

# Army Guide monthly



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**Contracts****Armor Holdings Receives \$73M Award for M1114 Program**

Armor Holdings, Inc., a leading manufacturer and distributor of security products, tactical wheeled vehicles, and vehicle armour systems, announced the award of a \$73.6 million contract modification from the U.S. Army Tank-automotive and Armaments Command for production of M1114 Up-Armored HMMWV armour components.

The Company stated that the new work is to provide additional armour components that increase IED protection levels for new and fielded vehicles with production to be performed during 2006 and early 2007 at the Armor Holdings Aerospace and Defense Group facilities in Fairfield, Ohio.

**Defence Industry****Commencement of Series Production of BMD-4**

The Volgograd Tractor Plant begins series production of the chassis of the air-borne infantry fighting vehicle – BMD-4 Bakhcha-U. Final assembly, roll-off, and hand-over to the customer of the new fighting vehicle will be carried out by the Tula Instrument Design Bureau.

Volume of the production of the chassis will gradually increase. The enterprise is simultaneously involved in the scheduled repair and upgrade of BMD-1, BMD-2, and BMD-3 vehicles. The upgraded BMD-1 becomes equal in its capabilities to the BMD-2.

The BMD-4 is intended to carry out high-mobility offensive and defensive actions both autonomously and in interaction with other types of armoured fighting vehicles of the air-borne troops, as well as with other fighting systems. The crew of the Bakhcha-U consists of 2 persons plus 5 troops. The vehicle is fitted with a multi-fuel diesel engine that enables it to move at a speed of up to 70 km/h. The cruising range is 500 km.

The vehicle is armed with a 30mm 2A42 gun, 100 mm

low-pressure gun, 9M11 Konkurs ATGW, Arkan ATGW, AG-17 Plamya grenade launcher, 7.62mm PKT machine gun, and 5.45mm RPKS-74 machine gun.

**Future Technologies****Future Soldier System: Bundeswehr awards Rheinmetall Defence key force modernization contract**

The German Bundeswehr has contracted with Rheinmetall to develop an expanded version of one of its most important modernization projects, "Future Soldier System". This multi-million euro development contract is expected to culminate in large-volume procurement orders starting in 2009, when serial production is set to commence.

The system is destined to form a key part of the personal equipment of German soldiers at home and abroad.

Dubbed "Future Soldier - Expanded System" (IdZ-ES), this state-of-the-art technology programme seeks to enhance materially the efficiency of infantry forces across the operational spectrum, while simultaneously reducing the risk for individual soldiers on the modern battlefield.

The IdZ-ES order underscores Rheinmetall Defence's role as a technology pacesetter in the process of force transformation. Rheinmetall is already playing a critical part in developing similar systems on behalf of the armed forces of Canada and France (ISSP and FELIN).

As Klaus Eberhardt, Chairman of the Executive Board of Rheinmetall AG, points out, "We're convinced that the Future Soldier system order lays the groundwork for long-term, intensive cooperation in equipping the hard-hitting, fast moving forces that are going to play a key role in future crisis reaction missions. What's more, the Bundeswehr order is an impressive reference, which should help us in winning export orders."

**Digitized equipment for networked infantrymen**

A comprehensive equipment concept for the individual soldier, IdZ-ES encompasses a full range of voice and other communication systems. Moreover, it can be integrated into the German Army's FuInfoSys command and information system. Fully compliant with NATO standards, its outstanding compatibility means that it can be readily adapted to the armed forces of Germany's allies.

The high-tech items of equipment carried by the infantryman are all carefully tailored to the concept: the computer, sensors, helmet system with display and voice radio, navigation aids, body armour and carrying system.

Fully digitized, the modular communication equipment enables transmission of voice, data and video. A GPS-integrated digital display permits real-time depiction of the situation on the ground, which can be monitored at all echelons of command. Moreover, Rheinmetall's "Interconnected Command Control Communications Computer Unit" (IC4U) enables real-time exchange of data between individual infantrymen, the section vehicle and relevant networks.

In addition, the contract encompasses development of a wide array of sensor packages for fire control and mine detection. Rheinmetall is also working with other project partners to develop a new visor-equipped helmet, together with a system for monitoring the soldier's health status.

The development contract also includes integration of IdZ-ES technology into various armoured systems such as the new German infantry fighting vehicle Puma and the new armoured personnel carrier Boxer as well as lightweight air-portable combat vehicles. Rheinmetall is to furnish the Bundeswehr with two IdZ-ES system demonstrators in 2008, bringing the development contract to a close.

In the subsequent procurement phase, Germany's infantry, armoured infantry, air force security troops and naval special operations units will be outfitted with the new system.

Source: Rheinmetall

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### Defence Industry

## DRS Awarded \$10M Contract to Develop Maintenance Information system for U.S. Army Ground Vehicles



DRS Technologies, Inc. has been awarded a \$10 million contract to develop and integrate a Condition Based Maintenance Information system for the U.S. Army's ground combat vehicle fleet. The contract's objectives are to develop a capability to monitor, record and communicate operating parameters to an enterprise logistics network and subsequently apply a set of decision-support tools to conduct logistics maintenance analyses for the U.S. Army's Bradley Fighting Vehicles, Abrams Main Battle Tanks and Family of Medium Tactical Vehicles.

The contract was awarded to DRS by the U.S. Army Tank Automotive and Armaments Command Life Cycle

Management Command (TACOM LCMC), Rock Island, Illinois, for the Program Manager, Heavy Brigade Combat Team in Warren, Michigan. For this award, DRS will integrate and demonstrate critical elements of a platform information management system that will be extended to help realize the Army's vision for logistics transformation through this Condition Based Maintenance approach. This contract includes the system development, integration and initial field evaluation of the system in an operational brigade. Work for this contract will be performed by the company's DRS Test & Energy Management unit in Huntsville, Alabama.

The Condition Based Maintenance System will monitor and analyze the performance of combat vehicles and tactical systems, and will report vehicle information and status to an enterprise logistics network that can react to real or anticipated failures in a timely manner.

DRS produces a variety of on-vehicle, embedded diagnostic and off-vehicle automatic test equipment (ATE) designed to diagnose and repair electronic components installed on Army M1A1, M1A2 and M1A2 System Enhancement Program (SEP) Abrams Main Battle Tanks and Bradley M2/M3 Fighting Vehicle Systems, as well as U.S. Marine Corps' Abrams tanks and Light Armored Vehicles (LAVs). Using this fielded equipment, the DRS-led team will leverage its diagnostic system to encompass all of the logistic and situational awareness features of a complete Condition Based Maintenance system that will enhance the operation and effectiveness of the tactical and combat vehicles of the current force.

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### Defence Industry

## Oshkosh Truck Selected for the U.S. Military's Joint Light Tactical Vehicle Program

Oshkosh Truck Corporation has been selected by the U.S. Office of Naval Research to perform a conceptual design and mockup, science and technology program for the Joint Light Tactical Vehicle (JLTV) program. The Office of Naval Research, in concert with the U.S. Army and Marine Corps, is supporting the JLTV program to develop a family of light tactical wheeled vehicles with superior survivability characteristics and enhanced payload.

Specifications defined by the U.S. Army and Marine Corps for the JLTV family of vehicles address capabilities gaps and increase force protection, survivability, fuel-efficiency, capacity, maneuverability and automotive safety balanced with the total cost of ownership. Vehicles also must meet current weight and dimension requirements for transportability aboard ships and aircraft.

The work that Oshkosh Truck will perform involves a component technology review and the development of modeling and simulation programs, as well as conceptual designs of future technologies for the JLTV program. Work is expected to be completed during the second

quarter of fiscal 2007.

### Term of the day

## External Gun Tank



It is an unconventional tank in which the gun is mounted in a separate mini-turret above the hull. The crew, usually three, in order to accommodate an autoloader, is located in the hull and hence all surveillance and target acquisition have to be accomplished by the use of remote viewing devices.

Of all the unconventional concepts, the external gun shows the most promise. If the crew can be contained entirely below the turret ring then their chance of survival is greatly enhanced. The gun is mounted on a plinth which is itself mounted on a rotating platform. Thus, the target presented when engaging the enemy is remarkably small. As the gun is entirely supported by the external trunnions, the height of the turret roof does not come into the calculations and the tactical height of the tank can be reduced considerably.

### Defence Industry

## Stryker Teams Train with New Vehicles



A long wait is over for Stryker Mobile Gun System (MSG) crews of the 4th Brigade, 2nd Infantry Division.

The 2nd Battalion, 23rd Infantry, received its complement of MGS vehicles last month after more than a year of waiting. They are the first vehicles to be fielded in the Army.

"I think its going to give the infantry a whole new dimension of what they can do. Armor and infantry have kept each other at arm's length for years and years," said Sgt. 1st Class David Cooper, an MGS platoon sergeant with B Company, 2-23 Inf. "We've got some growing pains, but once we get out there and they see what we can do, we're going to be everybody's friend."

Each infantry company is slated to receive three vehicles, though crews don't expect to operate together except on rare occasions.

The vehicles carry crews of three, and are equipped with a 105 mm main gun and a state-of-the-art fire control system. The MGS also has an onboard coaxial machine gun that's fire controlled.

"You can literally shoot smiley faces with it at 900 meters," said Cooper. "Even minus the big gun we can give the infantry a lot of support."

The 105 mm is capable of firing four types of rounds: SABOT, a depleted-uranium armor-piercing round; HEAT, high-explosive anti-tank; HEP, high-explosive plastic; and a canister round. The rounds are loaded using a hydraulic auto-loader in the rear of the vehicle.

The HEP and canister rounds give Stryker units new capabilities, especially in urban areas. The HEP can blow holes in reinforced concrete walls, but unlike the rounds from an Abrams, won't continue through the target and into surrounding buildings. The canister provides as effective anti-personnel capability.

"The vehicle's basic role is to support the infantry. It's not there to take on tanks or go toe-to-toe in the wide-open desert like we did with the Abrams," said Sgt. 1st Class William Ozmet, an MGS instructor from Fort Knox, Ky. "Its primary function is blowing a hole in the wall or blowing up bunkers."

Over the past year, the crews have been training with TOW-ITAS Humvees or other Stryker variants. Finally having the vehicles gives the crews a chance to delve into training.

"I can actually start focusing on our training, both on our mission tasks and working with the infantry," said 1st Lt. Christopher Lilley, the MGS platoon leader in B Co.

The MGS also comes equipped with training software that allows Soldiers to train on various engagements in their own vehicles, instead of going to a simulator somewhere else.

Once the 4th Bde. completes training, instructors from General Dynamics Land Systems will move on to equip and train Soldiers in Hawaii and Pennsylvania. Training for those units may change according to lessons learned here, but the vehicle itself is expected to remain mostly unchanged.

"I'm confident that this will turn out to be a successful piece of equipment for us, the infantry and the Army," said Lilley.

### Defence Industry

## iRobot to Deliver PackBot Robots to German Federal Defense Force

BURLINGTON, Mass., - iRobot Corp. (NASDAQ: IRBT) today announced it has signed an agreement with the German Bundeswehr (Federal Defense Force) to deliver 18 iRobot® PackBot® EOD robots, spare parts and repair services this year, with a follow-on option for 22 additional robots in 2007. The bomb disposal robots will be used by German forces to identify and dispose of Improvised

Explosive Devices (IEDs).



iRobot was among six companies that participated in the competitive bid process. The PackBot EOD was selected for its durable, lightweight and compact design – key attributes for executing successful IED missions.

“Military organizations worldwide are embracing new technology to assist 21st century warfighters,” said Helen Greiner, iRobot co-founder and chairman. “iRobot is well positioned to become a global robot supplier as more countries choose to deploy the combat-proven PackBot rather than sending soldiers into dangerous situations.”

This is the second international contract iRobot has announced in recent days. Last week, the company announced an agreement to deliver 30 PackBot robots, spare parts and support to the United Kingdom’s Ministry of Defence. The robots will be used to identify and dispose of IEDs as part of the country’s effort to combat terrorism.

PackBot continues to grow in popularity because of its modular architecture, which allows developers to integrate various payload capabilities that help to keep first responders and troops out of harm’s way.

To date, iRobot has delivered more than 500 PackBot robots to a broad range of military and civilian customers worldwide. The robots have performed tens of thousands of missions in Iraq and Afghanistan and are credited with saving soldiers’ lives.



### Contracts

#### BAE Systems Bofors Wins Artillery Order from Sweden



BAE Systems Bofors has received a contract worth SEK 40 million from the Swedish Defence Materiel

Administration for detailed design work on the Archer program. The contract includes an additional option worth up to SEK 50 million.

Archer is a self-propelled 155 mm artillery gun based on a commercial off-the-shelf chassis, originally made for construction equipment, allowing for a system that is both simple and inexpensive to maintain. The three-man crew - as opposed to the normal six to 10 - operates all activities through computers in the splinter-proof cab. Each gun carries shells required to perform its mission. An Archer gun provides the same operational capability as four to six traditional guns.

BAE Systems Bofors previously delivered two demonstrator guns that are now undergoing testing by the Swedish Armed Forces. Order of the final development of a series of 24 guns (two artillery battalions) is planned for 2007-2008 with the first delivery in 2009. Final delivery is scheduled for two years later.



### Contracts

#### ArmorWorks Receives Second Army Delivery Order for Side Armour

ArmorWorks, a leading provider of advanced armour products, announced the receipt of its second delivery order from the U.S. Army to provide Enhanced Side Ballistic Inserts.

This order is pursuant to the company's ongoing \$543 million ID/IQ contract with the U.S. Army on which the company had previously announced commencement of fulfillment ahead of schedule.

ArmorWorks is also currently fulfilling U.S. Department of Defense contracts for advanced armour including Enhanced Small Arms Protective Inserts, vehicle armour and aircraft armour.



### Defence Industry

#### Mowag Piranha IIIC Selected by Belgium



The Belgian Government announced that the MOWAG PIRANHA IIIC had been selected from five candidates for the delivery of up to 242 vehicles and related logistics support, with a total contract value of over EURO500 million, for the Belgian Army's Armoured Infantry Vehicle Program.

This sales success in Belgium represents the largest single order ever awarded from a European NATO member in the history of the Swiss technology-based company. Deliveries will commence in 2007 and will

extend to 2015 for the total quantity including options.

With the worldwide operating PIRANHA IIIC 8x8, the technology-based company from Kreuzlingen, Switzerland offers a proven product, which fulfils this high-ranking requirement of protection, mobility, and mission flexibility.

Main vehicle sub-systems include the CMI 90mm Turret, the ELBIT 30mm Overhead Weapon Station, the FN Herstal ARROWS 12.7mm Overhead Weapon Station, all with OIP electro-optical aiming systems, the THALES Belgium Communication System, Threat detection Systems for Lasers and Small Arms (OIP) and the Pearson Sur-face Mine Plough and Dozer Blade.

A main focus was paid by MOWAG to offer a product with high commonality and compatibility within the AIV fleet itself, other vehicles of the Belgium Army and NATO countries. PIRANHA III 8x8 vehicles are in series production since 1997 and continuously developed to include the most modern technology available on the market. A vast number of specific vehicle variants based on the PIRANHA III 8x8 have already been built for various customers including NATO and European Countries, USA, Canada, Denmark, Spain, Ireland, Sweden and Switzerland including the variants specified by the Belgium customer thus giving the PIRANHA solution offered, a very high production readiness. The 242 PIRANHA IIIC 8x8 will be delivered in seven variants to solve specific operational tasks: APC, C30, direct fire capability, command post, engineering, ambulance and recovery.

Delivery of the first 138 vehicles to the Belgian Army will take place from 2007 to 2012. Optional second and third batch vehicles would be delivered from 2012 to 2015. Initial vehicles, MOWAG Driveline and Suspension systems and other components will be manufactured at MOWAG in Kreuzlingen, Switzerland with the follow-on hull welding and vehicle assembly being conducted at the facilities of the MOWAG partners Jonckheere and CMI in Belgium.

The MOWAG proposal further includes a comprehensive Industrial Benefit Programme worth 100% of the contract value in Belgian value added combining direct work, semi-direct effort as well as a significant commitment to other industrial sectors through indirect benefits. The program is proportionally balanced between Flemish and Wallonian companies and will span over the next 12 years.

More than 3000 PIRANHA III based vehicles are in service with or in production for NATO and European countries Denmark, Spain, Ireland, Sweden and Switzerland along with the USA and Canada. The "PIRANHA Group Europe" was formed in 2005 and it is anticipated that Belgium will now join this group as a future user of the PIRANHA vehicle.

The U.S. Army's Future Force Warrior system is one step closer to being fielded as the Ground Soldier System following a successful demonstration in August of its electronic networking capability.

Developed and managed by the U.S. Army Natick Soldier Center with General Dynamics C4 Systems as the lead integrator, FFW is the Army's flagship science and technology program, aimed at integrating "best in class" technologies from the Army's Research, Development, and Engineering Command (RDECOM) enterprise, other government agencies and industry to enhance the combat effectiveness of the Soldier and small combat unit.

NSC has worked with a number of their sister centers, including the Communications and Electronics Research, Development and Engineering Center (CERDEC).

As the lead organization for the FFW ATD, NSC is responsible for the successful integration of all FFW-related technologies developed by government and non-government partners and ensuring that the final product seamlessly incorporates state-of-the-art technologies into one Soldier-friendly package.

The FFW Increment 1 capabilities demonstrated at the OTM included: SCU integration into the future force network via the Soldier Radio Waveform; demonstration of the Soldier Protective Individual Equipment System, an advanced body armor and load carriage system; demonstration of cooperative engagement/networked fires using digital target handoff and Non Line of Sight fire; demonstration of headgear thermal and Image-Intensification sensor fusion; demonstration of system voice control; and simulation of physiological status monitoring.

In addition, the FFW early Increment 2 capabilities demonstrated at OTM included: demonstration of Leader level Command and Control via FalconView (leveraged from the Air Force), system voice control, integrated Class I Unmanned Aerial Vehicle imagery, look-down display integrated into combat goggles, and advanced power management devices to extend mission duration; demonstration of Soldier level Situational Awareness leveraged from CERDEC's Command and Control Mobile Intelligent Net-Centric Computing System program; Warrior Physiological Status Monitoring; and deeper integration of electronics into the FFW combat ensemble.

## Contracts

### Ceradyne Receives \$13.3M Ceramic Body Armour Orders for the U.S. Army

Ceradyne, Inc. received from the U.S. Army, Aberdeen Proving Ground, Maryland, two ceramic body armour delivery orders in the total amount of \$13.3 million.

The orders are for \$9.9 million of ESAPI and \$3.4 million of ESBI (side plates) to be shipped late in 2006. These new delivery orders will be shipped against larger indefinite delivery/indefinite quantity contracts

## Defence Industry

### U.S. Army's Future Force Warrior Passes Major Milestone

announced earlier.

Dave Reed, Ceradyne president of North American operations, commented: 'We are pleased that the Army continues to issue ESAPI and ESBI orders to our Company. Our expanded capacity in Costa Mesa, California, and Lexington, Kentucky, will allow us to meet the Army's quality and delivery requirements. We continue to expect additional orders, including an order later this year for delivery during the balance of 2006 and early 2007'.

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### Defence Industry

#### General Dynamics Awarded \$20M in Army Pacts for Work on the Stryker Vehicles



The U.S. Army awarded General Dynamics Corp. a pair of contracts worth more than \$20 million for work on Stryker combat vehicles.

Both awards are contract modifications valued at about \$20.4 million combined for repair of Strykers returning from Operation Iraqi Freedom.

Work on one order will be performed in Sterling Heights, Mich., and London, Canada, and is expected to be completed by Dec. 31. Besides those two cities, work on the second order also will be performed in Doha, Qatar, and is expected to be completed by June 30, 2007.

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### Future Technologies

#### Shieldall - A Breakthrough In Armor Protection Capability

Battelle has announced it has developed a next-generation composite armor material, exclusively licensed to Protected Vehicles for use in the company's ShieldAll armor systems.

The new material is being called a lighter, more capable, and cost-effective armor solution. The Battelle breakthrough material is a uniquely tailored composite that includes ceramics, reinforcing, and patented binders.

Battelle and Protected Vehicles, Inc. collaborated to create the PVI armor system trademarked as "ShieldAll."

At less than 37 percent the weight of steel armor, the Battelle material alone is capable of stopping multiple armor piercing projectiles exceeding a 7.62mm threat as a stand-alone component. When combined with Protected Vehicles, Inc. armoring methodologies, the complete system is capable of stopping threats from 50-caliber armor-piercing shells without the weight

associated with conventional metal or ceramic armor.

The weight of armored steel used in some current up-armor packages causes some vehicles to operate in an overweight condition which can degrade performance, increase maintenance requirements, and decrease overall and component lifecycles of the vehicle.

"The ShieldAll breakthrough means vehicle payloads can be restored, productive life can be extended, and maintenance costs can be reduced," said Scott Versluis, a Commercialization Manager at Battelle.

In addition, the material is being considered for personal armor equipment giving soldiers in the field more mobility while allowing equal or better protection.

"We're pleased to be working with Battelle on this exciting breakthrough," said Garth Barrett, President and CEO of Protected Vehicles, Inc. "We see a tremendous opportunity to advance personal and vehicle protection at a time when this is greatly needed around the world."

Under the exclusive licensing agreement to manufacture and market the armor, the companies have plans to further the armor's capabilities and develop a number of different protection applications and products. Based on readily available components and ongoing involvement from a tier one polymer manufacturer, ShieldAll is available immediately for large-scale production.

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### Defence Industry

#### Rheinmetall to supply electronics for Hellenic Army Leopard 2 tanks



The Hellenic Army has contracted with the Dusseldorf-based Rheinmetall Group to supply electronic diagnostic systems for its Leopard 2 main battle tanks as well as command and information systems for battalion command posts.

A Group subsidiary, Rheinmetall Defence Electronics of Bremen, will execute the multi-million euro order; delivery of the systems is to be completed by 2008.

The order takes the form of a commissioning agreement issued by Germany's Federal Agency for Defence Technology and Procurement on behalf of the Greek authorities. It is based on a government-to-government agreement between Germany and Greece concerning the sale of 183 surplus Leopard 2 main battle tanks and peripheral systems from the Bundeswehr inventory. Another Group subsidiary, Rheinmetall Landsysteme, has been assigned partial responsibility for servicing the vehicles.

New vehicles designed to help protect British forces in Iraq and Afghanistan were demonstrated on Salisbury Plain on 13 September 2006.

Under the new contract, Rheinmetall Defence Electronics is tasked with supplying the necessary hardware and software as well as tactical and technical integration with the NATO-interoperable INIOCHOS command and information system through to battalion level.

The package also encompasses an order for diagnostic testing equipment and systems for all levels of maintenance, including the tank's laser rangefinder and thermal imaging devices as well as a complete mobile testing kit for electronic, optical and optronic components. Moreover, Rheinmetall will supply additional technology for the existing depot testing facility at Velestino, Greece.

The system can be used to test the fire control components of a wide cross section of combat vehicles, including the M48 and Leopard 1 as well as Greece's newly acquired Leopard 2.

Thanks to its subsidiary Rheinmetall Defence Electronics, the Rheinmetall Group is one of the world's leading suppliers of network-enabled reconnaissance and command systems as well as fire control technology.

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### Defence Industry

#### Oshkosh Truck Subsidiary, Pierce, Is First to Introduce Air Bags for Custom Fire Trucks

Oshkosh Truck Corporation's subsidiary, Pierce Manufacturing Inc., North America's leading manufacturer of fire and rescue apparatus, is the first fire truck manufacturer to offer frontal air bags in its custom fire chassis.

The air bags will be available in spring 2007 in Pierce's new Velocity(TM) and Impel(TM) chassis models.

The air bag offering is the latest element in Pierce's 360(degree) Protection From Every Angle(TM) program, a bumper-to-bumper program designed to increase the safety of fire fighters as they respond to and from fire and emergency calls. Pierce introduced the new frontal air bags with the unveiling of its newest custom chassis - the Velocity(TM) - at the Fire Rescue International show in Dallas. The system was co-engineered with LifeGuard Technologies, a division of IMMI, and is available exclusively from Pierce.

The Pierce air bag is also paired with the Pierce Side Roll Protection(TM) system. This system senses the exact moment of a side-roll and then deploys instantaneously seat belt pretensioners and side air curtains. Pierce was the first to introduce this safety technology to the fire service.

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### Defence Industry

#### New Protected Patrol Vehicles for Iraq and Afghanistan Put Through Their Paces

The Minister for Defence Procurement, Lord Drayson, said the Cougar and Vector vehicles were a significant step forward in helping troops in Iraq and Afghanistan to carry out their tasks more safely.

"We are one hundred per cent committed to giving our troops what they need," he said.

"Within force protection there is no perfect solution, it is a high risk business, but these vehicles are really excellent and will offer increased protection."

Vector provides good protection and, importantly, increased mobility and capacity compared to Snatch Landrovers which makes it very suitable for the rugged terrain and long patrol distances in Afghanistan. It is expected that deliveries of Vector will begin early in 2007.

The Mastiff PPV (a variant of the US Cougar) meets the requirement for a well protected, wheeled patrol vehicle with a less intimidating profile than tracked vehicles like Warrior or FV430.

The vehicles will be customised with essential Bowman radios and electronic counter-measures – and then fitted with additional armour beyond the standard level, to ensure they have the best possible protection. They are expected to arrive in Iraq by the end of 2006.

Before the recent announcement of new vehicles, the Ministry of Defence had already spent over BJ527m on Urgent Operational Requirements for Iraq and Afghanistan designed to improve force protection. This is in addition to the planned BJ6bn annual defence procurement budget.

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### Defence Industry

#### Successful Safety Testing of GPS-Guided Artillery Projectile



The Raytheon Missile Systems and BAE Systems Bofors' Excalibur team successfully concluded safety testing of the Excalibur global positioning system-guided 155 mm artillery projectile. Excalibur is the next-generation family of projectiles for U.S. Army and Marine Corps artillery.

The Sequential Environmental Test-Safety (SET-S) series of 15 Excalibur projectiles took place Aug. 24 to 30. The program is a cooperative effort between the United States and Sweden.

The success of the SET-S series brings the team closer to the early fielding goal. The next steps prior to fielding to deployed forces early in 2007 are production verification tests, first-article tests and a limited user test.

The projectiles were fired from an M109A6 Paladin



howitzer during the tests at Yuma Proving Ground, Ariz. The Excalibur rounds in the SET-S firing series were conditioned at extreme hot and cold temperatures, subjected to shock and vibration testing to simulate logistical and tactical transportation, initialized with the portable Excalibur fire control system, and fired at much higher than normal charge levels to demonstrate safety margin in the projectile design. Some of the rounds also were fired at 5 degrees off-axis to demonstrate the projectile's enhanced maneuverability and operational flexibility.

The goal of the SET-S series is to verify that Excalibur is safe to handle, transport, and fire as part of the Army's safety confirmation for fielding. Despite the over-margin test conditions, Excalibur continued to exceed its accuracy requirements. Average CEP (Circular Error Probability) was demonstrated at about 5 meters (16.5 feet), significantly better than the 10-meter (33 feet) requirement. One projectile detonated with devastating effects less than two feet from the target center.

The Excalibur program currently is responding to an urgent request from the warfighter to accelerate fielding because of the projectile's better than 10-meter accuracy that is not available from any other artillery projectile. Because of its accuracy and increased effectiveness, Excalibur reduces the logistical burden for deployed ground forces. It also provides lower collateral damage through its concentrated fragmentation pattern, increased precision and near-vertical descent.

Excalibur produces a wide range of effects in all terrain at extended ranges and in all weather conditions. With 155 mm howitzers part of the standard organization in current operations, Excalibur's precision effects are readily available to small-unit maneuver elements.

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### Term of the day

## Coaxially Mounted Machine Gun (Coaxial Machine Gun)



It is a machine gun that is mounted alongside the main armament and used against suitable targets in order to save main armament ammunition.

The main armament gun controls are used to aim the coaxially mounted machine gun or 'coax', as it is often called. This machine gun is usually of small calibre (7.62-12.7 mm). Most modern battle tanks are armed with 7.62 mm coaxial machine guns.

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### Training And Simulators

## FATS Awarded U.S. Army National Guard Contract for Weapons Simulators

FATS Inc. was awarded a \$2.3 million contract for weapons simulators in support of the U.S. Army National Guard's fielded Combat Arms Training Systems.

The National Guard contract continues a modernization program that began in 2004 and includes virtual training in advanced marksmanship, force escalation and de-escalation judgment, and collective tactical training. These FATS systems facilitate the training of critical tasks required to meet military operational requirements.

Since 1995, FATS has delivered a total of 262 systems and over 2,000 simulated weapons to the Army National Guard.

(FATS Inc. is a leading provider of simulated weapons training systems for military and law enforcement organizations around the world.)

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### Defence Industry

## Globecomm Systems Receives \$2.7M Contract Mod. to Support the Afghan National Army

Globecomm Systems Inc., a global provider of end-to-end satellite-based communications solutions, received a contract modification in the amount of \$2.7 million to support a communication network for the Afghan National Army (ANA).

On September 12, 2005, Globecomm announced a \$7.4 million contract, through DasNet Corporation, to provide all the equipment and personnel necessary to support a communications network for the ANA allowing communications between the Afghan Ministry of Defense and the ANA, which included options, some of which have now been exercised. The contract includes options yet to be exercised for three more years of follow-on-support. The contract is fully funded by the U.S. Government.

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### Contracts

## Stewart & Stevenson Tactical Vehicle Systems L.P. was awarded order amount of \$24,791,268

Stewart & Stevenson Tactical Vehicle Systems L.P., Sealy, Texas, was awarded on Sept. 26, 2006, a delivery order amount of \$24,791,268 as part of a firm-fixed-price contract for refurbishment of Family of Medium Tactical Vehicles.

Work will be performed in Texarkana, Texas, and is expected to be completed by Sept. 30, 2008. Contract funds will not expire at the end of the current fiscal year. This was a sole source contract initiated on June 27,

2006. The U.S. Army Tank-Automotive and Armaments Command, Warren, Mich., is the contracting activity (W56HZV-06-D-0345).



Va., employs approximately 81,900 people worldwide and had 2005 revenue of \$21.2 billion. The company is a market leader in mission-critical information systems and technologies; land and expeditionary combat systems, armaments and munitions; shipbuilding and marine systems; and business aviation. More information about the company can be found at [www.generaldynamics.com](http://www.generaldynamics.com).

### Contracts

#### General Dynamics Awarded \$45 Million Contract to Produce MK19 Grenade Machine Guns



CHARLOTTE, N.C. - General Dynamics Armament and Technical Products, a business unit of General Dynamics, was awarded a \$44.5 million contract by U.S. Army TACOM-ARDEC for the production of MK19 grenade machine guns. Deliveries will commence in January 2007 and extend through December 2008.

The MK19 is capable of firing up to 400 grenades per minute and can provide lethal fire against a variety of targets, including lightly armored vehicles and dismounted infantry. Its high lethality and broad versatility make it the prime choice of the U.S. Armed Forces as an essential weapon in both offensive and defensive operations.

Program management will occur at the company's Burlington, Vt., facility. Production work will be performed at General Dynamics Armament and Technical Products' Saco, Maine, facility, which has produced more than 33,000 MK19 systems for the U.S. government and its allies since 1984.

General Dynamics Armament and Technical Products, Inc., located in Charlotte, N.C., provides a broad range of system solutions for military and commercial applications. The company designs, develops and produces high-performance armament systems; a full range of advanced composite-based products; biological and chemical detection systems; and mobile shelter systems. More information about General Dynamics Armament and Technical Products can be found on the World Wide Web at [www.gdatp.com](http://www.gdatp.com).

General Dynamics, headquartered in Falls Church,