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Contracts

General Dynamics Awarded $129 Million for Production of Reactive Armour for Bradley Infantry Fighting Vehicle

General Dynamics Armament and Technical Products, a sub-division of General Dynamics, was awarded a $129 million contract from the U.S. Army TACOM-Picatinny for the production of enhanced-capability reactive armour tile sets for the Bradley Infantry Fighting Vehicle. The total contract value could total up to $245 million.

The reactive armour package designed specifically for the U.S. Army Bradley Infantry Fighting Vehicle, is saving lives and preventing crippling damage to combat vehicles in Iraq, giving units equipped with the armour a clear advantage on the battlefield. The package is made up of tiles that fasten to the exterior of the vehicles. Equipped with the General Dynamics' reactive armour, Bradley Fighting Vehicles are better able to withstand a direct hit from a variety of anti-armour munitions, including the shoulder-fired rocket propelled grenades.

General Dynamics' partner, RAFAEL Armament Development Authority Ltd., Ordnance Systems Division (Israel), will share 50 percent of the production workload. The production program will be directed from the General Dynamics Armament and Technical Products, Burlington Technology Center, Burlington, Vt., with U.S. tile production being carried out at the company's reactive armour facility in Stone County Operations, McHenry, Miss.

Term of the day

Armour Piercing Fin-Stabilised Discarding Sabot Round

A type of kinetic energy ammunition where a sub-calibre penetrator of heavy material is surrounded by a light weight 'pot' or sabot which supports the penetrator in the barrel. The use of the sabot ensures that the largest possible base area is presented to the propellant gases over which pressure can be exerted. The sabot falls to the ground a few hundred metres from the barrel, leaving the sub-calibre penetrator to continue to the target.

A penetrator of a dense material (high grade steel, tungsten or depleted uranium) is surrounded by a light-weight 'pot' or circular support, the object of which is to present the largest possible base area within the barrel, over which the propellant gas can exert pressure. The projectile is accelerated very quickly up the barrel and once it exits from the muzzle the air resistance causes the 'pot' to fall off allowing the smaller diameter penetrator to continue towards the target. The penetrator normally has a ballistically shaped outer shell or cap to make it more aerodynamic in flight. This ballistic casing normally shatters on contact with the armour, leaving the solid core to penetrate.

Depth of penetration at the target will depend not only on the residual energy of the shot but also on its shape and size. The shape of the curve at the head of the penetrator (the ogive) is most important as it must not only be able to pierce the armour but must 'turn into' it to reduce the advantage of sloped armour and not ricochet. Ideally, the penetrator must not break up, should pass through taking as much armour material with it as possible and should break up inside the tank and not exit on the far side, expending all its energy within the vehicle. If, for a given mass, the diameter of the penetrator is reduced and its length is increased, then for the same residual velocity, it will penetrate a greater thickness of armour as it will be expending its energy over a smaller cross-sectional area. The ratio of the length-to-diameter is called the 'slenderness' ratio or length/diameter ratio and although a projectile with a ratio in excess of 7:1 cannot be spin-stabilised it is not until they reach a ratio of approximately 20:1 that they can be called 'long rods'. The long rod penetrator has been the most significant advance in kinetic energy ammunition in recent years though the idea itself is far from new. The most famous application of the principal of the long rod penetrator was the arrow used by the medieval archers to defeat the armoured knight.

Defence Industry

Oshkosh Truck Finalizes Acquisition of AK Specialty Vehicles, Inc.

Oshkosh Truck Corporation, a leader in manufacturing specialty trucks and truck bodies, announced that it had completed the acquisition of AK Specialty Vehicles, a leader in mobile medical, homeland security command and communications, and broadcast vehicles, from Healthtronics, Inc. The transaction was completed on an all-cash basis for $140 million.

"Oshkosh has developed a decade-long record of successful acquisitions because we are selective in the acquisition process and set high expectations during the integration process. AK Specialty Vehicles and its brands are recognized leaders in their respective markets for technology integration and exceptional customer service. The company is an excellent fit with our initiative to expand within complementary specialty truck markets and to continually expand the product offering and services that we offer to existing customers. We're extremely pleased to welcome AK Specialty Vehicles and its employees to our organization," said Robert G. Bohn, Oshkosh's chairman, president and chief executive officer.

AK Specialty Vehicles markets its mobile medical vehicles under the AK Specialty brand in North America and under the SMIT brand in Europe. Front-line is the company's leading brand in broadcast vehicles and command and communications vehicles.

Contracts

BAE Systems Awarded $223.5M Contract to Re-manufacture and Upgrade Bradley Armoured Vehicles

BAE Systems received a $223.5 million contract modification from the U.S. Army TACOM Life Cycle Management Command to re-manufacture and upgrade 96 Bradley Armoured Vehicles.

BAE Systems will re-manufacture and upgrade 57 Bradley A3 vehicles in infantry and cavalry configurations, 16 Bradley A3 Fire Support Team (BFIST) vehicles and 23 A2 Operation Desert Storm-based M7 BFIST vehicles. Disassembly will be performed at BAE Systems in Fayette County, Pa. Final assembly, integration and testing will be conducted at the BAE Systems facility in York, Pa.

BAE Systems will field the Bradley vehicles directly to the units at their home locations and conduct any necessary training and technical support. Vehicle deliveries under this contract will begin in January 2008 and run through mid-2008.

Bradley Combat Systems vehicles continue to provide outstanding survivability and mobility to U.S. soldiers in all types of close-combat urban scenarios and in open-combat, open-terrain scenarios over three completed rotations. The Bradley fulfills five critical mission roles - infantry, cavalry, fire support, battle command and engineer squad.

Bradley Combat Systems have played a critical role in the success of the U.S. Army that have faced some of the most challenging missions in Iraq since the conflict began in March 2003. During Operation Iraqi Freedom, the Bradley operational readiness rate has exceeded 94 percent in urban and cross-country missions that have covered more than 8 million miles. The Bradley moves with maneuvre forces across rough terrain at speeds up to 38 mph, and can negotiate narrow streets and tight corners in urban areas.

The C4ISR-equipped, network-ready Bradley vehicles feature a proven set of armour solutions designed to protect soldiers against a wide variety of threats, and are readily equipped with the Bradley Urban Survivability Kit.

Last year, the Army contracted with BAE Systems to re-manufacture and upgrade 450 Bradley A3, 50 A2ODS and 33 BFIST vehicles under fiscal year 2005 funding (June 2005). BAE Systems has now been awarded a total of 501 Bradley vehicles to date under fiscal year 2006 funding totaling $477.9 million. Approximately 595 Bradley A3 vehicles have been delivered against the Army's requirement for 2,545 total Bradley A3s planned for the fleet.

Contracts

Thales Contracts for Dutch Mission in Afghanistan

On 28 July, the Netherlands Ministry of Defence and ADI limited of Australia signed a contract for the delivery of 25 Bushmaster infantry vehicles that will be deployed by the Netherlands Armed Forces for their mission in Afghanistan. The Bushmaster will be equipped with the Thales SOTAS M2 multi-media

communication system, to be supplied by Thales Land & Joint Systems, Huizen, Netherlands. Thales will also supply 12 SWARM remote control weapon systems and a full logistics package for these systems. This is the first export order for Bushmaster. The Bushmasters will leave for Afghanistan end of August.

The proposal phase for this contract lasted only two weeks. The contract was awarded to ADI on the basis of the specifications of the Bushmaster vehicle and on the quick delivery time ADI could propose, thanks to the Australian Government that made these 25 units available from its own new stock.

ADI's Bushmaster vehicle has the capacity to transport 10 persons and their full marching kits. The vehicle is specifically designed to rapidly deploy battle-ready troops in all field conditions. It provides a high level of troop protection, comfort, all-terrain agility and easy maintainability.

Thales' SOTAS M2 is a full-fledged multimedia communication system for use in practically any military vehicle, between vehicles and between vehicles and command posts. It enables speech, video and data transfer and can be used to set up a local area network. SOTAS M2 noise filters ensure unambiguous communication, greatly improving safety and comfort.

Term of the day

High Explosive Anti-Tank Round

A type of chemical energy ammunition (i.e., ammunition where the penetrative power is generated by explosive energy rather than by kinetic energy) fitted with a high explosive anti-tank (HEAT) – or hollow charge – warhead. The HEAT warhead is not velocity dependent. In order to achieve penetration, the limited amount of explosive is shaped into an inverted, rearward-facing cone lined with a metal such as copper or some other ductile material. When the charge is detonated by a nose fuze, a jet of high energy gas and vaporised metal is projected forward at speeds, typically, of 6,000 m per second. This plasma jet acts like a cutting torch.☐

The detonation of the limited amount of high explosive contained within a shell fired from a tank gun is unlikely to do lethal damage to a tank and therefore a means must be found to focus the energy of the detonation into some form of high-energy jet. The most effective and widely used method is to shape the detonation wave so that the total energy available is directed onto a small cross-sectional area of the target. This is achieved by manufacturing the explosive charge into the shape of an inverted, rearward-facing cone and lining it with copper or some other low melting point, ductile metal. When the charge is detonated by the fuze mounted in the nose, a jet of high-energy gas and vaporised metal from the cone is projected axially forward (the Munroe effect). This jet, travelling at a speed of around 6,000 m per second, burns its way through the armour like a cutting torch. The effectiveness and penetration of the jet depends on the diameter of the cone and hence the calibre of the gun, the type of metal liner and the 'stand-off' distance from the target at which the charge is detonated.

The penetration of a HEAT round is severely degraded if the charge is spun, so the projectile must be fin-stabilised (even at 400 rpm penetration is reduced by about 25%). If the hollow charge is to be fired from a rifled barrel, then some means such as slipping driving bands must be used to limit, or preferably eliminate, the spin. Although a relatively small cone diameter can produce a very impressive depth of penetration (typically 5-6 times cone diameter), lethahty is low unless it over-matches the target by at least 33%. However, if an exit hole in excess of 24 mm in diameter is produced, the terminal effect inside the vehicle is likely to be considerable as the jet continues into the target with considerable residual energy bringing with it 'spall' or splinters torn off the armour plate. Thus, the performance and effect of the hollow charge round is largely dependent on cone diameter.

Contracts

Ultralife Batteries Awarded $1.3 Million Military Battery and Charger Contracts

Ultralife Batteries, Inc. has been awarded contracts valued at approximately $1.3 million for UBI-2590 rechargeable batteries and MRC-119 battery chargers from an undisclosed foreign military. The batteries and chargers will be used to power tactical military radio transceivers. Deliveries are expected to begin in August and be completed during the 3rd quarter.

Ultralife's advanced UBI-2590 rechargeable battery has two independent 15-volt sections, each with protection electronics and state-of-charge displays, enabling users to operate the battery in either 15-volt or 30-volt modes. Designed to power the most demanding military devices, UBI-2590 usage has been spread over many additional markets including law enforcement, homeland security, scientific research, medical, surveillance and mining. Applications include military radios and communication devices, robotics, power grid

surveillance sensors, remote data collection devices, video detection systems and remote scientific monitoring devices.

The MRC-119 battery charger, manufactured by Ultralife's operating unit, McDowell Research, is a self-contained charger, which provides a reliable, consistent recharge of two batteries simultaneously. The charger auto senses the battery type to assure the proper charging profile is used. The MRC-119 comes complete with the MRC-139 AC/DC power supply, allowing the system to be both powered in the field from vehicles and generators and in base locations. A wide range of AC and DC input voltages allows for operation from nearly any power source likely to be encountered worldwide.

Term of the day

High Explosive Squash Head (HESH) or High Explosive Plastic (HEP) Round

This is a type of anti-tank ammunition in which the explosive is contained in a thin-walled projectile which deforms on contact with the target, allowing the explosive to spread. A base fuse then detonates the explosive which sends shock waves through the armour. The shock waves are reflected from the internal face of the armour and when they meet the next incoming wave, the resulting wave front causes the armour to fracture. This type of ammunition is not velocity dependent as it relies on chemical energy to achieve its effect.

High Explosive Squash Head (HESH), for which the American term is High Explosive Plastic or HEP, is a type of chemical energy ammunition which is not velocity dependent. In this round the explosive is contained in a thin-walled projectile which collapses on striking the target, allowing the plastic explosive to spread. A base fuze then denotes the explosive which sends strong shock waves through the armour. Reflection from the internal armour surface causes an overmatch of the armour which then fails, causing a large 'scab' to form and fragments to fly off inside the vehicle. The success of HESH against armour depends on the explosive forming a suitably shaped 'pat' on the outside of the armour plate before it is detonated (the British term 'squash-head' describes the process very well). This poses several problems, because if the projectile hits the target at a very acute angle, the explosive will not form a cohesive mass and consequently its effectiveness will be greatly reduced. Similarly, if the projectile arrives at the target with very high residual velocity, i.e. if the target is at very close range, the explosive will be dispersed on impact, before the fuze has time to function. The latter problem is easily resolved by keeping the muzzle velocity low, but the result is a lower chance of a hit because of the higher trajectory. HESH can be defeated relatively easily by having a discontinuity (spaced armour) in the path of the shock wave, though the outer plate will almost certainly be destroyed.

The major advantage of HESH lies in its usefulness as a multipurpose round. It is approximately 90% as effective as a conventional High Explosive (HE) round against unarmoured targets and considerably better than HE against bunkers and buildings. It has a devastating effect against lightly armoured targets and even if a kill is not obtained against a more heavily armoured target, the secondary effects will damage all the optics, antennae and any equipment mounted externally.

Contracts

Armor Holdings Announces $172M Body Armor Component Award

Armor Holdings, Inc., a leading manufacturer and distributor of safety and survivability systems, tactical wheeled vehicles and vehicle armor systems serving military and homeland security announced that the U.S. Army Research, Development and Engineering Command had awarded a new three year Indefinite Delivery/Indefinite Quantity contract having a maximum value of $172 million.

The Company advised that the initial delivery order is for $35.8 million to supply new Outer Tactical Vests components for use in the Interceptor Body Armor ensemble. The Company also advised that these new components are conversion kits which provide ballistic protection as well as support the transition to the Army's new camouflage patterns for Outer Tactical Vests. Work will begin in 2006 at the Armor Holdings Aerospace and Defense Group facilities located in Tennessee and Alabama.

Defence Industry

Cubic Delivers First Comprehensive Homestation Training System to U.S. Army Command in Korea

The defense segment of Cubic Corporation announced it had delivered the U.S. Army's first Initial - Homestation Instrumentation Training System (I-HITS) - the world's most advanced deployable training system - to the Eighth U.S. Army at Camp Casey, Korea. I-HITS provides high-fidelity training capabilities, including battle tracking, data collection and after-action reviews, without the need for a fixed infrastructure.

A completely self-contained package, I-HITS can be rapidly deployed to support force-on-force, force-on-target, joint and combined arms training. Cubic Defense Applications is delivering I-HITS to U.S. and allied forces under a five-year contract awarded in 2005 from the U.S. Army's PEO-STRI. The contract is potentially worth $71.7 million if all options are exercised.

The I-HITS configuration delivered to Camp Casey supports force-on-force engagement training for the U.S. Army's mechanized/armor infantry company. The delivery included player instrumentation that interfaces with MILES engagement simulation; observer/controller equipment; a transportable communications infrastructure, including a satellite-linked backbone; a mobile exercise control center; and deployable after-action review capability. The instrumentation tracks the positions and casualty status of troops and vehicles in real time and relays exercise data to command centers for post-mission analysis and after-action review presentations. The system can operate in tents, fixed shelters, buildings and vehicles. The Camp Casey instrumentation supports training for dismounted infantry, vehicles and observer/controllers - and it is expandable to integrate with over 2,000 live players and 8,000 virtual and constructive entities. It also provides training for urban operations.

Contracts

General Dynamics Land Systems Receives $135 Million to Upgrade M1A2 Main Battle Tanks to the Most Advanced Configuration

The U.S. Army has awarded General Dynamics Land Systems, a business unit of General Dynamics, a $134.6 million contract to upgrade 60 M1A2 Abrams main battle tanks to the System Enhancement Package (SEP) configuration (M1A2 SEP) - the latest, most technologically advanced Abrams tank. The contract includes a $145 million option to upgrade 60 additional M1A2 Abrams battle tanks.

The M1A2 SEP is a fully digitized platform with a new command and control system, second-generation thermal sights and improved armour. This retrofit is part of an overall M1A2 tank upgrade program that integrates information technologies to improve soldier war-fighting capability with enhanced command and control features like colour maps and displays, networked communications, high-density computer memory and increased microprocessing speed.

Work will be performed by existing General Dynamics employees in Lima, Ohio; Anniston, Ala.; Tallahassee, Fla.; Sterling Heights, Mich.; and Eynon, Pa. Delivery of the first 60 vehicles is slated to begin in November 2007. The 60 tanks associated with the option, if it is exercised, would be scheduled for delivery beginning in November 2008.

Term of the day

Male and Female Tanks

During the First World War, the British Mark 1 tank was armed either with guns or machine guns. If it was fitted with two 6-pounder guns, it was called 'Male tank'; if it was fitted with machine guns only, it was called 'Female Tank'. So, the term 'Male Tank' has no significance other than to distinguish this tank from a Female Tank.

The early British Mark 1 tanks had two 6-pounder guns, one mounted in each sponson on either side of the hull. These 'long' 6-pounders were naval guns adapted for military use and although they were fairly accurate, the length of the barrel made them heavy and cumbersome to operate. Later marks of the 'Male' tank, as the 6-pounder version became known, were fitted with the short barrel version. The 'Female' tanks were armed only with Lewis machine guns, but as the main task of both types of tank was to break through the enemy trenches and wire entanglements this could be accomplished as easily by a tank armed with machine guns as with one mounting 6-pounders.

The French military – witty as they were - went even further in these 'gender-related designations' and called their AMX13 tank, armed with 30mm double-barrel gun, 'Rкve de vierge' – 'Dream of Virgin'.

Contracts

BAE Systems Awarded $30.5 Million to Upgrade Additional Carriers

BAE Systems has been awarded a contract option worth $30.5 million to upgrade 112 M1068

Standard Integrated Command Post System (SICPS) carriers to the A3 model for the U.S. Army. The additional option is expected to take production through to November 2007.

Under the contract, BAE Systems is producing 334 M1068s as well as 42 M1064A3 mortar carriers and 48 M577A3 command post carriers. All vehicles are members of the M113 family of vehicles.

The BAE Systems' vehicle upgrade facility, located in Anniston, Alabama, has been upgrading the M113 family of vehicles since 1994. The upgrade allows the M113 combat system to match speeds with the Bradley Fighting Vehicle System and the Main Battle Tank and also provides better armour protection for the soldiers.

There are five variants in the M113 family of vehicles included in each of the U.S. Army's heavy brigade combat teams.

Defence Industry

Ceradyne to Develop Prototype Lightweight Ceramic Armoured Truck Cab for Mack Trucks Crew Protection Package for U.S. Army Long Term Armor Strategy

Ceradyne, Inc. received a purchase order from Mack Trucks, Inc. for a prototype lightweight ceramic armoured truck cab incorporating technology specifically designed to meet the requirements of the U.S. Army's recently announced Long Term Armor Strategy (LTAS). Ceradyne expects to deliver the armoured cab to Mack in August 2006.

The cab is a Mack Granite typically used in severe service applications. Ceradyne will incorporate its FlexKit ceramic armour system which is adjustable and interchangeable and consistent with LTAS requirements for ballistic and blast protection. The build will be performed at Ceradyne's Wixom, Michigan, facility, with the lightweight armour design allowing the use of Mack's standard drive train components. Mack is actively working with engineering firms to optimize the overall cab design, with a focus on crew situational awareness and ease of operations.

Defence Industry

Rolls-Royce Invests in Electric Drive Technology

Rolls-Royce announced it has continued its development strategy in electrical systems by concluding an exclusive licensing agreement with Magnetic Systems Technology Ltd, a company specialising in power dense electric drives, permanent magnet motor systems and power electronics. As part of this agreement, Rolls-Royce is also taking a minority shareholding in Magnetic Systems Technology Ltd.

Under the agreement, Rolls-Royce will assist in the development of electric drive systems, and provide manufacturing and marketing expertise for customers in aerospace, defence, marine and energy markets, including hybrid electric military vehicles.
Hybrid-electric drive vehicles combine conventional engines and electric motors and can provide benefits such as increased power, improved fuel economy and auxiliary power for electronic systems on-board the vehicle.

Defence Industry

State-owned Enterprise Kharkiv Morozov Machine Building Design Bureau (SOE KMDB) of Ukraine has begun to series-produce computer-based simulators for BMP-2 Infantry Fighting Vehicles

SOE KMDB has a multi-year experience in designing, developing, and manufacturing various simulators for armoured vehicles. The specific feature of the computer-based simulators developed by the SOE KMDB is their modular design.
The simulators can be used both for training the whole crew and for training the driver, commander, and gunner separately. At the customer's request, the simulators can either be installed on the universal motion platform or supplied in a static version.

Use of the simulators enables the customers to solve several main problems:

- to save operational materials, ammunition, and service life of the vehicles due to computer-based training;
- to increase the quality of training;
- to carry out training of the personnel in the environments that do not allow using real vehicles, e.g., urban areas and NBC environment.

The open architecture makes it possible to unite several simulators into one network and to create combined tactical training systems.

The simulators for BMP-2 infantry fighting vehicles that are now series-produced by SOE KMDB will be supplied to a foreign customer. The export contract envisages supply of not only the simulators themselves, but also a set of accompanying services including installation and adjustment in the country of the customer, guarantee and after-guarantee service, and training of the customer's service personnel.

Defence Industry

BAE Systems Signs an Agreement to Sell Lighting and Control Device for Fighting Vehicles

BAE Systems signed an agreement with ELTAM, a leading developer and manufacturer of intelligent Light Emitting Diode (LED) based light and control systems, to promote and sell its LED-based products for military vehicles. The first product of this family is the LED-based Light, Emergency Light, Battery Status Indicator (LEBSI).

The LEBSI is a combat-proven direct plug-and-play replacement for the old single function incandescent dome light. The main features of the LEBSI include a dome light, an emergency light with an independent back-up power source providing light for up to two hours, a vehicle battery monitor that includes a visual alert in the event of low voltage, and better distribution of white and blue light. The battery status indicator is especially critical for the survivability of the crew and the vehicle because it provides the crew with an alert during silent watch missions when battery power is getting low, which allows the crew to start the vehicle, move and recharge. This system uses less power than the old dome lights, but the intensity output and light distribution are higher.

BAE Systems has installed the product on several platforms and received positive feedback from troops in the field. The product has shown to improve soldiers' mission effectiveness and reduce long-term maintenance costs. LEBSI unit can be installed in minutes by the end-user without any additional tools or training.

Contracts

General Dynamics Awarded $5 Million for Production of M2HB Machine Gun Receivers

General Dynamics Armament and Technical Products, a business unit of General Dynamics, was awarded a $5.5 million contract from U.S. Army Tank Automotive Command, Rock Island, Ill., for the production of receiver assemblies for the M2HB machine gun. Deliveries on this contract will commence in January and extend through October 2007.

These receiver assemblies, which form the body of the weapon, will be used to refurbish M2HB machine guns at Anniston Army Depot, Ala., and as spare parts for fielded M2HBs. The M2HB crew-served 12.7 mm machine gun features a rate of fire of over 450 rounds per minute and a maximum effective range of 2,000 yards. Its high level of lethality and versatility has made it the world standard in its class.

Production work will be performed at General Dynamics Armament and Technical Products' Saco, Maine, facility, which has manufactured the M2 machine gun since 1979.

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Contracts

General Dynamics Receives $34M To Provide Manufacturing Assistance to Egypt

The U.S. Army has awarded General Dynamics Land Systems, a business unit of General Dynamics, a $34 million contract modification to provide manufacturing technical assistance to Egypt for the co-production of the M1A1 Abrams main battle tank.

Under the Egyptian M1A1 Abrams Tank Co-production Program, General Dynamics provides components for kits used in production. The kits are shipped to Egypt and the tanks are then manufactured for the Egyptian Land Forces at the Egyptian tank production facility near Cairo.

This modification covers providing manufacturing technical assistance to the Egyptian facility in the areas of tank production, the freight forwarder management system, total package fielding, and support to Egyptian Land Forces' accepted/fielded tanks.

Work will be performed in Sterling Heights, Mich., and Cairo, Egypt, by existing General Dynamics employees through August 2009.

Contracts

British Buying Cougar Vehicles From Force Protection, Inc.

Force Protection, Inc. announced that it had been awarded a contract by the British Ministry of Defense for more than 85 Cougar Explosive Ordnance Disposal (EOD) vehicles. These vehicles will be known as Mastiff Protected Patrol Vehicles (Mastiff PPV). The contract also includes associated spares, technical manuals, and field service support and is worth approximately $63 million.

Force Protection's Cougar and other mine-protected vehicles have been deployed with combat engineers and EOD teams for more than three years. First deliveries on the new contract will ship from Charleston, SC in November 2006.

About Force Protection

Force Protection, Inc. manufactures ballistic- and mine-protected vehicles through its wholly owned subsidiary. These specialty vehicles are protected against landmines, hostile fire, and Improvised Explosive Devices (IEDs, commonly referred to as roadside bombs). Force Protection's mine and ballistic protection technology is among the most advanced in the world. The vehicles are manufactured outside Charleston, S.C.

Term of the day

Panoramic Sight

It is a sight that can be rotated to enable an operator to observe the scene throughout an

azimuth angle of 6400 mils (360 degrees).

The sight of the tank commander is normally positioned at the highest point of the turret, enabling him to rotate his line of sight through 6400 mils (360 degrees) in azimuth. This sight is called a panoramic sight. However, to prevent the image from being inverted after 3200 mils (180 degrees) of rotation, the panoramic sight must be fitted with de-rotation optics. These additional elements make panoramic optical sights more complicated, and hence more expensive, and also reduce the light transmission.

In general, panoramic sights, with their gyro systems and de-rotation optics, are expensive and, being more complicated than the fixed link sights, they can be less reliable and require more maintenance. Nevertheless, such sights are essential equipment in a modern battle tank if it is to acquire and engage moving targets while itself being in motion. Quite simply, without this capability, a tank is likely to find itself outclassed.

Defence Industry

General Dynamics Receives $108M for Abrams Tank Integrated Management Work

The U.S. Army has awarded General Dynamics Land Systems, a business unit of General Dynamics, $108 million for the production of 155 M1A1 tanks through the Abrams Integrated Management (AIM) process.

AIM is a joint effort to refurbish M1A1 main battle tanks involving the U.S. Army Project Manager for Heavy Brigade Combat Team, the TACOM Life Cycle Management Command, the Anniston Army Depot, Anniston, Ala., and General Dynamics Land Systems. Under the AIM program, M1A1 Abrams tanks are completely disassembled and overhauled to a like-new, zero-mile condition. Refurbished tanks incur lower operational and support costs and report higher operational readiness rates.

These tanks will be the first M1A1s configured with additional mission-critical technologies to bolster crew situational awareness (SA). The SA package improvements include second-generation Forward-Looking Infrared, Far Target Locate, Blue Force Tracking (BFT)/Force Battle Command Brigade and Below (FBCB2), a tank-infantry phone, a .50 caliber thermal sight, a power distribution box, a rear slave receptacle, an eye-safe laser rangefinder, and driver's vision enhancement. This situational awareness package increases the M1A1 Abrams tank's fighting capability by providing soldiers an electronic graphic of the battlefield with icons for friendly and enemy forces, and increasing the accuracy of the tank commander's .50 caliber machine gun.

Work will be performed by existing General Dynamics employees in Lima, Ohio, and Eynon, Pa. These M1A1 tanks are slated for delivery to U.S. Army units beginning in July 2007.

Defence Industry

EADS Technology Protects German Armed Forces Puma Armoured Vehicles

EADS is to equip the German Armed Forces' new Puma armoured fighting vehicles with an electronic self-protection system which repels strikes by guided anti-tank munitions, such as guided missiles, bombs and shells.

EADS Defence Electronics was initially commissioned to equip the first five prototype Puma vehicles with the MUSS multifunctional self-protection system. MUSS comprises three main elements: (1) warning sensors which detect the incoming missile or laser beam directed at the target vehicle and report this to the (2) central computer of the MUSS system. This in turn activates (3) electronic or pyrotechnic countermeasures, therefore preventing the target from receiving a hit. Therefore, any risk to troops, especially in the complex scenarios of international deployments, will be significantly reduced.

Working together with EADS on the MUSS project is Krauss-Maffei Wegmann (system integration) and Buck (pyrotechnic countermeasures). EADS Defence Electronics is responsible for warning sensors, central computers and electronic countermeasures.

The MUSS warning sensors are based on a UV missile warning sensor and a laser warner. Both are extremely compact, and combining them in a single device means that integration into the turret of the Puma can be achieved quite simply. As a result, it is also much easier to retrofit old vehicles. The missile warner was specially designed for use in ground vehicles for the detection of anti-tank missiles. It is based on the MILDS missile warning system for helicopters and aircraft which is tried

and tested throughout the world. MUSS has demonstrated its effectiveness against various different threats during extensive tests, including testing on board the Leopard 2 main battle tank.

Defence Industry

JAVELIN Anti-tank Missile Systems for Oman

The Government of Oman has requested the United States of a sale of 250 JAVELIN missile rounds and 30 JAVELIN command launch units, simulators, trainers, support equipment, spare and repair parts, publications and technical data, personnel training and equipment, U.S. Government and contractor engineering and logistics personnel services, a Quality Assurance Team, and other related elements of logistics support. The estimated cost is $48 million.

This proposed sale will contribute to the foreign policy and national security of the United States by helping to improve the security of a friendly country that has been and continues to be an important force for political stability and economic progress in the Middle East.

The desert warfare missions of Oman's infantry and light armored forces require the protection afforded by the capabilities of the JAVELIN system. JAVELIN will provide the forces with a credible anti-armor defense that is critical to successful operations. The proposed sale of JAVELIN is consistent with Oman's ongoing efforts to modernize its armed forces and the presence of the weapon in the land forces' inventory will provide yet another inroad for enhancing interoperability between the U.S. and Omani military forces.

The prime contractor will be Raytheon/Lockheed-Martin JAVELIN Joint Venture in Orlando, Florida.

Defence Industry

Refurbishment/Sustainment of Jordan's M113A1 Armored Personnel Carriers

The Government of Jordan has requested a possible refurbishment/sustainment of 1,000 M113A1 Armored Personnel Carriers (APC) to M113A2-Jordan configuration. This will include various upgraded conversion kits: diesel engines, transmission upgrades and overhaul, differential conversions, suspension upgrades, cooling system upgrades, and drive train upgrades; spare and repair parts; support equipment; publications and technical data; communications equipment; maintenance; personnel training and training equipment; contractor representatives' services; and other related elements of logistics support. The estimated cost is $156 million.

The Jordan Armed Forces (JAF) requires the defense services to refurbish its M113A1 APC's to a sustainable configuration. The upgrade will provide JAF with a dependable vehicle capable of responding quickly against aggression or unauthorized entry on the border. This capability is essential to modernizing Jordan's military forces and maintaining equipment for effective internal security operations.

The prime contractor will be BAE Company in Santa Clara, California.

Term of the day

Hull-down Position

It is a fire position for a tank where the barrel and upper part of the turret is visible from the front, i.e., everything from the 'hull down' is protected behind cover.

In this position the hull and running gear are concealed, but the turret above the gun trunnions, usually the best protected aspect of the tank, is exposed.

Army

US Army Receives State of the Art Simulation Systems for the New Abrams M1A1AIM Tank

The US Army received the new ABRAMS M1A1 AIM

Tank Driver Trainer and Relocatable Advanced Gunnery Trainer System. The equipment was installed at the School of Armour in Puckapunyal, Victoria.

The driver training system is a full motion trainer that allows for a wide variety of terrain and weather conditions to be negotiated without leaving a class room environment. The system also enables other students to monitor the progress of the driver under training and the instructor can inject system failures for the driver to respond to, with no risk to vehicles or personnel.

The gunnery training system will enable rigorous monitoring and analysis of the training and performance of tank gunners and crew commanders. Use of the gunnery simulator offers the potential for significant savings in ammunition expenditure and a lowering of impact on the environment. Full recording and scoring of the crew's performance occurs and there is zero ammunition cost if crews require further training.

Defence Industry

Rheinmetall awarded major simulation system contracts

The Rheinmetall Group of Dusseldorf has recently booked orders from Germany, Switzerland and Thailand for simulation systems worth some EUR50 million. Once again, these three nations have turned to the Group's Bremen-based subsidiary Rheinmetall Defence Electronics GmbH for advanced simulation technology for training their troops.

The German Army has contracted with Rheinmetall to modernize the system technology of the operations centre of its GUZ combat training facility at Altmark in Saxony-Anhalt, which first entered service in 1997. Among other things, the upgrade package also includes a regeneration of the TETRA wireless system and installation of new high-performance networks and communication servers.

The company has received two orders from Switzerland: an electronic gunnery training system (ELSA) as well as system extensions for its artillery simulation technology.

ELSA will be employed in Switzerland for training infantry fighting vehicle and armoured artillery command vehicle crews, as well as for teaching troops to operate target acquisition and observation equipment used by the Swiss Army's Artillery Corps.

The series scope of delivery includes a system with eight vehicle mock-ups of the CV9030 infantry fighting vehicle as well as another with four mock-ups of the armoured artillery command vehicle, plus target acquisition and observation equipment.

In Thailand Rheinmetall will upgrade an existing TACOS I gunnery and combat simulator. TACOS II will give the Thai military the most advanced networked simulation centre for ground forces in the entire Asia-Pacific region.

The TACOS I simulation centre entered service in Thailand back in 1998. Like its predecessor, the new system consists of five true-to-life mock-ups of the fighting compartment of the M60 A3 main battle tank used for gunnery and combat training. In addition, TACOS II will feature five state-of-the-art driving simulators with electrical movement systems, suitable not only for entry-level driver's training but also for driving licence training at all relevant exercise units.

An important new feature of the order is the networking of both TACOS simulation units to form a joint virtual world. Starting in 2008, ten four-man tank crews, consisting of the commander, gunner, driver and loader, will be able to act out numerous scenarios in a networked environment.

Contracts

General Dynamics Awarded USD30 Million to Manufacture Reactive Armour for M1A2 Abrams Battle Tanks

General Dynamics Armament and Technical Products, a business unit of General Dynamics, has been awarded a $30 million competitive contract from U.S. Army Tank Automotive and Armaments Command for the production of reactive armour tile sets to equip M1A2Abrams battle tanks. Total contract value could reach $59 million if all contract options are exercised. General Dynamics has been a leading producer of reactive armour for the Bradley Fighting Vehicle since 1995, with $417 million in Bradley reactive armour orders to date.

Reactive armour that currently equips the U.S. Army Bradley Fighting Vehicle is made up of tiles that fasten to the exterior of the vehicles. Equipped with the General Dynamics' reactive armour, combat vehicles are better able to withstand a direct hit from a variety of anti-armour munitions, including the shoulder-fired rocket propelled grenades that are prevalent in many of today's regional conflicts.

The production program will be directed from the General Dynamics Armament and Technical Products' Burlington Technology Center, Burlington, Vt., with U.S. tile production occurring at the company's reactive armour facility in Stone County Operations, McHenry, Miss. Work will be completed by August 2009.