no hiding place from this vehicle. It can go anywhere."

#### Jackal facts

- Crew: 2+1

- Length: 5.39m



- Width: 2.00m
- Height: 1.97m (not including weapon system)
- Weight: 6,650kg
- Engine: 5.9 litre Cummins ISBe Euro3
- Jackal is ready to receive the British Armed Forces' new BOWMAN communications equipment.

### Defence Industry

#### United Kingdom - Mine Resistant Ambush Protected (MRAP) Vehicles



The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Kingdom of 157 Mine Resistant Ambush Protected (MRAP) vehicles as well as associated equipment and services.

The total value, if all options are exercised, could be as high as \$125 million.

The Government of the United Kingdom has requested a possible sale of 157 Mine Resistant Ambush Protected (MRAP) Category I 4X4 Cougar vehicles, tools and test equipment, maintenance support, contractor technical and logistics personnel services, support equipment, spare and repair parts, and other related elements of logistics support. The estimated cost is \$125 million.

The United Kingdom is a major political and economic power in NATO and a key democratic partner of the U.S. in ensuring peace and stability in this region and around the world.

The United Kingdom requests these capabilities to provide for the safety of its deployed troops in support of Global War on Terror (GWOT) operations. This program will ensure the United Kingdom can effectively operate in hazardous areas in a safe, survivable vehicle, and enhance the United Kingdom's interoperability with U.S. forces.

The United Kingdom is a staunch supporter of the U.S. in Iraq and Afghanistan, and the GWOT. The



United Kingdom's troops are deployed in support of IRAQI FREEDOM and ENDURING FREEDOM, where U.S. assets currently provide this proposed capability. By acquiring this capability, the United Kingdom will be able to provide the same level of protection for its own forces as that provided the United States forces.

The proposed sale of this equipment and support will not affect the basic military balance in the region. The United Kingdom will have no difficulty absorbing these vehicles into its Armed Forces.

The principal contractor will be Force Protection Industries, Inc., of Ladson, South Carolina.

There are no known offset agreements proposed in connection with this potential sale.

The proposed sale requires the continued support of seven Field Service Representatives (FSRs), currently providing in theater maintenance support for the existing Mastiff vehicles. An additional eight FSRs will be added under UK-P-LTR, and the United Kingdom has requested one additional FSR under this proposed sale to support the additional vehicles until 31 July 2009.

There will be no adverse impact on U.S. defense readiness as a result of this proposed sale.

This notice of a potential sale is required by law; it does not mean that the sale has been concluded.



## Contracts

### Ceradyne, Inc. Receives \$32.3 Million ESAPI Order

COSTA MESA, Calif. -- Ceradyne, Inc. (NASDAQ:CRDN) received a \$32.3 million ESAPI (Enhanced Small Arms Protective Inserts) order to be delivered in the second and third quarter of 2008.

This order is a delivery order issued by the Defense Supply Center Philadelphia against a larger ID/IQ (Indefinite Delivery/Indefinite Quantity) three-year contract issued in December 2007. Ceradyne's practice is to only book firm delivery orders such as the above \$32.3 million as backlog for scheduled delivery.

David P. Reed, Ceradyne President North American Operations, commented: "We are very pleased to have received this order and believe we will continue to ship this ESAPI product on time with the high standards of quality required. Based on non-binding conversations with the government, we believe that there will be additional delivery orders against the blanket ID/IQ contract this year."



## Robots

### Research Agency Showcases Robot-Driven Vehicles at Pentagon

WASHINGTON -- Defense Department employees got a glimpse of the automobile of the future at a display of robot-driven vehicles in the Pentagon's center courtyard.

The small four-door sedan, compact station wagon and four sport utility vehicles in the exhibit can navigate themselves without human drivers through a combination of servo-devices and radar- and laser-enabled sensors, said Anthony J. Tether, director of the Defense Advanced Research Projects Agency.



DARPA, now 50 years old, is a Defense Department agency that develops new technology for military use.

"Imagine if we had convoys being driven by robots," Tether said. Military use of autonomous vehicles would nullify the human impact of roadside bombs used by terrorists in Iraq and Afghanistan, he explained.

The vehicles on display at the Pentagon had vied for honors during a DARPA-sponsored competition called Urban Challenge that was held Nov. 3 on a closed course at the former George Air Force Base, in Victorville, Calif. A modified 2007 Chevrolet Tahoe entered by Carnegie Mellon University in Pittsburgh won first place, earning a \$2 million cash award for its Tartan Racing design team.

A computer brain that "rides" in the back of the General Motors-donated Tahoe takes the place of human thinking to drive the truck, said "Red" Whittaker, leader of the Tartan Racing team.

The much-modified, gasoline-powered truck incorporates a mix of radar- and laser-operated sensors to "see" where it is going, Whittaker said. Its multiple sensors collect data "and then the computer blends those into a complete model of what is going on," he explained.

"This robot with computers is very good at seeing what's occurring now and what it projects will happen in the future," Whittaker said.

The current leading markets for robot-operated vehicles include farming and surface-mining operations, Whittaker noted. Yet, the automotive market could be the "blockbuster" of all potential markets for autonomous vehicles, he said. The U.S. government has long studied the feasibility and potential benefits of so-called "automated highways" featuring vehicles that drive themselves, he noted.

Future use of such highways would likely reduce automobile accidents and provide more efficient traffic management, Whittaker predicted.

"The automotive industry believes in the vision of driving automation," Whittaker pointed out. "And, that's a big change from how things were a year ago."

Maj. John A. Moberly of the Army Staff was impressed with the robot-driven vehicles on display.

"It is amazing technology that can save lives for us in

the Army," Moberly said. "There is still definitely work to do and obstacles to overcome, but it is very promising."



**Defence Industry**

**Keshet Weapons System Reaches the Infantry Brigade**



A new weapons system, which is controlled by a computer and is composed of 120 ml mortars, was recently developed for use by Ground Forces.

The Keshet weapons system is an autonomous mortar with the ability to aim and navigate independently. It fires at a fast speed and has the capacity to fire the first mortar accurately within a minute.

"The Keshet weapons system is, without a doubt, the most advanced weapons system of the Infantry Corps," said Lieutenant Colonel Tal Aharon.



**Defence Industry**

**Navistar Defense Wins \$261 Million Contract For International® MaxxPro™ MRAP Armor Upgrades**



WARRENVILLE, Ill. -- Armor upgrades to Mine Resistant Ambush Protected (MRAP) vehicles will provide U.S. troops with a tougher defense against evolving explosive threats.

Navistar Defense, LLC won a contract valued at more than \$261 million from the U.S. Marines for engineering upgrades to the armor used on International® MaxxPro™ MRAP vehicles. Navistar Defense, formerly known as International Military and Government, LLC, is a wholly owned affiliate of Navistar International Corporation.

Under the new contract, armor protection on production MaxxPro MRAP vehicles will be increased to that of the MaxxPro Plus protection level.

MaxxPro MRAP vehicles are designed to protect troops from roadside bombs and other threats. To date, the military has ordered 5,214 total production MaxxPro

MRAP vehicles.

"Our close collaboration with the U.S. military allows us to swiftly adapt our vehicles to meet the growing threats and challenges faced by our troops in theater," said Archie Massicotte, president of Navistar Defense. "It is a privilege to build and service the MaxxPro MRAP vehicles because this is about protecting our troops so they can fulfill their missions safely."

Navistar International Corporation is a holding company whose wholly owned subsidiaries produce International® brand commercial and military trucks, MaxxForce™ brand diesel engines, IC brand school and commercial buses, and Workhorse brand chassis for motor homes and step vans. It also is a private-label designer and manufacturer of diesel engines for the pickup truck, van and SUV markets. The company also provides truck and diesel engine parts and service. Another affiliate offers financing services. Additional information is available at [www.Navistar.com/newsroom](http://www.Navistar.com/newsroom).



**Defence Industry**

**BAE Systems Receives 2008 European Turret Mounted Weapons Excellence In Technology Award From Frost & Sullivan**

ORNSKOLDSVIK, Sweden -- BAE Systems has received the 2008 European Turret Mounted Weapons Excellence in Technology award from Frost & Sullivan, a worldwide growth consulting company.

The award recognizes BAE Systems for its work designing and developing the SEP family of vehicles. The SEP family consists of common-chassis, tracked and wheeled 6x6 and 8x8 vehicles.

"This recognition is the result of significant investments by BAE Systems and our employees to develop the best and most cost effective family of vehicles for Armed Forces," said E-rjan Olsson, SEP projects director of BAE Systems. "The SEP family of vehicles is built on a 50-year tradition of manufacturing excellence and commitment to innovation by our Swedish operations. Its flexibility to always be fit for any type of mission, high protection levels for the crew and high availability gives the users ability to act in any type of conflict anywhere in the world."

A SEP vehicle is created by adding a specific mission module to a basic chassis depending on the users need--ranging from troop carrier, ambulance, command and control, reconnaissance or logistic carrier. More than 24 different variants have been created. The vehicles are designed and manufactured in E-rnskoldevik, Sweden, by BAE Systems H-agglunds AB, one of the company's Swedish subsidiaries.

"Our analyses have showed that the SEP family has unique features which the users definitely will benefit from," said Moin Chowdhury, research manager at Frost & Sullivan. "Governments around the world should soon realize the benefits of platforms, such as SEP, which

bring all the capability needed in conflict at a cost which is significantly more favorable than anything else seen on the market today."

The Frost & Sullivan Excellence in Technology Award is given to the company that has pioneered the development and introduction of an innovative technology into the market—a technology that has either impacted or has the potential to impact several market sectors. The award recognizes a company's successful technology development that is expected to bring significant contributions to the industry in terms of adoption, change and competitive posture. It also recognizes the overall technical excellence of a company and its commitment towards technology innovation.

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### Defence Industry

#### BAE Systems Develops Anti-Jamming GPS Receivers

AUSTIN, Texas -- BAE Systems has developed a satellite navigation receiver system that provides uninterrupted operation of the Global Positioning System for air, land, and sea platforms and applications.

The company developed and readied the system in response to the emerging threat of disruption to operations of GPS navigation systems. The new satellite navigational immune receiver keeps GPS navigation operable in the presence of radio frequency jamming.

"GPS jamming has become an acute threat to armed forces operating in the modern battle arena," said Kent Jacobson, vice president of BAE Systems' Sensor Integration business in Austin. "BAE Systems developed a unique system that offers operational immunity against electronic jamming and disruptions to maintain precise and reliable GPS operation, even in multiple jamming environments."

During tests of the system, the anti-jam GPS successfully overcame electronic jamming in various scenarios, including multiple simultaneous jamming.

The anti-jamming satellite navigation receiver is available as a complete system or as an add-on to any existing GPS system.

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### Contracts

#### DRS Technologies Awarded \$10 Million Contract for US Army Heavy Ammunition Trailers



PARSIPPANY, N.J.-- DRS Technologies, Inc. announced today that it received a \$10.1 million order to build more than 140 additional M989A1 Heavy Expanded Mobility Ammunition Trailers

(HEMATs).

The order was part of a previously awarded fixed-price, five-year Indefinite Delivery/Indefinite Quantity (IDIQ) contract from the U.S. Army's Tank-Automotive and Armaments Command in Warren, Michigan. Work for this contract is being performed by the company's DRS Sustainment Systems unit in West Plains, Missouri.

The HEMATs are part of the U.S. Army's future force transformation and modularization into combat brigades rather than divisions. The trailer has a heavy industrial payload capacity to transport numerous and extremely heavy Multiple Launch Rocket System pods, palletized or non-palletized conventional ammunition and fuel bladders. The trailers can be operated on paved, unpaved or cross-country roads.

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### Army

#### The DGA delivers first PVP to French Army



The French Defense Procurement Agency (DGA) has delivered to the French Army the first 30 small protected vehicles (PVP). These deliveries are the result of an initial order for 314 vehicles passed in 2004.

The current conditions require external commitments to improve the protection of warfighters. Launched in 2001, the program PVP responds to this need for all-terrain vehicles, protected air transportable and carrying a crew of 3 to 4 men. The vehicle is available in two versions, the "Placing" to equip the units and support and the "Command" to the cells of command of the infantry.

The procurement contract was notified in September 2004 and provides for the supply of 933 PVP for an amount of 150 million euros. Panhard General Defense is the project manager in charge of industrial development and production of vehicles on the 2 industrial sites in Marolles-Hurepoix (93) and Saint-Germain-Laval (42).

Air transportable in C130 and C160 or using helicopter slings, the PVP is a 4x4 vehicle topped with a shielded cell that ensures the protection of personnel, equipment and motor transport. It is equipped with a holder for the 7.62 mm machine gun. The diesel brand IVECO of 4-cylinder in-line (2.8 liters engine capacity) develops an output of 160 hp. The transmission is provided by a gearbox 4 speed automatic.

The protection, very good for a vehicle in this category, is not at the expense of the equipment of this vehicle equipped with air conditioning, tyre fitted with a

run-flat, a variable pressure inflation system and an electric winch. Having a payload of 750 kg, the PVP has an internal volume of more than 3m<sup>3</sup> through modular rails fixed to the floor, on the inner faces and on the roof that predispose to receive a SIT (Terminal Information System). Additionally, it can tow a trailer of 750 kg.

### Defence Industry

## General Tactical Vehicles Low-Risk JLTV Solution Uses High-Level Systems Maturity

STERLING HEIGHTS, Mich. -- Leveraging over 120 years of combined experience in the design, production and support of more than one million combat and tactical vehicles, General Tactical Vehicles has submitted its proposal for the Technology Development phase of the U.S. Army and U.S. Marine Corps Joint Light Tactical Vehicle (JLTV) program.

GTV's offer for the JLTV maximizes survivability and optimizes power and payload. The approach focuses on commonality of systems and components along with modular armor, resulting in an innovative and agile vehicle system that will provide enhanced crew protection, increased cargo capacity and transportability.

"Our JLTV provides America's Soldiers and Marines a vehicle with the strong performance, flexibility, protection and sustainability they need across the full range of missions, locations and operational scenarios," said Don Howe, GTV's JLTV program director. "Our JLTV gives the armed forces the rapid deployability, reliability, networking capabilities and survivability they need today and in the decades ahead."

General Tactical Vehicles applies proven technologies along with a modular design that will accommodate continuing advances in armor and vehicle systems. "While it's a significant advancement in design, it's also affordable and practical," said Howe. "Combined with manufacturing readiness that allows an accelerated path to production, our design will make the JLTV program a smart, low-risk investment for America's armed forces and taxpayers."

Innovative features of the GTV design include:

- Lightweight hybrid hull structure which provides a low-profile and blast-resistant vehicle designed to survive current and future threats
- Parallel arm adjustable height suspension to give the vehicle increased mine blast protection without jeopardizing air and sea transportability
- Semi-active suspension ensuring safety, enhanced mobility and crew comfort
- Proven propulsion systems with a high horsepower-to-weight ratio to maximize payload, plus a driveline that gives the vehicle tough off-road capabilities
- Digital cockpit with C4I technologies connecting the crew to other units and systems
- Unique modular and scalable trailer that has mobility equal to the JLTV vehicle itself

General Tactical Vehicles is a joint venture between

AM General and General Dynamics Land Systems, a business unit of General Dynamics, formed to provide the U.S. Army and U.S. Marine Corps a low-risk, affordable, technically advanced and economically sustainable solution to their Joint Light Tactical Vehicle requirements. In 2006, both AM General and General Dynamics were awarded JLTV "Best Technical Approach" trade studies by the Office of Naval Research. More information about General Tactical Vehicles is available online at [www.generaltacticalvehicles.com](http://www.generaltacticalvehicles.com).

### Contracts

## Turkish defense industry conquers Asia



Thirty-seven defense companies from Turkey will participate in the 11th Defence Services Asia Exhibition and Conference (DSA 2008), which began yesterday in Kuala Lumpur, where more than 600 companies from 50 countries are expected to participate.

This year Turkish companies are expected to be the center of attention in Kuala Lumpur. FNSS Savunma Sistemleri (Defense Systems), one of the main Turkish companies at the event, has already signed armored vehicle contracts with Malaysia during DSA 2008 at the Putra World Trade Centre.

According to the contract, FNSS will provide Malaysia with 48 Adnan armored combat vehicles, worth \$72 million in total. FNSS had previously sold 211 Adnan infantry fighting vehicles to Malaysia for \$300 million, and 65 of these vehicles will be assembled in Malaysia.

Adnans are equipped with firing ports, which allow infantrymen to fire their weapons from within the vehicle. They also possess passive night vision equipment produced by Turkish defense contractor Aselsan.

Malaysian Sultan Mizan Zainal Abidin visited Turkish defense industry companies at the fair and was briefed by head of the Undersecretariat for the Defense Industry (SSM) Murad Bayar.

### Defence Industry

## Swiss companies BAL Bauer Industries Ltd. and MineWolf Systems selected based on rigorous trials in extreme desert conditions

Abu Dhabi, UAE -- The Land Forces of the United Arab Emirates (UAE) signed a multi-million euro contract with BAL Bauer Industries Ltd. for the procurement of large-scale mine clearance machines "MineWolf".



The purchase follows extensive trials of the MineWolf in harsh desert conditions in the Gulf region in 2006, and includes special modifications for lifting mine fragments buried in sandy terrain to the surface.

BAL Bauer Industries Ltd., who acts as General Contractor for this contract, and MineWolf Systems were selected based on their superior technology, extensive regional experience and military know-how. The systems were delivered at the beginning of 2008 six months after contract signing and the training of the UAE personnel is being carried out at the present time.

It is the first army in the Middle East to procure the MineWolf.

The MineWolf is a tracked mine clearance machine implementing an interchangeable tiller or flail system. It has been proven effective against anti-personnel (AP) and heavy anti-tank (AT) mines in many mine-affected countries including Sudan, Jordan, Bosnia-Herzegovina and Croatia (humanitarian projects). The system is capable of clearing up to 30,000 square metres per day.

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### Future Technologies

#### Synthetic Demonstration Develops Unmanned Vehicle Command Capability

New Malden, UK -- BAE Systems has shown, for the first time, how multiple unmanned air and land vehicles can work under the command of a number of battlefield commanders to deliver vital reconnaissance and surveillance information to front-line troops.

The demonstration showed how two unmanned ground vehicles (UGVs) and two unmanned air vehicles (UAVs) can pass information between themselves and their command centres, while allowing control of the vehicles to be passed between different command systems in real time.

Andy Wright, Capability Augmentation Manager for BAE Systems, said that in battlefield situations, being able to seamlessly pass control of unmanned vehicles between different stations was vitally important. "In this kind of operation, it's critical that the payload – in this case, vital surveillance and reconnaissance information – and that the tasking of an unmanned asset is transferred quickly and effectively between commanders on the battlefield."

The demonstration was part of BAE Systems' Capability Augmentation Programme, and took place at

Apex, the Company's newly developed systems integration, visualisation and experimentation facility in New Malden. Using systems and software technology from across BAE Systems, including Aerosystems International, BAE Systems Australia, Integrated System Technologies, Electronic & Information Systems and Military Air Solutions, the demonstration allowed researchers to examine the technological challenges of managing multiple unmanned air and ground vehicles in a manned environment, de-conflicting UAV flight paths and planning and re-planning missions based on new mission goals and threats.

The demonstration was the first in a series of trials that will lead to a live vehicle demonstration at BAE Systems' West Sale test facility in Australia in November this year.

BAE Systems' Capability Augmentation Programme is managed by the Company's Strategic Capability Solutions team and pulls together technology developed across BAE Systems' global business to create vital future capability for the armed forces.

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### Defence Industry

#### BAE Systems Receives \$6 Millions U.S. Army Contract For Family Of Medium Tactical Vehicles For Jordan



SEALY, Texas -- BAE Systems has been awarded a \$6 million contract from the U.S. Army for a Foreign Military Sale of Family of Medium Tactical Vehicles (FMTV) destined for Jordan. This is the third order for Jordan in the last four years, bringing the total value to over \$16 million.

"BAE Systems is building the case throughout the region that the FMTV delivers high-performance capability backed up with outstanding reliability and logistics support. Repeat customers help send that message," said David Landecker, sales director, Middle East, for BAE Systems' Medium/Heavy Vehicles.

Work on the contract will be performed in Sealy, Texas, and managed by the U.S. Army Tank-automotive and Armaments Command (TACOM). The work is expected to be complete by October 2008.

The FMTV is available in 18 variants with payloads ranging from 2 to 16.5 metric tons. The FMTV features cargo hauling to include weapon systems, soldier transport, vehicle recovery, and more. The FMTV can also be equipped with armor to protect crew and up to a squad of soldiers in certain variants.

More than 48,000 FMTV trucks and trailers are in service around the world with the U.S. Army and U.S. allies. The commonality of parts among the FMTV

includes shared engines, transmissions, power trains, tires and cabs. This commonality significantly reduces the logistics burden and operating and support costs for the user. FMTVs are the industry leader for meeting and exceeding tactical vehicle standards for capability, reliability, mobility, protection and transportability.

BAE Systems employs approximately 2,400 people in Sealy, Texas and has 900,000 square feet of manufacturing and office space on approximately 200 acres. The Medium/Heavy Vehicles business unit leverages a long history with wheeled vehicle products. It has established itself as a world-class designer, volume manufacturer and through-life supporter of high-quality, best value, military tactical trucks and wheeled vehicle systems. Today, BAE Systems is the exclusive manufacturer of FMTVs and the producer of the Caiman MRAP (Mine Resistant Ambush Protected Vehicle).

**About BAE Systems**

BAE Systems is the premier global defense and aerospace company delivering a full range of products and services for air, land and naval forces, as well as advanced electronics, information technology solutions and customer support services. With 97,500 employees worldwide, BAE Systems' sales exceeded BJ15.7 billion (US \$31.4 billion) in 2007.



**Defence Industry**

**Australia – Modular Artillery Charge Systems, XM982 Block Ia-1**



The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Australia of Modular Artillery Charge Systems and XM982 Block Ia-1 Excalibur Projectiles as well as associated equipment and services.

The total value, if all options are exercised, could be as high as \$58 million.

The Government of Australia requested a possible sale of 2,400 Modular Artillery Charge Systems (MACS), 250 XM982 Block Ia-1 Excalibur Unitary Projectiles with base bleed units, 43 Portable Excalibur Fire Control Systems (PEFCS), 43 AN/PRC-119 Single Channel Ground and Airborne Radio System (SINCGARS) w/o GPS, training ammunition, containers, support equipment, spare and repair parts, publications and technical data, maintenance, personnel training and training equipment, U.S. Government and contractor representatives' engineering and technical support services, and other related elements of logistics support. The estimated cost is \$58 million.

Australia is one of our most important allies in the Western Pacific. The strategic location of this political and economic power contributes significantly to ensuring

peace and economic stability in the region. Australia's efforts in peacekeeping and humanitarian operations in Iraq and in Afghanistan have had a significant impact on regional, political, and economic stability and have served U.S. national security interests. This proposed sale is consistent with those objectives and facilitates burden sharing with our allies.

The proposed sale will enhance Australia's defensive capabilities and increase interoperability with United States and multi-national forces supporting coalition operations. The country will have no difficulty absorbing this new capability into its military.

The proposed sale of this equipment and support will not affect the basic military balance in the region.

The principal contractors will be:

- Raytheon Missile Systems (Excalibur) Tucson, Arizona
- ITT (SINCGARS) Roanoke, Virginia
- General Dynamics Armament and Technical Products (MACS), Camden, Arkansas

There are no known offset agreements proposed in connection with this potential sale.

Implementation of this proposed sale will require the assignment of eight contractor representatives (two in-country for a period of two weeks each), and six U.S. government representatives (two in-country for a period of one-two weeks each).

There will be no adverse impact on U.S. defense readiness as a result of this proposed sale.

This notice of a potential sale is required by law; it does not mean that the sale has been concluded.



**Defence Industry**

**Thales to supply a Deployable Tactical Internet to the Signal Corps of the United Arab Emirates**



The Signal Corps of the United Arab Emirates and Thales have signed a major contract for the development and supply of ZAGIL, a theatre wide deployable Tactical Internet system.

Thales has been selected after an international competition involving deep system analysis and intense field trials. ZAGIL, based on Thales Di@ne solution, combines all the specific military requirements such as mobility, security, hardening, with the latest multimedia information exchange capacities offered by modern IP technology.

The Deployable Tactical Internet ZAGIL is a Di@ne solution. Its network backbone relies on the TRC 4000 family of secure, tactical, high data rate microwave radios. The TRC 4000, already selected/used by French, British and Swiss Armed Forces, offers an excellent combination of range, bandwidth - 34 Mbps full duplex - and functionality to convey heavy IP traffic over encrypted transmission links.

The communication nodes of ZAGIL can quickly be set up and torn down to cope with the accelerated pace of field deployments. Seamless interoperability with the mobile components of the battlefield is provided thanks to automatic combat net radio integration such as the Thales F@stnet VHF and Skyf@st HF radios.

The wireless access to Di@ne is achieved by the Thales brand-new tactical mobile WiMAX solution providing Point-To-Multipoint broadband IP connections. This innovative mobile WIMAX solution delivers multi-Mbps data rate at long range for voice data and video transmissions and greatly enhances the connectivity of the C4I Command Posts.

High level quality of service adapted to military environment is ensured by the Thales "IP Services" providing features such as precedence and pre-emption while using future-proof COTS routers and switches. Network management and configuration is made extremely simple and user friendly using the Thales management software suite.

"ZAGIL will get the latest battlespace digitisation technology available on the market to support their overall C4ISR network centric warfare programmes. Thales is proud of the trust of the United Arab Emirates", indicates Pierre Suslenschi, Thales vice president for tactical communications from Land & Joint Systems activity of Thales.

Thales is a leading international electronics and systems group, addressing defence, aerospace and security markets worldwide. Thales's leading-edge technology is supported by 22,000 R&D engineers who offer a capability unmatched in Europe to develop and deploy field-proven mission-critical information systems. Thales employs 68,000 people in 50 countries with 2007 revenues of EUR 12.3 billion.



## Defence Industry

### Lockheed Martin Completes Initial EMI Testing to Enhance JLTV Design, Reduce Risk

OWEGO, NY -- Lockheed Martin has completed initial electromagnetic interference (EMI) testing of the next-generation vehicle it is building for the U.S. Army's Joint Light Tactical Vehicle (JLTV) competition. The tests are helping team engineers reduce risk and ensure JLTV program success by advancing the team's vehicle design in the early stages of development.

"As a systems integrator, we routinely perform EMI testing early in the design process to find sources of electromagnetic radiation that could interfere with other

on-board electronic systems or enable enemy forces to detect the vehicle on the modern battlefield," said Louis DeSantis, vice president and general manager of Ground Vehicle Systems at Lockheed Martin Systems Integration - Owego. "Correcting any issues now through structural redesign and relocation or shielding of key subsystems is far less costly and time consuming than making the same improvements later, and will help speed development of this vital transport system to the war fighter."

EMI testing was performed on the JLTV Team's Combat Tactical Vehicle Payload Category B infantry carrier inside an anechoic chamber at Lockheed Martin Systems Integration in Owego NY. Insulated from outside radio signal interference, the chamber enables test engineers to precisely measure the emission levels radiating from specific equipment. Systems tested included radio antennas, displays, engine and transmission controllers and electrical components. Additional tests conducted on an outdoor range characterized the interactions of the vehicle's antennas, which will determine the optimum design of the communications suite.

The tests were performed by Lockheed Martin's Owego-based EMI Laboratory team, which recently gained accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP). Run by the U.S. Department of Commerce's National Institute of Standards and Technology, the NVALP verifies that testing and calibration laboratories meet national and international quality and procedural requirements.

This summer, the U.S. Army and U.S. Marine Corps are expected to award 27-month technology development contracts to at least two industry teams. Prototype JLTV vehicles developed for the demonstration will undergo a host of trials to military standards, including EMI testing. The services could order as many as 50,000 vehicles for operation beginning in the mid 2010s.

In addition to its infantry carrier, Lockheed Martin also has built a second JLTV prototype — the Utility Vehicle Light Payload Category C — designed to carry personnel, general cargo and ammunition. The Category B vehicle already has undergone more than 5,000 miles of on and off-road testing, and both vehicles will complete 25,000 test miles by the end of this year.

As a lightweight tactical vehicle, the JLTV program will provide the services with a family of expeditionary vehicles capable of on and off-road mobility, protection from roadside bombs and the ability to haul a variety of useful payloads. As a system, the sensors and communications suite aboard the JLTV will tap into the military's global communications network, enabling forces to coordinate operations by sharing up-to-the-minute battlefield information.

The Lockheed Martin-led JLTV Team includes Lockheed Martin as the prime contractor and design agent, providing systems engineering, platform integration, design expertise and program management. BAE Systems Mobility & Protection Systems provides advanced armor solutions and production facilities for high volume assembly. Alcoa Defense supplies materials

knowledge, design services and aluminum components that give the vehicle its structural strength at reduced weight.



### Defence Industry

## General Dynamics Awarded \$57 Million for Abrams Tank Survivability Kit Work



STERLING HEIGHTS, Mich. -- General Dynamics Land Systems, a business unit of General Dynamics, has been awarded two contracts valued at \$57 million for Abrams Tank Urban Survivability Kits (TUSK).

The first award, valued at \$45 million, funds 2,832 Loader's Armor Gun Shields. The second award, valued at \$12 million funds Loader's Thermal Weapon Sights and Counter-Sniper Anti-Materiel Mounts.

Lessons learned during combat operations in Iraq led the Army's project manager for the Heavy Brigade Combat Team and General Dynamics to create TUSK. The add-on kit for M1A1- and M1A2-series tanks enhances crew survivability in urban environments and consists of added armor protection, a mine safety seat, Abrams reactive armor tiles and a tank infantry phone.

The combination of an added gun shield and thermal weapon sight allows the tank's loader to engage targets from behind a transparent shield during limited visibility or at night. The counter-sniper anti-materiel mount enables the gunner to precisely engage with a .50 caliber machine gun while remaining under armor protection.

General Dynamics employees will perform the work primarily in Lima, Ohio. Work on the loader's armor gun shields is expected to be completed by Aug. 31, 2011, and work on the loader's thermal weapon sights and counter-sniper anti-materiel mount is expected to be completed by Feb. 28, 2009.



lead a team of scientists that will develop miniature robots to improve military situational awareness. The company signed a \$38 million agreement with the U.S. Army Research Laboratory to lead an alliance of researchers and scientists from the Army, academia and industry.

The Micro Autonomous Systems and Technology (MAST) Collaborative Technology Alliance will research and develop advanced robotic equipment for use in urban environments and complex terrain, such as mountains and caves. The alliance will create an autonomous, multifunctional collection of miniature intelligence-gathering robots that can operate in places too inaccessible or dangerous for humans.

"Robotic platforms extend the warfighter's senses and reach, providing operational capabilities that would otherwise be costly, impossible, or deadly to achieve," said Dr. Joseph Mait, MAST cooperative agreement manager for the Army Research Laboratory. "The MAST alliance is a highly collaborative effort, with each partner from government, academia, and industry playing a significant role."

MAST will advance fundamental science and technology for future robotic systems in several key areas, including small-scale aeromechanics and ambulation; propulsion; sensing, processing and communications; navigation and control; microdevices and integration; platform packaging; and systems architectures.

"The technologies that will be developed under MAST represent capabilities and techniques that will influence nearly all of the products that BAE Systems will develop and produce in the future," said Steve Scalera, MAST program manager for BAE Systems in Merrimack, New Hampshire. "We and our alliance partners have committed our brightest minds to make the MAST program a success."

The Alliance has a planned duration of five years with an option to extend for an additional five years. MAST consists of four primary research areas, led by four principal alliance members: BAE Systems will lead Microsystems Integration, the University of Michigan will lead Microelectronics, the University of Maryland will lead Microsystem Mechanics, and the University of Pennsylvania will lead Processing for Autonomous Operation.

The alliance also has five general members participating in one or more of the research areas: the University of California at Berkeley, the California Institute of Technology and the Jet Propulsion Laboratory, the Georgia Institute of Technology, the University of New Mexico, and North Carolina Agricultural and Technical State University.



### Robots

## BAE Systems-Led Team To Develop Miniature Robots For Military Use



MERRIMACK, New Hampshire -- BAE Systems will

## Future Technologies

### DRS Technologies Receives \$101 Million Five-Year Contract for Long Range Advanced Scout Surveillance System Subassemblies



PARSIPPANY, N.J.-- DRS Technologies, Inc. announced today that it has received an initial order of \$36.4 million on a five-year contract with a projected minimum value of approximately \$101 million to produce critical subassemblies for the Long Range Advanced Scout Surveillance System (LRAS3) program.

The contract was awarded to DRS by the Network Centric Systems business of the Raytheon Company, McKinney, Texas, the prime contractor and final integrator for the LRAS3 program.

The work will be performed by DRS' Sensors & Targeting Systems unit - Optronics Division in Melbourne, Florida. Manufacturing is expected to begin immediately.

LRAS3 is a multi-sensor infrared system enabling real-time detection, recognition, identification and geo-location of distant targets. Army scouts on Stryker and HMMWV platforms use this technology to conduct 24-hour reconnaissance and surveillance, while remaining outside enemy acquisition and fire ranges - a vital improvement over previous generations of LRAS.

Under the contract, DRS will provide such key LRAS3 subassemblies as Forward Looking Infrared (FLIR) systems and Integrated Optical Benches (IOBs).

"This contract ensures that DRS will continue to be a major contributor to the LRAS3 program for the next five years," said James M. Baird, president of DRS' Reconnaissance, Surveillance & Target Acquisition (RSTA) Segment. "We're proud of the role we will continue to play in bringing this technology - widely considered to be the Army's premier ground-combat system for reconnaissance and surveillance - to the modern battlefield."

The company's RSTA Segment develops, manufactures and supports electro-optical technologies, including advanced cooled and uncooled thermal-imaging solutions for soldier systems, ground vehicle, airborne, maritime, industrial, security, public safety and firefighting applications.

Work will be performed in Sterling Heights and London, Ontario, Canada, by existing General Dynamics employees. Work is expected to be completed by Sept. 30, 2009. Stryker is a family of eight-wheeled combat vehicles that includes 10 variants. Stryker vehicles have been deployed to support Operation Iraqi Freedom since 2003. The contract being modified was initially awarded December 2006.

## Future Technologies

### Future Looks Bright for Non-Line of Sight



The Non-Line of Sight Launch System has completed the first of multiple summer tests at White Sands Missile Range, N.M., meeting all mission requirements and proving NLOS-LS is a weapon of choice for the Army of tomorrow.

The Future Combat System Technical Field Test, conducted in February and March, was the initiation of a summer of demanding developmental and operational tests for the Future Combat System command and control network, as well as a host of FCS related programs, to include Redstone Arsenal's NLOS-LS. The efforts of the project office paid off, as NLOS-LS reaped praise from users and evaluators alike during the test.

NLOS-LS consists of a highly deployable, platform-independent weapon system that provides networked, extended range, precision strike capability for combat commanders. The NLOS-LS is capable of unattended/unmanned operations under all weather conditions. Armed with 15 Precision Attack Missiles, the NLOS-LS is capable of engaging a host of varied targets on the modern and future battlefield.

The two-week TFT consists of developmental tests conducted with production representative prototypes and operated by Army Experimental Task Force Soldiers in a field environment. Under the operational control of the FCS program, the NLOS-LS participated in the TFT event working in conjunction with Unmanned Ground Systems and FCS Network Components, as well as Current Force equipment. Using a "crawl, walk, run" strategy, the TFT is in the crawl phase for the FCS program's aggressive test schedule. Successful completion of the TFT provides the entrance criteria for more complicated and demanding Force Development Test and Limited User Tests this summer.

For the NLOS-LS project office, the TFT showed the

## Contracts

### General Dynamics Awarded \$58 Million for Stryker Work



STERLING HEIGHTS, Mich. -- General Dynamics Land Systems, a business unit of General Dynamics, has been awarded a \$58 million contract modification to purchase long-lead materials for Stryker Infantry Carrier Vehicle and Nuclear, Biological and Chemical Reconnaissance Vehicle variants.

capability of NLOS-LS to work with the current force through effective employment of the system, as well as integration into the current force's network architecture. Specifically, NLOS-LS needed to show compatibility and interoperability with the Army's Advanced Field Artillery Tactical Data System.

Participating in two separate operational vignettes, NLOS-LS successfully received fire missions and engaged targets from FCS and current force platforms. All exercises were conducted with actual platforms in the field using live communication networks. NLOS-LS' successful execution of this test allows it to participate in the upcoming Training and Doctrine Command's Force Developmental Test and Evaluation event later this spring.

The NLOS-LS is one of the Future Combat System program's 16 core systems. FCS is the Army's leading modernization program to develop manned and unmanned systems linked by a common network and equipped with leading-edge technology.

The NLOS-LS Project Office, led by Col. Doug Dever, is located at Redstone with the Program Executive Office for Missiles and Space. The NLOS-LS was developed by the NetFires Limited Liability Company, a joint venture between Lockheed Martin and Raytheon.




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## Defence Industry

### **Sagem Defense Securite records new order for SITEL information systems, to be deployed by the French army**

French defense procurement agency DGA has officially placed an order with Sagem Defense Securite (SAFRAN Group) for an additional batch of 500 SITEL information systems, to be deployed by the French army.

Part of an overall program for the French army to deploy 4,500 systems, this latest batch brings the number of systems ordered to date to nearly 1,000.

The SITEL system, designed for several different vehicle types, comprises a terminal with a touch screen and digital map, and an interface for tactical radio and navigation systems.

SITEL provides connectivity between basic units and combat vehicles and is interoperable with the army's other information systems, especially the one used in the FELIN\* integrated equipment suite (soldier modernization program). It allows both combat and support units to stock and share information on tactical situations, along with mission planning and specific services for different weapon systems.

SITEL is already deployed by the 2nd Armored brigade and the 6th Light armored brigade.

