Army Guide monthly

1 (28) January 2007

- Canister Round
- BAE Systems Receives Contract for M113 Upgrade Kits for Norwegian Army
- Recon Optical Awarded Contract for Stabilized Remotely Operated Weapon Systems
- General Dynamics Awarded $29M to Produce Reactive Armor for Abrams Tanks
- Graticule
- Swiss Army orders new Armoured Engineer Vehicle from Rheinmetall
- GD Awarded USD $77M Contract to Supply Mine Protected Vehicles to the U.S. Army
- Patriot Antenna Systems wins Deployable Trailer Mount Antenna Development Contracts
- General Dynamics Awarded $425M for Missile Systems by Spanish Army
- German army receives new command and control information system
- Laser range-finder
- Pakistan, India discuss peace process
- Raytheon Successfully Tests New Solid-State Laser Area Defense System
- New section of the ARMY-GUIDE web-site
- QinetiQ wins GBP9.48M armoured vehicle 'survivability' contract
- SciSys To Play Role in Armoured Vehicle Survivability Programme
- Armoured Recovery Vehicle
- BAE Systems Receives Thermal Weapon Sights Orders
- U.S. Army Awards General Dynamics $40 M Tank Training Ammunition Contract
- General Dynamics Awarded $7M for Production of M2HB Machine Guns

www.army-guide.com

Term of the day

Canister Round

The canister round is intended for close-in defence of tanks against massed assaulting infantry attack and to break up infantry concentrations, between a range of 200-500 metres, by discharging large numbers of metallic balls from the main cannon.

The canister round has not yet found a universal acceptance of tank designers as a type of tank ammunition. However, it might be very useful in 'tanks versus infantry soldiers' engagements, like those that occur nowadays in the Middle East.

Defence Industry

BAE Systems Receives Contract for M113 Upgrade Kits for Norwegian Army

BAE Systems has received a $29.7 million contract from the Norwegian Defence Procurement Division for the development and delivery of M113 upgrade kits.

The contract calls for the development and production of 72 power pack kits, air conditioning system kits, suspension kits, and track system kits for Norwegian M113 vehicles, plus the provision of logistics support and spare parts.

BAE Systems are pleased to be selected to work with the Norwegian Army to upgrade their M113 vehicles and will be working closely with the customer to field a modern, low cost, commercial power train upgrade and other vehicle improvements.

Work will be performed at BAE Systems' facility Santa Clara, Calif., and will continue through November 2008. The contract also includes options for 34 additional sets of kits, storage cases and additional spares. The kits will be installed at the customer's facility in Norway.

Contracts

Recon Optical Awarded Contract for Stabilized Remotely Operated Weapon Systems

Recon Optical has received a $5.5M production contract from Electro Optic Systems, Limited (EOS) of Australia to supply 44 of its RAVENTM R-400 Stabilized Remotely Controlled Weapon System for integration on the Bushmaster infantry mobility vehicle under ADI/THALES Australia's Project Bushranger.

Recon Optical delivered all 44 systems to EOS by the end of December 2006. By completing deliveries a full month ahead of schedule, Recon Optical demonstrates its continued focus on the end user's urgent needs and its ability to support rapid procurement programs.

The U.S. Army type classified the RAVENTM R-400 as the M101 Common Remotely Operated Weapon Station (CROWS), and through a series of urgent material requirements (UMR), over 560 units have been contracted to Recon Optical in less than 18 months. To meet this demand, Recon Optical's new lean manufacturing facility is capable of producing hundreds of units per month. Recon Optical fully supports the U.S. Army CROWS with field service engineers and maintenance facilities in the theater of operation and in Barrington, Illinois and Tucson, Arizona.

With its stabilized remote operation, the RAVEN protects Soldiers by enabling gunners to operate safely from within their vehicle's ballistic armor. The Soldier is no longer exposed to hostile fire, inclement weather, or other hazardous conditions normally associated with operating a pintle-mounted weapon system. The systems' stabilization greatly increases the accuracy of the installed weapons while on the move or stationary. RAVEN's one-shot, one-kill capability multiplies force effectiveness, lowers collateral damage potential, and minimizes logistics resupply requirements in demanding urban warfare environments.

RAVEN accommodates a variety of small caliber (5.56 and 7.62-mm) machine guns, and the M2 .50-cal and Mk-19 40-mm heavy machine guns. RAVEN mounts on the roof of HUMVEEs and other armored or un-armored vehicles.

The CROWS systems currently deployed in Iraq are getting high marks from the Soldiers using them. Soldiers in combat are obviously pleased to be off the roof and effectively firing their weapons from inside their vehicles. They have been able to engage the enemy in situations that would be impossible without the CROWS' accuracy.

Recon Optical is also teamed with EOS, who provides

the critical fire control and sensor components, for the U.S. Army's CROWS program. Together, Recon Optical and EOS have spent years developing and refining their patented RAVEN technologies.

Contracts

General Dynamics Awarded $29M to Produce Reactive Armor for Abrams Tanks

General Dynamics Armament and Technical Products, a business unit of General Dynamics has been awarded a $29 million contract from U.S. Army Armament Research, Development and Engineering Center (ARDEC) for the production of reactive armor tile sets to equip Abrams tanks.

This award modifies a contract originally awarded in August 2006 and brings the total contract value to $59 million.

The reactive armor system is made up of tiles that fasten to the exterior of the vehicles. Equipped with the General Dynamics' reactive armor tiles, combat vehicles are better able to withstand a direct hit from a variety of anti-armor munitions, including shoulder-fired rocket propelled grenades that are prevalent in many of today's regional conflicts.

Similar reactive armor systems are currently being used in Iraq on U.S. Army Bradley Fighting Vehicles and have been proven to prevent crippling damage to those combat vehicles. General Dynamics has been a leading producer of reactive armor for the Bradley Fighting Vehicle since 1995, with $417 million in Bradley reactive armor orders to date.

The production program will be directed from General Dynamics' Vermont-based Burlington Technology Center, with tile production occurring at the company's facility in McHenry, Miss.

Term of the day

Graticule

The high magnification sight is normally equipped with a graticule (or reticule). The graticule, which overlays the field of view, is a pattern of marks which can be used for alignment and gunnery purposes.

For each particular set of conditions (such as charge temperature, air pressure and target speed) a different set of graticule markings would be required, but such an approach is impractical since it would clutter the field of view and render the sight unusable. Therefore, most graticules define the correct gun position for a number of target ranges, but they are only accurate for one particular set of circumstances.

Conventional graticules are etched on to glass and either positioned in the optical path or injected via a half-silvered mirror. If too much information is included on the graticule, the operator's field of view can become cluttered. To overcome this problem, it is possible to have graticules which can be switched in and out or partially masked, although great care must be taken to maintain alignment accuracy. As an alternative, graticules may be generated electronically and these can easily be switched off or masked when not required. As both etched and electronic graticules physically exist, they can provide a reflector for the radiation from a laser sensor damage weapon. In the future, therefore, it is likely that sight graticules will be generated by holograms, which present no reflector for laser light.

Defence Industry

Swiss Army orders new Armoured Engineer Vehicle from Rheinmetall

Rheinmetall AG of Dusseldorf has won an order from the Swiss Army for a new generation of armoured engineer vehicles. Under the order, Rheinmetall will supply the Swiss Army with twelve Kodiak armoured engineer vehicles, known in Swiss military parlance as the "Geniepanzer".

Based on well proven components from the Leopard 2 main battle tank, the Kodiak has clear market potential in all Leopard 2 user countries. A number of nations have

already expressed an interest in this state-of-the-art system; some have launched procurement projects already.

Apart from its role as a heavy-duty combat engineer tool - whether in military scenarios or disaster relief operations - the Kodiak can be used to breach lanes through minefields, crucial for assuring the mobility and safety of friendly forces.

Joining forces, Rheinmetall subsidiary Rheinmetall Landsysteme GmbH of Kiel and RUAG Land Systems of Thun, Switzerland have set up a consortium to develop, market and manufacture the Kodiak. The Swiss Army is scheduled to start taking delivery of the new systems in 2009.

Over the years, some 8,000 tracked and wheeled vehicles have left the Rheinmetall Landsysteme assembly line, making the company one of the world's most experienced makers of tracked and wheeled armoured vehicles as well as combat support systems and NBC detection technology.

To perform its primary mission, the Kodiak is equipped with a high-performance hinged arm excavator mounted in centre position, as well as a dozer system with innovative cutting and tilt angle settings and a double-winch system consisting of two 9t capstan winches. When combined and deployed in multiple traction mode, these provide a pulling force of up to 62 tons. Thanks to a quick-release coupling, the excavator bucket can be exchanged for a number of other devices, including a hydraulic hammer and a universal-gripper. All of these tools are electro-hydraulically controlled and can be operated by the driver with two joysticks.

Rounding out the system's operational capabilities, the dozer blade can be swapped for a full-width mine plough, turning the Kodiak - when additionally equipped with a signature-duplicator and a lane-marking unit - into a high performance minefield-breaching system. The Kodiak's anti-landmine protection technology features correspond to those of the latest generation of Leopard 2 MBT.

To defend itself, the Kodiak will be armed with a 12.7mm machine gun and smoke grenade launcher.

Contracts

GD Awarded USD $77M Contract to Supply Mine Protected Vehicles to the U.S. Army

The U.S. Army Tank Automotive and Armaments Command (TACOM), in support of the Program Executive Office for Combat Support and Combat Service Support (PEO CS&CSS), has awarded a contract for USD$76.5 million to General Dynamics Land Systems-Canada to provide 169 RG-31 Mk5 Mine Protected Vehicles, with an option for nine additional vehicles. General Dynamics Land Systems, the Canadian company's parent corporation, is a business unit of General Dynamics

The contract was signed through the Canadian Commercial Corporation, a Crown Agency of the Canadian Government. Under this contract, General Dynamics Land Systems-Canada will provide the program management while BAE Land Systems OMC of South Africa will manufacture the vehicles. Deliveries will occur from June 2007 to January 2008.

The RG-31 Mk5 is the latest version of the highly successful RG-31 vehicle family. The Mk5 delivers a significant increase in power and payload to meet emerging requirements. In service with forces around the world, the RG-31 is a highly effective multi-role armored vehicle capable of a variety of military applications. Offering enhanced mine blast resistance, as well as protection against both improvised explosive devices and ballistic threats, these vehicles will be used by the U.S. Army in support of ongoing activities.

In October 2006, TACOM awarded General Dynamics Land Systems-Canada a contract for USD$27.2 million to provide 60 RG-31 Mk5 vehicles. In November 2006 this order was increased to 94 vehicles for an additional USD$15.4 million.

Defence Industry

Patriot Antenna Systems wins Deployable Trailer Mount Antenna Development Contracts

Patriot Antenna Systems is pleased to offer the new 3.8m and 4.8m Deployable Trailer Mount Antennas. These high performance antennas provide combined convenience and quality.

Patriot's newest Trailered antennas exemplify solid performance. These antennas provide customers with an extra link margin for hub stations in their VSAT network, video uplink, or SCPC central station.

The 3.8m Quad Band Ka, Ku, and C-band antenna allows for quick change out of feed systems and offers 180-degrees of azimuth motorization and utilizes Patriot's patented dual-skin technology with quick-disconnect points for each panel and radial Trussback structure.

The 4.8m motorized tri-fold trailer offers a cassagrain feed system for L4 Ku frequencies which allows the feed structure to stay assembled to the reflector. The side structures fold up for easy deployment.

Contracts

General Dynamics Awarded $425M for Missile Systems by Spanish Army

General Dynamics Santa Barbara Sistemas was awarded a $424.5 million contract in late December 2006 by the Spanish Army for the supply of Long Range (LR) SPIKE Missile Systems.

General Dynamics Santa Barbara Sistemas is one of four companies that comprise General Dynamics European Land Combat Systems, a business unit of General Dynamics.

General Dynamics Santa Barbara Sistemas, the prime contractor, has an agreement with the Israeli company RAFAEL for the manufacture of the systems. Approximately 60 percent of the program work will be completed in Spain, where General Dynamics Santa Barbara Sistemas will manufacture system components and perform final assembly and testing.

The SPIKE-LR is a lightweight, shoulder-launched multi-purpose missile system with a range of up to 4,000 meters. The contract calls for the manufacture of 260 launchers and 2,600 missiles, plus integrated logistics support (ILS). Work under the contract is expected to be complete by 2014.

Defence Industry

German army receives new command and control information system

Representatives of the Federal Office for Information Management and Information Technology of the Federal Armed Forces (IT-AmtBw) and the joint-venture FuInfoSys Heer (Krauss-Maffei Wegmann and Rheinmetall Landsysteme) signed the amended contract for the serial procurement of the Army's command and control information system.

After the successful conclusion of service tests, some 1500 vehicles will be equipped with the first production batch of the system by the year 2012. The contract also projects transfer services such as training and documentation. Its scope adds up to some 380 million euros.

FuInfoSys Heer serves not only for the support and preparation of deployments, but also in peacetime staff operations. Installed in mobile carrier platforms, in command-post and combat-support as well as combat vehicles, and linked up via tactical communications systems, it closes the gaps in equipping the inter-operations command and control systems of the German Army. The introduction of FuInfoSys H is the decisive step in the direction of networked operation command and control, and will significantly improve command capability. FuInfoSys H is an important system, which is adapted to the needs of supporting the modern armed forces and their conceptional adaptation to changed scenarios for intervention.

With FuInfoSys H, a comprehensive command and information link-up has been created, from the division command level right down to the squad command level. FuInfoSys H is furthermore already conceptually integrated into FuInfoSys SK, which embraces all branches of the armed forces, and in the medium-term will migrate to FuInfoSys SK as an application specific to the terrestrial armed forces. The systems will be delivered from 2007 on and their use will also include deployment in the joint German-French Brigade.

The Federal Office for Information Management and Information Technology of the Federal Armed Forces

The IT-AmtBw, which originated in a sub-section of the Federal Office for Military Technology and Procurement, is responsible for the efficient, prompt and user-oriented procurement of computer technology and up-to-date services for the entire Federal Armed Forces. Besides the analysis, conception and drafting of of standards, this also includes the implementation of IT projects and the assurance of IT security.

Krauss-Maffei Wegmann

Krauss-Maffei Wegmann GmbH und Co. KG is Europe's market leader for armored wheeled and tracked vehicles. With a workforce of approximately 2,800 and extensive system expertise, KMW as the leading system manufacturer develops, manufactures and supports a product line up ranging from air portable and highly-protected wheeled vehicles (MUNGO, DINGO, FENNEK and BOXER), to air defense and artillery systems (GEPARD, PzH 2000 and AGM) all the way to heavy battle tanks (LEOPARD 1 and 2) and armored infantry fighting vehicles (PUMA). The armed forces of 29 nations worldwide rely on operational systems supplied by KMW.

Term of the day

Laser range-finder

A laser range-finder is a device which uses a laser beam in order to determine the distance to a reflective object.

The most common form of laser range-finder operates on the time of flight principle by sending a laser pulse in a narrow beam towards the object and measuring the time taken by the pulse to be reflected off the target and returned to the sender. Due to the high speed of light, this technique is not appropriate for high precision sub-millimeter measurements, where triangulation and other techniques are often used.

Defence Industry

Pakistan, India discuss peace process

Pakistan and India renewed their commitment to carry forward a peace dialogue during talks between their foreign ministers, but no breakthrough emerged on major issues.

The three-hour talks between Indian External Affairs Minister Pranab Mukherjee and his Pakistani counterpart Khurshid Kasuri covered the Kashmir dispute, terrorism and the military stand-off at Siachen glacier.

They also discussed travel, civilian prisoners, and economic and commercial ties.

The ministers additionally reviewed the outcome from three rounds of talks under the peace dialogue that India and Pakistan initiated three years ago in a bid to bury decades of mutual acrimony and establish lasting peace.

Mukherjee said serious efforts were being made to resolve the issue of Kashmir, the Himalayan territory which has caused two of the three wars between the nuclear-armed rivals.

He said the fourth round of peace talks would be held on March 13-14, in Islamabad. Mukherjee said the first meeting of the joint anti-terrorism group set up by the two countries would be held before the end of March.

He added that the two sides had agreed to set up a committee of retired judges to visit jails in each others' countries and hasten release of prisoners who had completed their jail terms.

Mukherjee arrived here on a two-day visit primarily to invite Prime Minister Shaukat Aziz to a regional summit to be held in New Delhi in April.

He delivered Indian Prime Minister Manmohan Singh's invitation to Aziz and earlier visited President Pervez Musharraf.

Musharraf told Mukherjee the settlement of the violent dispute could lead to further cooperation between the countries, a Pakistani official statement said.

Musharraf said "that resolution of Jammu and Kashmir dispute and the Siachen and Sir Creek issues would open avenues for further cooperation between the two countries," the statement said.

The two countries are to conduct a survey in Sir Creek marshland from January 15 to demarcate a boundary which falls between Pakistan's southern Sindh province and the Indian state of Gujurat.

Expectations here ahead of the visit were that the talks would result in some decision to end the military stand-off on the strategic glacier, the world's highest battlefield.

Mukherjee said the two sides discussed the glacier issue and had agreed to call an early meeting of experts to find a resolution.

"Given the political will, it can be resolved within days. We are aware what work has already been done," Kasuri said.

Islamabad wants India to reduce troop levels from the vantage points on the glacier but India insists the process can start only after the authentication of Pakistani posts on the icy wasteland, where cold claims more lives than actual combat.

Defence Industry

Raytheon Successfully Tests New Solid-State Laser Area Defense System

Raytheon Company successfully tested a prototype solid-state laser weapon that combines the proven capabilities of the Phalanx weapon system with the power and effectiveness of lasers to defeat rockets, mortars and missiles at an operationally significant range.

The prototype solid-state Laser Area Defense System (LADS) successfully detonated 60-millimeter mortars at a range greater than 550 yards within the tactical timeline in static ground testing conducted in partnership with the United States government. This government-industry team accomplished these groundbreaking prototype tests in less than six months.

The LADS demonstration used a proven, existing, off-the-shelf solid-state laser, coupled with commercially available optics technology. The goal of the demonstration was to rapidly prove that lasers can yield military utility now by demonstrating that such a system could protect warfighters against mortars. Secondary goals of the demonstration were to offer a near-term alternative to chemical lasers, which may create logistics challenges for the warfighter, and to prove that existing optical and targeting components can significantly lower total laser system costs and speed their ultimate transition to the warfighter.

Solid-state laser technology makes LADS safe to the environment, does away with the need for caustic chemicals and radically reduces the life-cycle cost. LADS is highly mobile and has the operational capability to simultaneously engage multiple targets at tactically relevant ranges. The laser system is powered by a commercially available generator or grid electricity and

provides an extremely inexpensive, almost infinite magazine for countering mortar and rocket threats.

"In just six short months, Raytheon and government engineers went from an idea to operational field testing of a solid-state laser system that offers the potential of near-term protection for our troops," said Mike Booen, vice president of Advanced Missile Defense and Directed Energy Weapons at Raytheon Missile Systems in Tucson, Ariz. "Our solid-state LADS proves you don't have to wait another three to five years for solid-state lasers to have military utility on the battlefield. They are ready now, with no chemicals required."

LADS builds on the Phalanx weapon system to provide fast and precise search, track and engage capabilities for directing the laser energy on target. The next logical step for LADS is dynamic field testing in 2007. Raytheon has produced more than 900 Phalanx systems that fire 20-millimeter armor piercing rounds for 24 nations.

Raytheon Company, with 2005 sales of $21.9 billion, is an industry leader in defense and government electronics, space, information technology, technical services, and business and special mission aircraft. With headquarters in Waltham, Mass., Raytheon employs 80,000 people worldwide.

Exhibitions

New section of the ARMY-GUIDE web-site

Our Web site has been enlarged with a new section called Museum. This section contains pictures of some obsolete armoured vehicles.

Defence Industry

QinetiQ wins GBP9.48M armoured vehicle 'survivability' contract

A QinetiQ led team has competitively bid and won a pound 9.48m MOD research contract to deliver the Vehicle Technology Integration Demonstrator (VTID) programme.

This three-year programme will investigate and implement a layered protection approach to survivability for armoured vehicles to reduce their vulnerability to attack.

The competition and contract has been let and managed by the UK MOD Research Acquisition Organisation (RAO) working with customer Director Equipment Capability (DEC) Ground Manoeuvre. Other organisations in the QinetiQ led VTID team comprise: Thales UK, Ultra Electronics' - Electrics, SciSys, SVGC, BAE Systems, WilliamsF1 and teams from both York and Sussex Universities.

Current in-theatre operations continue to highlight that traditional armour alone does not necessarily provide sufficient protection to ensure the survivability of vehicles or crews against diverse and ever increasing types of threat. QinetiQ will be adopting a 'plug-&-play' approach to implementing solutions that can operate independently to existing systems and improve overall levels of vehicle survivability. The programme will also identify solutions that could be integrated onto new and legacy vehicles, so delivering operational benefits.

The VTID programme will investigate existing architectures and use underpinning research, along with previous trials, to 'fast-track' systems that will deliver near term benefits. The team will embrace a wide variety of technologies and concepts from visual awareness and sensor suites, disrupters and interceptors and 'soft' solutions like smoke, through to active camouflage and electric armour.

QinetiQ is proud to have won this important research work and envisage demonstration trials, using an FV432 as the demo platform, commencing in 2009. The team brings together a wealth of industry expertise, borne from many years of successfully developing and deploying quality defence technologies. By combining this with novel thinking from the universities, and WilliamsF1's experience of rapidly inserting technology on the world motor racing circuit, we have an excellent all round team that will answer one of MOD's key priorities.

Defence Industry

SciSys To Play Role in Armoured Vehicle Survivability Programme

SciSys will investigate the role of NEC in vehicle survivability as part of a QinetiQ led team.

The three-year Vehicle Technology Integration Demonstrator (VTID) programme will investigate and implement a layered protection approach to survivability for armoured vehicles to reduce their vulnerability to attack. The programme will embrace a wide variety of technologies and concepts from visual awareness and sensor suites, disrupters and interceptors and 'soft' solutions like smoke, through to active camouflage and electric armour.

SciSys is an expert in the use of Network Enabled

Capability (NEC) to collate, share, and utilise data. SciSys will investigate how NEC can be used to enhance a vehicle's survivability through improved situational awareness and operational effectiveness.

The company is proud to have this opportunity to utilise their experience of NEC and armoured vehicles which they have gained through several MOD programmes such as FRES Electronic Architecture and the NBC Battlefield Information System Application. The provision of information through NEC is becoming an increasingly essential component of a vehicle's survivability suite - knowledge of the enemy, and indeed of friendly assets, can make all the difference on the battlefield.

Term of the day

Armoured Recovery Vehicle

An armoured recovery vehicle (ARV) is a type of armoured fighting vehicle used to repair battle- or mine damaged as well as broken-down armoured vehicles during combat, or to tow them out of the danger zone for more extensive repairs.

ARVs are normally built on the chassis of a main battle tank (MBT), but some are also constructed on the basis of other armoured fighting vehicles, mostly armoured personnel carriers (APCs). ARVs are usually built on the basis of a vehicle in the same class as they are supposed to recover—thus, a tank-based ARV is used to recover tanks, while an APC-based one recovers APCs, but does not have the power to tow a much heavier tank.

Contracts

BAE Systems Receives Thermal Weapon Sights Orders

BAE Systems has received two U.S. Army orders totaling $80 million for production of thermal weapon sights.

The orders expedite production to meet Army fielding requirements and exercise remaining options under a five-year contract that calls for 29,000 of the day/night, all-weather sights.

The Army also awarded BAE Systems funding for advanced technology development that will continue to reduce the size, weight, and cost of future weapon sights.

The company received a $35 million contract modification to its Thermal Weapon Sight II (TWS II) contract to accelerate deliveries to meet Army requirements driven by the global war on terrorism. Separately, it received a $45 million order, also under the TWS II effort, to exercise all remaining base and option quantities on the five-year contract, originally awarded in March 2004.

The two awards bring the total value of the TWS II contract to $285 million. To date, the company has delivered more than 4,500 of the 29,000 weapon sights. The contract is managed by the Army's Program Executive Office-Soldier at Fort Belvoir, Virginia, and administered by the Army Communications-Electronics Command at Fort Monmouth, New Jersey.

These weapon sights provide Army infantry with the ability to detect and engage targets day or night, in all weather and battlefield conditions.

The TWS II program produces sights for applications ranging from rifles to heavy, tripod-mounted weapons. The thermal technology enables individual and crew-served weapon gunners to see deep into the battlefield, increasing their surveillance and target acquisition range.

Separately, the Army selected BAE Systems to continue development of advanced microbolometer technology designed to reduce the size, weight, and cost of future weapon sights. Under an Army contract awarded early in 2006, the company has partnered with the Army to demonstrate 17-micron, 640x480 pixel focal plane arrays in medium and heavy thermal weapon sights. The arrays have an active area about one-third the size of existing arrays.

Achieving performance comparable to the larger arrays is a significant technical breakthrough that promises major advances in thermal weapon sight technology. The goal is to ensure that these sights are highly reliable on the battlefield and easy to use.

The size reduction is made possible by state-of-the-art process technology that recently came online at BAE Systems' Semiconductor Technology Center in Manassas, Virginia. The company, in partnership with the Department of Defense, recently completed a $150 million factory modernization, providing a new specialty production capability to manufacture precision microelectronics. The company's Manassas facility recently was designated a Category 1 microelectronics "trusted source" for mission-critical DoD microelectronics, and is approved for classified microelectronics design, test, and production.

With dual foundries operating in Lexington and Manassas, BAE Systems has increased its total microbolometer manufacturing capacity by more than a factor of four.

Contracts

U.S. Army Awards General Dynamics $40 M Tank Training Ammunition Contract

The U.S. Army Sustainment Command in Rock

Island, Ill., has awarded General Dynamics Ordnance and Tactical Systems, a business unit of General Dynamics, a $39.5 million modification to a firm-fixed-price contract for M865 Target Practice Cone Stabilized Discarding Sabot-Tracer 120mm cartridges.

The M865 cartridge kinetic energy, target practice round is used in the 120mm, smooth bore M256 cannon of Army and Marine Corps Abrams main battle tanks. The M865 is designed to simulate the service round characteristics at reduced maximum ranges, to allow practice firings on short-range training areas.

Work on this contract will be performed at General Dynamics Ordnance and Tactical Systems locations in St. Petersburg; Red Lion, Pa.; and Valleyfield, Quebec; and is expected to be complete by Sept. 30, 2008.

Contracts

General Dynamics Awarded $7M for Production of M2HB Machine Guns

General Dynamics Armament and Technical Products, a business unit of General Dynamics, has been awarded a $6.9 million contract modification from U.S. Army Tank Automotive Command, Rock Island, Ill., to produce M2HB Machine Guns.

This option modifies a contract originally awarded in October 2006, bringing total contract value to date to $27.5 million.

The M2HB crew-served 12.7mm 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. Program management will occur at the company's Burlington, Vt., facility.

Future Technologies

Tadiran Communications Received $20.5M Order from Israeli Ministry of Defense

Tadiran Communications received an order in the amount of $20.5 million from Israel's Ministry of Defense. This order is an add-on to an order valued at $19.6 million for the supply of next generation radio communications systems for use by the various branches of the Israel Defense Forces, which the company received on December 2005.

The radio systems are software definable (Software Defined Radio), among the most advanced of their kind, providing high-speed simultaneous voice and data communications capabilities and supporting multiple advanced communications protocols.

The ordered radio opens the way to 3rd generation wireless military communications, meeting the demands for advanced voice and high-speed data communications in the Network Centric Warfare environment thereby becoming an essential building block for the communications infrastructure of the modern, digital battlefield.

The company recently reported the receipt of an order for the last stage of a tactical communications equipment transaction with an Asian country, valued at $42 million out of a total of $55 million. In October, the company announced a contract for the supply of the latest tactical communications equipment to a country in Africa, valued at $18 million. The company also reported that its subsidiary, Telefunken Racoms, received an order from the German government for the supply of long-range communications equipment valued at around EUR19 million. In August, it was reported that its subsidiary in the US, Talla-Tech, received an order from the US Army for the supply of rugged handheld and portable computers, valued at around $15 million.

Defence Industry

Armor Holdings Receives $19 Million FMTV Order

Armor Holdings, Inc., a leading manufacturer and distributor of military vehicles, vehicle armor systems and life safety and survivability systems serving military, law enforcement, homeland security and commercial markets, announced the receipt of a $19 million order from the U.S. Army Tank-automotive and Armaments Command (TACOM) for the production of additional Family of Medium Tactical Vehicle (FMTV) vehicles.

The Company advised that the award is made under the existing multi-year FMTV production contract, with work to be performed in 2008 by the Armor Holdings Aerospace and Defense Group at its facilities in Sealy, Texas.

Robert Schiller, President of Armor Holdings, Inc., said, "It is exciting to be building backlog for 2008, and we are extremely proud to be part of such a significant program supporting the U.S. Army."

Contracts

U.S. Army Awards NGC Integrated DoD Biometrics System-of-Systems Enterprise Solution Contract

Northrop Grumman Corporation has been awarded a contract by the General Services Administration,

Federal Systems Integration and Management Center, for the U.S. Army PEO-EIS, to provide an integrated Department of Defense (DoD) biometrics system-of-systems enterprise solution that will integrate their worldwide biometrics efforts.

The contract is valued at approximately $75 million to Northrop Grumman's Information Technology (IT) sector.

This contract is significant to Northrop Grumman due to the growing importance of biometrics in winning the global war on terrorism. This biometrics system will be the DoD's biometric repository for all identification types, linking to the intelligence community and civilian agencies, all in a focused effort to address the war on terrorism.

Under the terms of the contract, Northrop Grumman will provide program management, systems engineering and support for the automated biometric identification system. The company will also design, develop and field an enterprise solution that will include the central biometric repository, and also the tactical identification collection, enrollment and verification, allowing for near real-time retain, capture, or release data to be sent to the warfighter.

This effort will support the DoD biometric mission by operating and enhancing a biometric identification repository, associated search and retrieval services, and interfaces with existing and planned DoD and interagency biometrics systems. The Northrop Grumman solution will interface with collection systems, intelligence systems, and other biometric repositories already deployed. This solution is multi-modal, to include finger, face, iris and palm identification.

Northrop Grumman will add approximately 50 new jobs to support this contract with a majority of the positions located in West Virginia. Work on the contract will be performed in West Virginia, Fort Belvoir, Va., and Iraq.

Northrop Grumman's teammates on this contract include Ideal Innovations Inc., Arlington, Va.; L-1 Identity Solutions, Inc., Stamford, Conn.; and NEW-BOLD Enterprises, Inc., Fairmont, W.Va.

Future Technologies

Solidica Awarded $1.6M to Advance Smart Armor Technology for United States Marine Corps Ground Vehicles

Solidica, Inc. announced the award of a $1.6 million, twelve month contract with the United States Marine Corps to advance Solidica's proprietary Gradient-Modulus Energy Absorbing Material (GMEAM) technology.

The focus of the effort will be to validate the utility of GMEAM to the Marine Corps demanding field requirements and to explore optimal platform configurations.

Solidica is well aware of the critical needs of the military for effective armor solutions and is proud to be able to bring its GMEAM technology to the table. A unique element of the program will be the integration of the new armor tiles with Solidica's Pantheon vehicle sensing, diagnostic and telematic system. The integrated demonstration will showcase the ability of live damage assessment via a wireless grid of Solidica's Solo(TM) smart sensor nodes embedded throughout the armor. This program further underscores Solidica's ability to deliver rugged solutions -- armor, wireless, or otherwise -- into our customers' harsh environments and demanding market applications.

Program focused on development of retrofit armor kits for Light Armored Vehicles.

Term of the day

Infantry Fighting Vehicle

An infantry fighting vehicle (IFV, also known as mechanized infantry combat vehicle, MICV) is a type of armoured fighting vehicle (AFV) used to carry infantry into battle and provide fire support for them.

IFVs are similar to armoured personnel carriers (APCs), designed to transport five to ten infantrymen and their equipment. They are differentiated from APCs ("battle taxis") by their enhanced armament, allowing them to give direct-fire support during an assault, firing ports, allowing the infantry to fire personal weapons while mounted, and usually improved armour. They are typically armed with an autocannon of 20 to 40 mm caliber, 7.62 mm machine gun and possibly with ATGMs and/or AAMs. IFVs are usually tracked, but some wheeled vehicles fall into this category, too. IFVs are mostly much less heavily armed and armoured than Main Battle Tanks (MBTs), but they sometimes carry heavy missiles, such as the NATO 'TOW' missile and Soviet 'Spigot' which offer a significant threat to tanks.

Western powers were surprised when the Soviet Union paraded the first IFV, the BMP-1, in 1967. The BMP possessed a very low-profile and was armed with both a 73 mm smooth-bore gun and an AT-3 Sagger ATGM. Its steeply-sloped front armour offered partial protection against NATO's standard .50-calibre machine gun in a 60 degree frontal arc, while its smooth-bore gun and ATGM were a threat to NATO armoured personnel carriers and even main battle tanks. It was not quite the breakthrough some would make it out to be, as, in practice it performed similar to heavily-armed armoured personal carriers which NATO countries had been working on previously.

Since then, all major military powers have developed

or adopted IFVs. Examples include the Canadian LAV III, British Warrior, the American M2 Bradley, the Spanish Pizarro, the Italian Dardo, the German Marder and Puma, the South African Ratel, the French AMX-10P, the Swedish Combat Vehicle 90 and the Dutch YPR-765 AIFV.

Heavy infantry fighting vehicles

To cope with urban combat and mine warfare, including the use of large improvised explosive devices, there have been a number of heavy IFVs (HIFV) with the high protection level of a tank developed, based largely on experience of the Israel Defense Force (although the Canadian Kangaroo of World War II could be called the first). The Israeli Merkava tank is capable of carrying a small number of infantrymen in the back, and the Achzarit is a T-55 tank modified to be heavily armoured personnel carrier. A newer example is the Russian BTR-T, also based on the T-55. The Ukrainian BMT-72 and BTMP-84 are based on lengthened T-72 and T-84 main battle tanks, respectively, and retain the tanks' 125mm main guns.

Infantry fighting vehicle doctrine

In the times of asymmetrical warfare, local crises, and urban combat zones, the IFV is more important then ever. The IFV offers a viable compromise between mobility, armour protection, and firepower. They can be used in high and low intensity conflicts as well as peacekeeping operations. The latest vehicles, like the Patria AMV, have been designed with an emphasis on modularity that improves their repairability in the field.

Most infantry fighting vehicles are amphibious and air transportable. Wheeled IFVs can travel great distances on their own without needing flat-bed trucks and railway. In contrast, tracked vehicles need to have their treads serviced or replaced on a regular basis. The tracks themselves and the weight of the IFVs tend to be tough on road surfaces, wearing them down more quickly than a wheeled IFV. Consequently, wheeled IFVs have great tactical and strategical mobility. Moreover, many of the wheeled vehicles can extract themselves from the battlefield even on flat tires. A tracked IFV would require a heavy vehicle to tow it out of the same situation.

Infantry fighting vehicle components

Armour and countermeasures

Generally, IFVs have thinner and less complex armour than tanks to ensure mobility. Most IFVs are proof against heavy machine guns, artillery fragments, and assault rifles. It should be noted that the IFV's mission does not include anti-tank duties except in emergencies or in support of tank units, therefore it needs less protection from heavy weapons fire. Instead, the Infantry Fighting Vehicle, as its name implies, is supposed to carry riflemen and their weapons into the battlefield where they dismount and fight outside the vehicle with the support of the IFV's main armament.

In IFVs, the thickness of armour varies widely between models. Some vehicles are proof against nothing larger than 12.7 mm projectiles while others, such as Sweden's CV90, can withstand frontal hits from 30 mm autocannon. The sides, roof, and floors of IFVs have thinner armour. Vehicles must also protect crew against anti-personnel mines and against anti-tank mines.

Newer vehicles like the Finnish Patria AMV uses armour made in interchangeable modules of various thickness. This permits the vehicle to be tailored for particular missions such as decreasing the weight of vehicle for air transportation or strengthening the protection if it engages in dangerous missions. The latest models of the Russian BMP-3 use the Arena active protection system (APS) that protects the vehicle from guided and unguided missiles with velocities from 70 to 700 meters per second. Israeli IFVs will soon employ the "Iron Fist" APS which can defeat kinetic APFSDS tank rounds.

The most common counter measures are smoke grenade dischargers. These help Infantry Fighting Vehicles to avoid a hits from ATGMs by allowing the IFV to hide behind a smoke screen. Some vehicles, such as the French VBCI, employ infra-red jamming flare dispensers. These are effective against missiles with IR guidance systems.

Main armament

The primary weapon on most IFVs is an autocannon between 20 and 40 mm. The most new vehicles mount 30mm cannon. It is effective against a wide range of targets such lightly armoured vehicles, infantry, helicopters, low-flying fixed-wing aircraft, and of course, "soft" unarmoured trucks and scout cars. It can fire several types of munitions, including high explosive, incendiary. and kinetic rounds. Germany's Puma can fire air burst munition (ABM), that contain hundreds of tungsten rods and that are effective against vehicles, helicopters, and stationary strong-points. IFV cannons can elevate their barrels by as much as 70 degrees to permit their crews to engage aircraft. The Puma's main weapon has a cyclical fire rate of up to 800 rounds per minute, other modern auto-cannons have similar rates of fire.

Machine guns

On all IFVs, a coaxial machine gun is mounted on the turret along with the main armament. The most common caliber is 7.62 mm. Some vehicles mount more machine guns, for example on the German Marder, one machine gun fires from the rear of the vehicle.

Missiles

Some IFVs are equipped with anti-tank guided missiles. These missiles are mostly medium range (2000-4000 m). Others carry anti-aircraft missiles or a combination of the two, such as the 2T Stalker.

Grenade launchers

Some new vehicles come equipped with 30 or 40 mm automatic grenade launchers. All IFVs also have smoke grenade dischargers for concealment.

Robots

iRobot Awarded $16.58M for First Major Deployment of Explosive-Detection

Robots

iRobot Corp. announced it was awarded a $16.58 million order for delivery of more than 100 explosive-detection robots for use by the U.S. military in Iraq.

The contract was granted by the procurement office of the Naval Air Systems Command on behalf of the Robotic Systems Joint Project Office (RSJPO) at Redstone Arsenal, Ala. iRobot expects to begin delivery of the units in the first half of 2007. The company has teamed with ICx Technologies to integrate its award-winning, explosive-detection technology onto the combat-proven iRobot PackBot(r) platform. The technology has been successfully tested in Iraq during the past year.

The payload, called the ICx Fido for iRobot PackBot 500, can detect explosives' vapors emanating from Improvised Explosive Devices (IEDs). PackBot features a highly dexterous, 7-foot arm that allows the robot to place the explosive sensor close to suspicious packages and other objects, as well as reach through car windows and under vehicles. PackBot can then use its on-board capabilities to destroy IEDs, while warfighters remain out of harm's way.

"This RSJPO order marks the first major deployment of explosive-detection robots and demonstrates a new market application for robot technology," said Vice Admiral Joe Dyer (U.S. Navy, Ret.), president of iRobot Government & Industrial Robots. "There is a critical need for robots that can safely detect and disrupt explosives, not just for warfighters deployed in Iraq, but also for first responders around the world."

"The digital, modular architecture of iRobot PackBot enabled rapid and easy integration of the Fido payload, ensuring that iRobot can quickly meet the needs of the customer," said Joel Roark, general manager of ICx Nomadics, the business unit of ICx Technologies involved in the integration. "The Fido payload is highly sensitive and, combined with PackBot, makes a formidable and mobile explosive-detection robot that removes the human operator from harm's way."

To date, iRobot has delivered more than 800 PackBot robots to a broad range of military and civilian customers worldwide. The robots have performed tens of thousands of missions in Iraq and Afghanistan and are credited with saving soldiers' lives.

Defence Industry

Oshkosh Truck Contracted by USMC To Provide Four Armored Vehicles For Testing

Oshkosh Truck Corporation announced today that the company has been awarded a contract by Marine Corps Systems Command to provide four test vehicles in support of the Mine Resistant Ambush Protected (MRAP) vehicle program. Under the contract, Oshkosh will provide two Category I and two Category II vehicles, which will then undergo testing at the government's Aberdeen Proving Ground. Oshkosh Truck was one of several companies awarded a contract to provide vehicles for testing under the MRAP initiative.

The Category I vehicle is the smaller of the two vehicles, intended for urban operations and referred to as the Mine Resistant Utility Vehicle (MRUV). The Category II vehicle is a larger platform, designated as the Joint Explosive Ordnance Disposal Rapid Response Vehicle (JERRV), and is designed to carry up to 10 passengers on multiple types of missions.

Following testing, the Marine Corps program office can place orders on the Indefinite Delivery, Indefinite Quantity contract for up to 1,500 of the Category I vehicles, and 2,600 of the Category II vehicles. The MRAP program is a joint acquisition taking place under Rapid Deployment Capability authority, intended to field protected vehicles to forces in theater in large quantities as rapidly as possible.