

# Army Guide monthly



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**Term of the day****Arquebus**

The arquebus (sometimes spelled harquebus, harkbus or hackbut; from Dutch haakbus, meaning "hook gun") was a primitive firearm used in the 15th to 17th centuries.

Like its successor, the musket, it was a smoothbore firearm, although somewhat smaller than its predecessors, which made it easier to carry. It was a forerunner of the rifle and other longarm firearms.

Heavy arquebuses mounted on wagons were called arquebus *à croc*. These carried a ball of about 3.5 ounces.

As low-velocity firearms, they were used against enemies that were often partially or fully protected by steel-plate armour. Plate armour was standard in European combat from about 1400 until the middle of the 17th century. This was essentially the era of the arquebus. Good suits of plate would usually stop an arquebus ball at long range. It was a common practice to "proof" (test) armour by firing a pistol or arquebus at a new breastplate. The small dent would be circled by engraving, to call attention to it. However, at close range, it was possible to pierce even the armor of knights and other heavy cavalry. This led to changes in plate design like three-quarter plate and finally the retirement of plate armor altogether.

The arquebus was fired by a matchlock mechanism and had a larger bore than its predecessors. From the middle of 16th century, newer wheellock mechanisms were used instead of older matchlocks. The flared muzzle of some examples made it easier to load the weapon. The name 'hook gun' is often claimed to be based on the bent shape of the arquebus' butt. It might also be that some of the original arquebuses had a metal hook near the muzzle that may have been used for bracing against a solid object to absorb recoil. Since all the arquebuses were handmade by various gunsmiths, there is no typical specimen.

**Defence Industry****Steyr-led team completes first 17 Pandur II vehicles within contract requirements**

Steyr, a part of General Dynamics European Land Systems, announced today that the first 17 Pandur II wheeled armoured vehicles to be manufactured for the Armed Forces of the Czech Republic (AFRC) under a contract awarded in June 2006 are fully operational, combat-ready and ready for delivery from the Steyr facility in Vienna.

The vehicles are being produced by a team that includes Czech subcontractors who will contribute more

than 40 percent of the components in the Pandur II vehicles once serial production begins.



The first 17 vehicles were manufactured within the tight timeline established by the Czech Army, a direct result of good coordination between Steyr and its Czech subcontractors. The involvement of Czech industry was one of the AFRC's main preconditions in selecting a contractor for this program, and has required significant investment by members of the Steyr team.

"These first seventeen vehicles are fully operational and combat ready. They have proved their capabilities in MOD testing and training, and could go into service immediately to provide improved armour and mine protection for Czech soldiers," said Stefan Szűcs, project manager for the Pandur program.

Mr. Szűcs added, "There are currently more than twelve direct Czech subcontractors involved in the project, enabling us to meet the local-content condition set by the Czech government."

Steyr and AFRC are discussing plans to implement several minor modifications to the vehicles, requested as a result of opportunities identified during readiness testing, in the near future.

**Timeline of the preparation and production of the vehicles**

In June 2006, the Czech Republic awarded the contract for the delivery of 199 Pandur II 8x8 wheeled armoured carriers to Defendia CZ, a Czech subsidiary of Steyr-Daimler-Puch Spezialfahrzeug GmbH (Steyr SFF) and its parent group, General Dynamics European Land Systems. Beginning with the 18th vehicle, most Pandur IIs will be manufactured in the Czech Republic. The vehicles include many advanced Czech components such as the combat information system, communication equipment and optical systems. All 199 vehicles will be delivered to the AFRC before the end of 2012.

Through this competitive procurement, the AFRC will receive one of the most-advanced wheeled armoured carriers in the world, the Pandur II 8x8. The Pandur vehicles will be made in a total of 18 configurations, including 63 armoured personnel carriers (APC). The vehicles will be equipped with a Rafael remote-controlled weapon system (RCWS 30) and a Spike-LR anti-tank guided missile launcher. The Pandur II 8x8 APC is designed so that it can be transported in combat configuration aboard C-130 cargo aircraft. In addition to manufacturing the vehicles, the Steyr-led consortium of leading Czech and international companies also will supply full training and logistical support for the Pandur IIs.



## Contracts

### U.S. Army Awards GD \$16 M for Abrams Tank System Technical Support

Sterling Height, Mich. - The U.S. Army TACOM Life Cycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics, a \$16 million contract for Abrams Tank System Technical Support (STS).

The award will fund engineering studies on Abrams main battle tanks to identify improvements and replace obsolete parts to maintain the tanks at high operational readiness rates. The work will be performed by existing General Dynamics Land Systems employees in Sterling Heights, Michigan. It is expected to be completed by December 31, 2011.



## Term of the day

### Anti-tank gun



Anti-tank gun is a gun designed to destroy armored vehicles. In order to penetrate the armor of tanks and other armored vehicles, it fires high-velocity shells.

Prior to World War II, anti-tank guns were relatively small, with anti-tank rifles primarily used for destroying tanks. Few had calibres larger than 50 mm. With the rapid improvement in tank armor and guns, anti-tank guns increased in calibre, firing larger shells at greater velocities. One of the most widespread and successful of these was the

German 88 mm gun, which was originally developed as an anti-aircraft gun but later found widespread use in destroying tanks. Likewise, by the end of the war, all sides were using guns with diameters of 90 mm and up.

World War II also saw the mounting of antitank guns on vehicle chassis, sometimes armored, as a cheap substitute for a full-fledged tank. Some had open turrets, while others did not have rotating turrets at all, meaning that the whole vehicle had to be rotated to aim the gun. Americans called these vehicles tank destroyers.

At the start of World War II many of these weapons were still being used operationally, along with a newer generation of light guns that closely resembled their WWI counterparts. In combat both proved entirely useless against the larger and better armored tanks they faced. For instance, the German army had recently introduced a new lightweight 37-mm gun, whose users quickly nicknamed it the "armored door knocker" because all it seemed to do was announce its presence.

All combatants quickly introduced newer and more powerful guns, and the anti-tank rifle had largely

disappeared by 1942. The "average" gun by 1943 was 50 mm or larger, the Germans had an excellent 50-mm high-velocity design, while the British introduced the "6-pounder" which was also adopted by the US Army as the 57 mm. A year later, sizes had grown due to pressure on the Eastern Front, German guns were now 75 mm and the famous

88 mm. The Soviet Red Army used a variety of general-purpose 100-mm and 122-mm guns. The British 17 pounder was less at 77 mm but delivered its armour piercing shell at high speed.

As the guns grew in size they dropped in mobility, making the dedicated anti-tank gun less effective in the attack than in defence. This gave impetus to the development of the tank destroyer, an armoured vehicle sacrificing the tougher capabilities of the tank (in the German cases) or some protection for a more effective anti-tank capability.

By the end of the war the concept of the dedicated anti-tank gun was completely dead, as the guns were so large that they were essentially immobile.



## Defence Industry

### Greek military seeking to buy more than 400 armored vehicles from Russia

ATHENS, Greece: The Greek government on Wednesday gave the go-ahead for the country's military to open talks on buying some 420 armored vehicles from Russia, an official said.

A Defense Ministry official said senior Cabinet officials approved the start of "substantive negotiations" on the purchase, which would include talks on possible joint production of the medium-sized tanks.

The official could not say how much the deal would be worth. He was speaking on customary condition of anonymity.

State NET television said some €1.2 billion (US\$1.8 billion) had been budgeted for the military vehicles.

Greek Prime Minister Costas Karamanlis is expected to pay an official visit to Russia on Dec. 17-19.

The government also decided to send up to 12 more military instructors to Afghanistan, where 170 Greek troops are stationed.



## Training And Simulators

### U.S. Marine Corps contracts Arotech's FAAC Subsidiary to expand its USMC Operator Driving Simulator to encompass Mine Resistant Ambush Protected (MRAP) Vehicles

Arotech Corporation announced that its Training and Simulation Division's FAAC subsidiary, has recently received a contract modification from the U.S. Marine Corps Systems Command, Program Manager for Training Systems (PM TRASYS).

The order calls for FAAC to expand the capabilities of

currently contracted USMC Operator Driving Simulators (USMC ODS) to include Cougar Category (Cat) I MRAP operations. USMC ODS systems fielded to major active-duty installations will have the Cougar Cat I MRAP capability added to the existing systems which currently provide simulation based training on MK-23 and M1114 Up-Armored HMMWV operations.

FAAC's Operator Driving Simulators are being taken to the next level by the Marine Corps as they add vehicle types and increase the tactical training scenarios in an effort to best prepare Marine operators for deployment. The USMC ODS, using a generic tactical vehicle cab, interchangeable dash panels, simulated armor panels, and high-fidelity vehicle dynamics software, provides the Marine Corps with an extremely capable, cost-effective training tool.

"With the urgency of need for MRAPs in theater, maintaining an adequate inventory of vehicles at home-station for training remains difficult. MRAP driver simulators are key, in that they provide the Marine Corps the opportunity to maintain the requisite level of MRAP driver training and still push a high volume of vehicles to the area of operations. Now, more than ever, it is imperative that our Marines understand how to and are comfortable operating this new breed of truck," said Colonel Frank Kelley, Commander PM TRASYs. "PM TRASYs appreciates FAAC Incorporated's support of this important requisite to safety as we move forward with the MRAP driver simulation effort and begin familiarizing our Marines with these important, life-saving assets. The MRAP ODS provides fielding and operational flexibility to MARCORSYSCOM by training drivers while maintaining delivery in theater," concluded Colonel Kelley.

"FAAC's proactive initiation of an independent research and development effort at the first indication of US armed forces' need for MRAP training has allowed this important capability to be made available on an accelerated schedule to prepare Marines for deployment," noted Kurt Flosky, FAAC Executive Vice President. "The USMC's Program Manager for Training Systems and Marine Corps Training and Education Command continue to lead the way in identifying those areas in which simulation technology can significantly increase the individual readiness of Marines as well as the collective operational readiness of deploying units, both Active and Reserve."

### **About Arotech's Training and Simulation Division**

Arotech's Training and Simulation Division develops, manufactures, and markets advanced high-tech multimedia and interactive digital solutions for use-of-force and driver training of military, law enforcement, security, municipal and private industry personnel. The division's fully interactive driver-training systems feature state-of-the-art vehicle simulator technology enabling training in situation awareness, risk analysis and decision-making, emergency reaction and avoidance procedures, and conscientious equipment operation. In addition, the division's use-of-force training

products and services allow organizations to train their personnel in safe, productive, and realistic environments. The division also provides pilot decision-making support software for the F-15, F-16, F-18, and JSF aircraft, as well as simulation models for the ACMI/TACTS air combat training ranges.

Arotech's Training and Simulation Division consists of FAAC Incorporated and IES Interactive Training Inc.

### **About Arotech Corporation**

Arotech Corporation is a leading provider of quality defense and security products for the military, law enforcement and homeland security markets, including multimedia interactive simulators/trainers, lightweight armoring and advanced zinc-air and lithium batteries and chargers. Arotech operates through three major business divisions: Training and Simulation, Armor, and Battery and Power Systems.

Arotech is incorporated in Delaware, with corporate offices in Ann Arbor, Michigan, and research, development and production subsidiaries in Alabama, Michigan, and Israel. For more information on Arotech, please visit Arotech's website at [www.arotech.com](http://www.arotech.com).

### **Contracts**

#### **Navistar Affiliate Wins A \$151.9 Million Contract To Provide Parts And Support For MAXXPRO MRAP Vehicles**



WARRENVILLE, Ill. -- The more than 350 International® MaxxPro™ Mine Resistant Ambush Protected (MRAP) vehicles in Iraq will continue to receive parts and support as the U.S. Marine Corps today awarded Navistar International Corporation's military affiliate, International Military and Government, LLC a contract valued at \$151.9 million.

This supplements previous parts and components contract awards, now totaling nearly \$300 million.

The U.S. Marine Corps has ordered 2,971 MaxxPro MRAP vehicles to date to be delivered by April 2008. Overall, these vehicle, parts and support contracts total more than \$1.8 billion.

"With our vehicles now in theater, Navistar's global network provides the U.S. armed forces with the essential support they need to keep the MaxxPro MRAP mission ready," said Archie Massicotte, president of International Military and Government, LLC.

Navistar's commercial scale brings the military unique advantages in engineering, manufacturing and parts and service support. The company has nearly 1,000



dealership locations worldwide, including facilities in 75 countries outside North America, including Iraq and Afghanistan.

"We are bringing the total package to the military – vehicles, parts and field support," said Tom Feifar, general manager, Global Defense and Export, Navistar Parts. "Our goal is to keep these vehicles up and running so the troops can focus on their mission. It's an honor to be a part of the effort to support our troops."

Last year, Navistar built more than 160,000 trucks and school buses and 560,000 diesel engines.

"We already have delivered more than 700 MaxxPro MRAP vehicles and 60,000 parts pieces and components since receiving our first contract at the end of May of this year. We are on our way to building 500 vehicles per month by February," concluded Massicotte.

International Military and Government LLC is a wholly-owned subsidiary of International Truck and Engine Corporation. IMG was established to focus on military and government opportunities. Additional information is available at [www.InternationalMilitaryandGovernment.com](http://www.InternationalMilitaryandGovernment.com).

Navistar International Corporation (Other OTC: NAVZ) is a holding company whose wholly owned subsidiaries produce International® brand commercial trucks, military vehicles, MaxxForce brand diesel engines, IC brand school 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 wholly owned subsidiary offers financing services. Additional information is available at [www.Navistar.com](http://www.Navistar.com).



## Defence Industry

### Raytheon to Provide Surveillance Systems to NATO

TEWKSBURY -- Raytheon Company has been awarded a \$5.3 million contract by NATO Maintenance and Supply Agency to provide tower-based, elevated persistent surveillance capability for protection of NATO forces in Afghanistan.

The Enhanced Surveillance Systems has similarities to Rapid Aerostat Initial Deployment (RAID) systems currently deployed by the U.S. Army in Iraq and Afghanistan. In addition to providing the enhanced surveillance systems equipment, Raytheon will also provide all logistics support services required to keep the systems operational.

"This award demonstrates the recognized value of Raytheon's persistent surveillance systems to defense forces worldwide," said Pete Franklin, vice president, National and Theater Security Programs, for Raytheon Integrated Defense Systems (IDS). "Raytheon is proud to have been selected by NATO to provide this critical capability, and we are committed to rapidly delivering

these life saving systems to our coalition forces."

Raytheon first developed RAID to meet the military's critical need for persistent surveillance in Operation Enduring Freedom and Operation Iraqi Freedom. RAID consists of infrared and other sensor systems, elevated on a stationary platform, capable of detecting hostile troop and equipment movement at great distances. This capability enables U.S. and coalition forces to respond rapidly to threats.

Work will be performed at IDS' Integrated Air Defense Center, Andover, Mass., and at Raytheon's Warfighter Protection Center, Huntsville, Ala.

Integrated Defense Systems is Raytheon's leader in Joint Battlespace Integration providing affordable, integrated solutions to a broad international and domestic customer base, including the U.S. Missile Defense Agency, the U.S. Armed Forces and the Department of Homeland Security.

Raytheon Company, with 2006 sales of \$20.3 billion, is a technology leader specializing in defense, homeland security and other government markets throughout the world. With headquarters in Waltham, Mass., Raytheon employs 73,000 people worldwide.



## Contracts

### DRS Receives a \$6 M Award to Manufacture the Components of the U.S. Army's Large Capacity

Parsippany, N.J. -- DRS Technologies, Inc. announced that it received a follow-on \$6 million award from the Hunter Manufacturing Company in Solon, Ohio, to manufacture several components that comprise the U.S. Army's Large Capacity Field Heaters (LCFH).

The work for this award will be performed by the company's DRS Sustainment Systems business unit in St. Louis, Missouri. DRS is scheduled to immediately start manufacturing and delivering the heaters with completion expected in August 2008.

This follow-on award is part of a 10-year Indefinite Delivery/Indefinite Quantity (ID/IQ) contract DRS has with the Hunter Manufacturing Company and the U.S. Army Soldier Systems Center in Natick, Massachusetts. This is the second award DRS has received via this contract since August 2006 when the LCFH entered the Army's full-rate production phase. To date, the total value of DRS' ID/IQ contract is approximately \$12 million.

Prior to the full-rate production phase, DRS manufactured several components of the heaters for the Hunter Manufacturing Company, which were delivered to the U.S. Army Soldier Systems Center as part of the system development and demonstration phase and the low-rate initial production phase. The Hunter Manufacturing Company is responsible for integrating the DRS-built components such as the heater's main structure made of sheet metal, heat exchanger, and burner assembly, with its own diesel engines, control

panels, and fuel system to complete the production of each heater.

"This contract is another example that proves DRS is one of the preeminent suppliers of large-scale field equipment and systems to the U.S. Army," said Thomas G. Cornwell, president of DRS' Sustainment Systems business segment. "With our world-class engineering talent and manufacturing facilities, DRS can provide deployed military forces with the most reliable equipment available to help them accomplish their missions."



### Defence Industry

#### Patria Delivers the First Slovenian Configuration AMV Vehicle Ahead of Schedule



Half a year ahead of schedule, the first Slovenian configuration Patria AMV 8x8 APC vehicle was delivered to the customer today.

The vehicle was manufactured in Finland where also the Slovenian partners have been trained. After extensive end user tests starting as of now, the vehicle will be additionally customised at the Gorenje INDOP facilities in Sostanj, and will be ready for final hand-over later next spring.

"The delivery of this vehicle in such a short time is a result of our proven serial production process which already runs successfully in two countries. In Slovenia, the cooperation with the customer and our partners is going well and we are confident that together we shall reach all our goals. Technology transfer to Slovenia has been partially completed and local production started in the new Gorenje INDOP facilities in the beginning of November 2007", stated Mr Heikki Hulkonen, Executive Vice President from Patria.



### Future Technologies

#### GD Successfully Completes Future Combat Systems Phase I Robotic Convoy Experiment

WESTMINSTER, Md. – General Dynamics Robotic Systems successfully completed Phase I of the Future Combat Systems (FCS) Robotic Convoy Experiment (RCX) at White Sands Missile Range.

The unmanned Stryker vehicle reached speeds up to 55 kilometers per hour (34 mph). General Dynamics

Robotic Systems is a part of General Dynamics Land Systems (Sterling Heights, Michigan), a wholly owned subsidiary of General Dynamics (NYSE: GD).



As part of the company's Autonomous Navigation System contract with the U.S. Army, the Phase I experiment is designed to test basic robotic convoy functionality and accuracy with obstacle detection and avoidance technology.

The test vehicles were a Stryker Infantry Carrier Vehicle and Light Medium Tactical Vehicle (LMTV).

"We received positive results from our team at White Sands," said Phil Cory, president of General Dynamics Robotic Systems. "The current preparations position us for a successful Phase II experiment in July 2008."

Stryker, LMTV and Medium Tactical Vehicles (MTV) are expected to be used during Phase II testing. The robotic experiment is being funded under a contract to develop the Autonomous Navigation System for FCS. General Dynamics was awarded the task order because of its technology development on previous robotic convoy experiments and demonstrations.



### Contracts

#### GD Awarded \$22 M to Support DHS National Coordinating Center

The Department of Homeland Security (DHS) has awarded General Dynamics a task order to provide 24-hour-per-day, 7-day-per-week watch-officer, technical, analytical and liaison support to its National Coordinating Center (NCC).

The award has a maximum potential value of \$21.8 million over 50 months if all options are exercised.

Under the task order, General Dynamics will provide NCC watch-officer support and the necessary expertise to execute the NCC's mission in the areas of information-assurance analysis, document development, requirements development, liaison support and information system support.

"General Dynamics has supported the National Coordinating Center since 2001 and we look forward to continuing our partnership and assisting the NCC team with its growing mission," said Rick Finn, director of critical infrastructure protection solutions for General Dynamics Advanced Information Systems.



### Robots

#### iRobot Wins \$286 Million U.S. Army Contract

Company Selected to Deliver up to 3,000 Military Robots in Expanded, Broad-Scale Robot Deployment to U.S. Infantry Forces.

contract award for an additional 3,126 Mine Resistant Ambush Protected (MRAP) vehicles to be manufactured and completed by end of July 2008.

iRobot Corp. today announced it has been awarded the xBot contract, a \$286 million Indefinite-Delivery/Indefinite-Quantity (IDIQ) contract from the U.S. Army Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI), on behalf of the Robotic Systems Joint Project Office at Redstone Arsenal, Ala. Under the terms of the contract, the Army could order up to 3,000 military robots, spare parts, training and repair services over the next five years.

The award marks a turning point in the way the Army uses robots in combat, which until now have been deployed in limited numbers only to explosive ordnance device (EOD) specialists. With this award, the Army broadens the deployment of robots in larger scale to general infantry forces for a variety of critical missions in addition to EOD. iRobot immediately will begin to deliver the first 101 robots for urgent deployment.

"This new generation of robots is set to arrive in theater and change the way the Army fights," said Joe Dyer, president of iRobot Government and Industrial Robots. "Robots give our troops the distinct advantage of completing critical missions at a safe distance; more robots create a greater strategic advantage. We are honored to serve our troops by delivering these robots for urgent deployment."

iRobot was selected to fulfill the contract as the lowest priced, technically qualified bidder deemed able to deliver as a responsible contractor. iRobot's winning xBot prototype robot is based closely on the combat-proven iRobot® PackBot® military robot platform. xBot is a generic name, and the robots delivered to forces under the contract will be named iRobot PackBot 510 with FasTac Kit. These robots are smaller and lighter than the iRobot PackBot 510, with a robust gripper and an observation mast equipped with a low-light-capable zoom camera.

iRobot has delivered more than 1,200 PackBot robots, which are at work conducting dangerous missions while warfighters remain out of harm's way.

Four manufacturers received the delivery orders totaling just under \$2.66 billion.

MRAPs, with more than 1,200 in theater, have proven their value by saving the lives of warfighters by mitigating blast effects through the uniquely designed V-shaped hull and raised chassis. This contract award by the MRAP Vehicle Joint Program Office continues the rapid procurement and acquisition process for these life-saving vehicles with the release of four delivery orders resulting in a total of 11,941 vehicles in the life-saving fleet by mid-summer. The total approved acquisition objective for all services is 15,374 which includes vehicles produced for training and testing purposes.

Stewart and Stevenson Tactical Vehicle, a Division of Armor Holdings and more recently BAE Land Systems, received a firm fixed priced delivery order for the purchase of 668 Category II vehicles with Category I seat configuration. The company is now operating under the name, BAE-TVS.

BAE Systems Land and Armaments, increased their participation in the program by 600 bringing their total vehicle count to more than 1,730. The vehicles will be Category II vehicles.

Force Protection Industries, Inc. will add another 358 (178 Category I and 180 Category II) vehicles to their vehicle commitment.

The largest single delivery order to date has been issued to International Military and Government LLC for 1,500 Category I vehicles.

All four delivery orders include vehicles, integrated logistics support (ILS), sustainment items and engineering change proposals designed to increase vehicle capability.

Marine Corps Systems Command, Quantico, Va. serves as the lead contracting activity for the MRAP Vehicle Joint Program Management Office.

## Defence Industry

### MRAP Vehicle Orders Top 11,900



The Department of Defense today announced a

## Term of the day

### Bomb



A bomb is an explosive device that generates and releases its energy very rapidly.

The explosion creates a violent, very destructive shock wave. Bombs cause destruction and injury to objects and living things within the blast radius by the crushing



action of the shockwave (pressure) and by mechanical impact of fragments, including shards of the bomb casing (often called "shrapnel") or objects from the surrounding area propelled by the blast. Bombs have been used for centuries in both conventional and unconventional warfare. Most bombs do not contain more energy than ordinary fuel, except in the case of a nuclear weapon.

The word comes from the Greek word  $\text{ΟΠΠΗΟjOIOiΠ}$ , (bombos), an onomatopoeic term with approximately the same meaning as "boom" in English.

Bombs are first and foremost weapons; the term "bomb" is not usually applied to explosive devices used for civilian purposes, such as construction or mining, although the people using the devices may sometimes refer to them as bombs. Many military explosive devices are not called "bombs". The military mostly calls airdropped, unpowered explosive weapons "bombs," and such bombs are normally used by air forces and naval aviation. Other military explosive devices are called grenades, shells, depth charges (used in water), warheads when in missiles, or land mines.

Experts commonly distinguish between civilian and military bombs. The latter are almost always mass-produced weapons, developed and constructed to a standard design out of standard components and intended to be deployed in a standard way each time. By contrast, civilian bombs are usually custom-made, developed to any number of designs, use a wide range of explosives of varying levels of power and chemical stability, and are used in many different ways. For this reason, they are generally referred to as improvised explosive devices (IEDs).



## Contracts

### **\$1.2 Billion Award From U.S. Marine Corps To NAVISTAR Affiliate For More MAXXPRO™ MRAP Vehicles**



Largest Single Order to Date of 1,500 MaxxPro MRAP Vehicles; Navistar Captures Nearly 50 Percent of Military's Orders.

Making its largest single order to date of Mine Resistant Ambush Protected (MRAP) vehicles, the U.S. Marine Corps today ordered 1,500 additional MRAP vehicles valued at nearly \$1.2 billion from International Military and Government, LLC, a wholly owned affiliate

of Navistar International Corporation.

Navistar captured nearly 50 percent of the industry-wide orders announced by the military today. Overall, Navistar's MRAP orders total nearly \$3 billion since the first contract was awarded in May.

The new order increases Category I MRAP vehicle orders to 4,471 to be delivered by the end of July 2008. The new order totals \$1,183,141,218.40. MaxxPro MRAP vehicles are designed to protect troops from roadside bombs and other threats. This contract award also includes funding for Navistar's parts and support programs for MRAP vehicles.

A revised engineering design of the Category I MaxxPro MRAP vehicle increases protection and expands payload for greater mission flexibility such as more cargo and crew capacity and vehicle applications.

As orders continue for these vehicles, Navistar has delivered 60,000 parts pieces, components and other field support services to keep the more than 700 MaxxPro MRAP vehicles in theater mission ready. Parts and service contracts thus far total nearly \$300 million. In recent months, the Tank-Automotive and Armament Command (TACOM) of the U.S. Army has also awarded the company nearly \$80 million in truck orders including water and fuel tankers. Overall, more than 90 percent of Navistar's total military sales are non-MRAP vehicles to both the U.S. military and U.S. allies.

"Navistar's global scale and array of truck products offers the U.S. military and our allies unique advantages from design and manufacturing to parts and support services," said Archie Massicotte, president of International Military and Government LLC. "We know we're doing our part to help protect the troops with the MaxxPro MRAP vehicle, and it's a privilege."

With dealerships in Iraq and Afghanistan, Navistar has nearly 1,000 dealership locations worldwide with facilities in 75 countries outside North America.

"All Navistar support solutions are available to sustain these vehicles at home and abroad," said Massicotte. "Monthly production of MaxxPro MRAP vehicles continues to increase; we will be at 500 units per month by February."

In the past, Navistar has built more than 160,000 commercial trucks and school buses and 560,000 diesel engines in a 12-month period



## Future Technologies

### **Metal Storm Inc. Demonstrates Less Lethal Technology in Crowd Control Scenario**

ARLINGTON, VA -- Metal Storm Limited is pleased to announce that Metal Storm Incorporated has successfully conducted a live fire demonstration of a Crowd Control system using Metal Storm stacked projectile technology.

The demonstration was performed under a Small Business Innovative Research (SBIR) contract with the U.S. Army that began in January, 2006.



The demonstration was designed to display several technical objectives which included the development of a family of Less Lethal munitions with smart round features; development of an electronic fire control system with targeting and ranging; the acquisition of a man-machine interface; and the integration of the entire system with an Unmanned Ground Vehicle (UGV). Metal Storm met these objectives with an integrated weapon system that provides the operator with several options when responding to a domestic or Military Operations in Urban Terrain (MOUT) scenario.

The system was developed by Metal Storm working with several key technology partners including iRobot who supplied their Warrior UGV platform and TeleRobotics who specializes in networked remotely operated weapons systems.

Commenting on the demonstration, Peter D. Faulkner, Senior Vice President and General Manager for Metal Storm's U.S. Operations, said, "We see the Less Lethal arena as a significant growth market and one that adapts well with the Metal Storm stacked round technology. The Metal Storm system can be used with riot/crowd control, police actions or other situations where use of deadly force is unwarranted."

The event was attended by representatives from the U.S. Army, the Joint Non Lethal Weapons Directorate and the Fairfax County Virginia law enforcement Civil Disturbance Unit.

The Army's Program Manager for Metal Storm's SBIR Contract, Mr. Richard Joliffe, said, "I was pleased to witness the successful demonstration of the Metal Storm Crowd Control System. This demonstration prepares the way for further development, refinement and eventual commercialization of the Metal Storm Crowd Control System."

Lee Finniear, CEO of Metal Storm Limited, said, "The addition of a demonstrated Metal Storm less than lethal capability has significant positive implications across our entire range of weapon systems. 3GL, Redback and our custom configured weapon systems will now be able to offer both lethal and less lethal payloads, making the weapons more versatile in the complexity of modern combat and peacekeeping operations."

Metal Storm Inc. is aggressively marketing these demonstrated capabilities to the Department of Homeland Security, the U.S. Military and Domestic Law Enforcement agencies.

million.



MARCORSYSCOM also advised Force Protection that its Cheetah vehicle proposal is in the competitive range for continued development and testing and will be further evaluated with modifications as part of the ongoing MRAP II competition.

"In addition to this order from the Marine Corps Systems Command, we intend to continue working with the Army to field the Cougar vehicle in a way that will meet the Army's objective of reducing sustainment and life cycle expense," said Gordon McGilton, CEO of Force Protection, Inc. "The MRAP vehicle program requirements are based on the very design characteristics of our Cougar and Buffalo – the most proven and effective vehicles of this kind in service, and the Army continues to be a valued customer under the MRAP Category III Buffalo program. We are in the process of finalizing a contract for the Buffalo route clearance vehicles to be part of the Ground Standoff Mine Detection System (GSTAMIDS) program of record.

"We are pleased that the Marine Corps, Navy, and Air Force continue to select our proven Cougar MRAP for their Category I and II vehicle requirements," said McGilton. "The Cougar JERRV variant is already meeting joint service requirements for explosive ordnance disposal teams and continues to be the gold standard in performance where it matters most—on the battlefield."

In related activities, foreign military sales have also been approved to the United Kingdom and Italy for approximately 300 Cougar and Buffalo vehicles. These contracts have a combined estimated value of \$150 million, and include spare parts and sustainment items.

"As U.S. requirements for MRAP vehicles rise and fall, we are pleased to see the release of orders to foreign militaries," said McGilton. "We are aware of several other countries who have expressed additional need for these life saving vehicles, and we expect to receive approval to service them as well."

Deliveries for Cougar Category I and II vehicles in the MRAP program are executed through the company's joint venture, Force Dynamics, LLC, with General Dynamics Land Systems. As reported at the end of November, Force Dynamics is 68 vehicles ahead of the contracted MRAP delivery schedule. Buffalo Category III vehicles are sole-sourced to Force Protection and produced independently in Ladson, SC.

## Contracts

### Force Protection Awarded \$379 Million MRAP Contract, Additional Sales Orders to Follow

LADSON, S.C. -- Force Protection, Inc. today announced it has received a delivery order for an additional 358 Mine Resistant Ambush Protected (MRAP) Category I and Category II vehicles from the U.S. Marine Corps Systems Command (MARCORSYSCOM), which is acting as the lead contracting agency for the Department of Defense. The total approximate value of the order is \$379

## Contracts

### BAE Systems Receives Follow-On Orders Worth \$1.1 B from U.S. Marine Corps for New MRAP Vehicles



Arlington, Virginia -- BAE Systems has received two follow-on delivery orders worth a total of \$1.1 billion under the U.S. Marine Corps' current Mine Resistant Ambush Protected (MRAP) contract for 600 RG33 Category II vehicles and 668 Caiman Category I vehicles.

BAE Systems is currently contracted to build three of the five MRAP variants, and is now under contract to deliver 2,730 Category I vehicles and 2,444 Category II vehicles.

This award, when combined with previous contracts, brings the total value of BAE Systems' MRAP contracts to \$2.24 billion.

The RG33 order totals \$645 million to produce 600 survivability enhanced-versions of RG33 Category II 6x6 MRAP vehicle, and to provide engineering change proposals and vehicle sustainment Integrated Logistics Support (ILS).

"The enhanced version has markedly improved the RG33 and incorporates the most advanced suite of armor protection giving its crew a decided edge in combat survivability," said John Swift, BAE Systems' MRAP program manager. "We are proud to be a part of such a noble effort. Our vehicles save the lives of soldiers and Marines every day."

The Caiman award, worth \$458 million, calls for the delivery of 668 Category I Caiman MRAP vehicles, which are also enhanced to achieve high levels of survivability with enhanced mobility.

"BAE Systems' workforce is very proud to be offered the opportunity to deliver more Caiman to our hardworking Armed Services. This follow-on order demonstrates the effectiveness of the Caiman MRAP, our ability to deliver on our promises and our focus on the benefit to the United States," said Chris Chambers, BAE Systems' vice president of Medium/Heavy Vehicles.

## Contracts

### Oshkosh Truck to Build MRAP II Test Vehicles under New Contract Award

OSHKOSH, Wis.--(BUSINESS WIRE)--Dec. 20, 2007--Oshkosh Truck Corporation announced today that, with Ideal Innovations, Inc. (I-3), and

Ceradyne, Inc., it had been awarded a firm-fixed-priced delivery order for six Mine Resistant Ambush Protected (MRAP) II test vehicles by the U.S. Marine Corps Joint MRAP program office.

The vehicles are to be delivered in the first quarter of calendar year 2008 and will be used for further government testing of their Explosively Formed Penetrator (EFP) resistant capabilities. The BULL(a) is produced on an Oshkosh(R) MTVR (medium tactical vehicle replacement) chassis.

"Oshkosh Truck understands the complex mobility and protection requirements of armored vehicles, and with many companies competing for these contracts, it says volumes that Oshkosh was only one of two companies selected," said Robert G. Bohn, Chairman and Chief Executive Officer, Oshkosh Truck Corporation. "The Oshkosh Truck armored vehicles are engineered to help protect U.S. troops against asymmetric warfare threats such as mines and IEDs, and we are proud to supply troops with armored vehicles to help keep them safer in the theater."

The contract awarded to I-3, Oshkosh Truck and Ceradyne is worth \$18,100,000, and is a developmental effort to purchase test vehicles and armor coupons for enhanced MRAP survivability and mobility tests. The MRAP II contracts will also contain ordering options for production quantities.

The MRAP II test vehicles and armor coupons will be delivered to Aberdeen Test Center. Manufacturing of these vehicles will be performed in Wixom, Mich., Costa Mesa, Calif., and Oshkosh, Wis., and work is expected to be completed July 2008. This contract was competitively procured. The Marine Corps Systems Command, Quantico, Va., is the contracting activity.

## Robots

### NREC Receives \$14.4 Million to Develop and Demonstrate Next-Generation Autonomous Ground Vehicle



The US Army Tank-Automotive Research, Development and Engineering Center (TARDEC) awarded a \$14.4 million contract to develop an advanced, autonomous, unmanned ground vehicle (UGV) to Carnegie Mellon University's National

Robotics Engineering Center (NREC).

The TARDEC contract funds NREC to build an updated version of the center's successful "Crusher" UGV as part of the Autonomous Platform Demonstrator (APD) program. Additionally, TARDEC plans to add to the contract, on a work directive basis, additional effort for NREC Engineers to develop an Unmanned Ground Vehicle (UGV) end-to-end control architecture and demonstrate the viability of autonomous UGV operations in a relevant environment as part of the Robotic Vehicle Control Architecture (RVCA) program.

"We're delighted that NREC will play a key role in showing how advanced autonomous vehicles work in FCS (Future Combat Systems) settings," said NREC Director John Bares. "Our goal will be to develop, integrate and test a high-performance UGV with the most up-to-date mobility and autonomy technologies."

The new Autonomous Platform Demonstrator will utilize lessons learned from the Crusher platform, which was unveiled in 2006. Since then, the 6.5-ton Crusher has demonstrated unparalleled toughness and mobility during extensive field trials in extremely rugged terrain. The APD will make use of the latest suspension, vehicle frame, and hybrid-electric drive technologies to improve upon its predecessor's performance. The enhanced mobility capabilities will push the envelope for autonomous and semi-autonomous operation.

In the RVCA program, NREC engineers will develop a comprehensive control architecture that makes use of hardware and software components. The RVCA program will evaluate where semi-autonomous UGV operations can be feasibly included in FCS. It will also demonstrate autonomous maneuver functions by integrating RVCA onto the APD.

In many countries the manufacture or possession of a pipe bomb is a serious crime, regardless of its intended use.

The bomb is usually a short section of steel water pipe containing the explosive mixture and closed at both ends with steel or brass caps. A fuse is inserted into the pipe with a lead running out through a hole in the side or capped end of the pipe. The fuse can be electric with wires leading to a timer and battery or can be a common wick such as used in most consumer fireworks. All components are fairly easily obtainable.

Generally high explosives such as TNT are not used, because these and the detonators they require are difficult to obtain. Such explosives also don't require the containment of a pipe bomb. Instead, any sort of explosive mixture the builder can find or make is used.

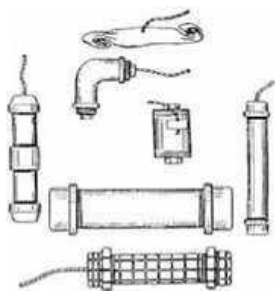
Some of the explosive mixtures used, such as black powder, match heads or chlorate mixtures are very prone to ignition by the friction and static electricity generated when packing the material inside the tube or attaching the end caps - accounting for many injuries or deaths amongst builders. If sharp objects, such as nails or broken glass, are added inside the bomb in an attempt to increase the amount of injury, these also add to the risk of premature ignition.

The addition of loosely fixed shrapnel material outside of the bomb can increase the danger of the explosion cheaply and easily. The Unabomber used this method by taping carpentry nails to the outside of his devices. Other variations include using scrap metal or ball bearings.

Devices made from plastic pipe, such as PVC, or thick walled cardboard tube would not be normally considered as "pipe bombs".

**Term of the day**

**Pipe bomb**



A pipe bomb is a simple type of improvised explosive device, a tightly sealed section of pipe filled with an explosive material. The containment provided by the pipe means that simple low explosives can be used to produce a relatively large explosion, and the fragmentation of the pipe itself creates potentially lethal shrapnel.

Premature detonation is a hazard of attempting to construct any homemade bomb, and the materials and methods used with pipe bombs make unintentional detonation incidents common, usually resulting in serious injury or death to the assembler.

**Contracts**

**BAE Systems Land and Armaments to support the national level reset of Bradley Fighting Vehicles**



BAE Systems Land and Armaments, York, Pennsylvania, was awarded on 21 December, 2007, a \$240,027,278 cost-reimbursable contract for purchasing long lead materials to support the



national level reset of Bradley Fighting Vehicles.

Work will be performed in York, Pennsylvania, and is expected to be completed by 31 December, 2009. Contract funds will not expire at the end of the current fiscal year. There was one bid solicited on 14 August, 2007, and one bid was received. TACOM-WARREN, Warren, Michigan, is the contracting activity.

BAE Systems, Ground Systems Division, York, Pennsylvania, was also awarded on the same day a \$6,958,635 firm-fixed-price and cost-plus-fixed-fee contract for procurement of Crew 2 A-Kits in support of the Bradley Fighting Vehicle program. Work will be performed in York, Pennsylvania, and is expected to be completed by 30 September, 2009. Contract funds will not expire at the end of the current fiscal year. There was one bid solicited on 21 May, 2007, and one bid was received. U.S. Army TACOM LCMC, Warren, Michigan, is the contracting activity.

enemy and hitting "friendlies"). Friendly fire is one kind of collateral damage. The term friendly fire is frequently used as a euphemism in military culture and frequently seen as an oxymoron.

The British military refer to these incidents as blue on blue, which derives from military exercises where NATO forces were identified by blue pennants, hence "blue", and Warsaw Pact forces were identified by orange pennants. Unofficially, the term 'own goal' is also used.

### Defence Industry

## General Dynamics Awarded \$258 Million for Improved Abrams SEP Reset



STERLING HEIGHTS, Mich. -- The U.S. TACOM Lifecycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics, \$257.8 million for the material to reset 180 Abrams tanks under the Abrams Improved SEP Reset (ISR) program.

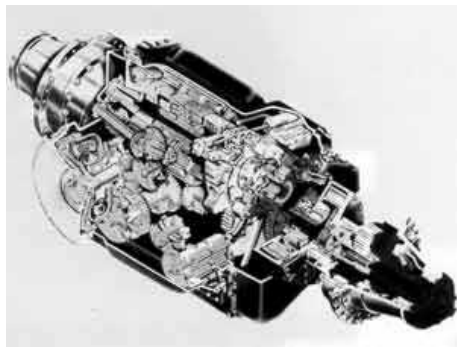
The program could total in excess of \$320 million if all options are exercised.

As part of the Improved Systems Enhancement Package (SEP) Reset program, M1A2 SEP Version One tanks are modified to the SEP Version Two configuration, which includes improved displays, sights, power and a tank-infantry phone. It is the most technologically advanced digital Abrams tank and can accommodate future technology improvements to ensure compatibility with the Army's Future Combat Systems.

Work on 180 tanks will be performed by existing employees in Anniston, Ala.; Tallahassee, Fla.; Lima, Ohio; Sterling Heights, Mich.; and Scranton, Pa. Deliveries begin in September 2009 and are expected to be completed by September 2010.

### Contracts

## Allison Transmission to support the Abrams Tank program



Allison Transmission, Inc., Indianapolis, Indiana, was awarded on 21 December, 2007, a \$6,280,137 firm-fixed price and cost-plus-fixed-fee contract for purchasing of transmission overhaul kits in support of the Abrams Tank program.

Work will be performed in Indianapolis, Indiana, and is expected to be completed by 31 December, 2008. Contract funds will not expire at the end of the current fiscal year. There was one bid solicited on 23 July, 2007, and one bid was received. USA TACOM LCMC, Warren, Michigan, is the contracting activity.

### Term of the day

## Friendly Fire

Friendly fire or non-hostile fire, a term originally adopted by the United States military, is fire from allied or friendly forces, as opposed to fire coming from enemy forces or enemy fire.

A friendly fire incident (fratricide), is when friendly forces or materiel are attacked and damaged by friendly fire which may be deliberate (e.g. incorrectly identifying the target as the enemy), or accidental (e.g. missing the

### Future Technologies

## Honda to mass produce fuel cell vehicles within next 10 years

Mass production of fuel cell vehicles could begin within the next decade, it has been claimed.

In an interview with Jiji Press, Takeo Fukui, the president of Honda Motor Company, has reiterated the company's intention to focus on the development of fuel cell vehicles rather than electric vehicles, and believes that significant progress is being made.

Meanwhile, Honda is also working on a home-use

system for producing hydrogen from natural gas as part of its attempt to overcome the main hurdle to hydrogen and fuel cell vehicle adoption - the supply of hydrogen.

However, Mr Fukui believes that a hydrogen fuelling infrastructure will be readily created once technical issues are resolved - further paving the way for fuel cell vehicle usage.

As a result, he believes that the market will be sufficiently developed for Honda to start mass producing fuel cell vehicles inside the next ten years.

Both Mitsubishi and Nissan plan to release electric vehicles within the next five years, although Mr Fukui has dismissed these as they can only be used for short-distance travel in urban areas.

