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Contracts

Kongsberg Signs MNOK 32 Contract with US Army



Kongsberg Protech has signed a contract valued at MNOK 32 with the US Army. The contract encompasses the delivery of weapons control systems, and contains options that can increase the scope of the contract to MNOK 50.

This is the first contract Kongsberg has signed directly with the US Army. The weapons control system was developed to protect shooters on armoured personnel carriers. Weapons and advanced sensors are mounted on the outside of the vehicle, while the operator remotely controls the system from a protected position inside the vehicle. The system has previously been sold to Norway, the USA, Australia and Finland.

Defence Industry

U.S. Increases Order for Combat-Tested Raytheon-Lockheed Martin Javelin



TUCSON, Ariz., -- The U.S. Army has awarded the Raytheon-Lockheed Martin Javelin Joint Venture (JV) a \$95 million contract for Javelin Anti-tank Weapon System production.

The contract is for 120 command launch units and 1,038 missiles. Javelin is currently in full-rate production.

It is in service with the U.S. Army and Marine Corps, as well as the armed forces of Australia, and has been used extensively in current operations including Operation Iraqi Freedom, where more than 1,000 rounds have been fired against tanks and alternate targets.

"Our customer has told us that during the initial invasion, Javelin played a critical role in neutralizing Iraqi armor," said Mike Crisp, president of the Javelin JV. "This was evident in the taking of Baghdad Airport and also in the Battle of Debecka Pass, where 30 U.S. special forces who were pinned down by an advancing Iraqi armored column used Javelin to stop the enemy in its tracks and sustained no casualties."

"Since the armored threat was eradicated, Javelin has seen extensive use against alternate targets such as buildings, bunkers and light armored vehicles," added Howard Weaver, Javelin JV vice president. "We have

received strong user testimonials on how important Javelin was in the recapture of Fallujah from insurgents."

In addition to the Javelin systems deployed by the U.S. and Australia, Javelin has been selected by nine other countries and is currently being evaluated for integration onto ground and naval platforms. The Javelin JV is also working on a number of technology spirals in support of future requirements, including extended range.

Defence Industry

Holland Orders 74 BvS10 All Terrain Vehicles from BAE Systems



The Netherlands Defence Materiel Organisation has today signed a contract with BAE Systems Land Systems Hagglunds for 74 BvS10 All Terrain Vehicles valued at approximately 570 mSEK (approximately J43 million). The BvS10 is being acquired for the Royal Netherlands Marines.

The vehicle will be procured in four variants; troop carrier, command, repair & recovery, and ambulance. They will be used for worldwide operation as logistics vehicles for carrying both troops and equipment. They will supplement the Bv206 vehicles in service with the Dutch Royal Marines since the early 1990s.

Series deliveries of the BvS10 will commence in January 2006 and will conclude in April 2007. The BvS10 is the latest generation of the Land Systems Hagglunds All Terrain Vehicle family, and is based on more than 25 years experience of articulated all terrain vehicle design and production. Compared with the Bv206, 11,000 of which have been sold to forty countries around the world, the BvS10 has, in addition to armour protection, a higher load-carrying capacity and greater top speeds both on and off-road. The BvS10 is currently in operation with the British Royal Marines, and is under trial and evaluation in military procurement projects in France and Finland.

Sven Kegevall, President of Land Systems Hagglunds, said: "We are delighted to be awarded this important contract, further cementing our relationship with the Netherlands. The BvS10 provides the Netherlands Royal Marines with the ability to safely transport personnel and equipment to remote and inaccessible places." "This contract also supports our marketing of the BvS10 and highlights the need for armoured all terrain vehicles in the future. The BvS10 has primarily been designed for multi-role worldwide operations, for emergency and peacekeeping operations, being capable of rapid deployment and outstanding performance.

"BAE Systems Land Systems is part of the CS&S and Land Systems group. It has some 5,100 employees across

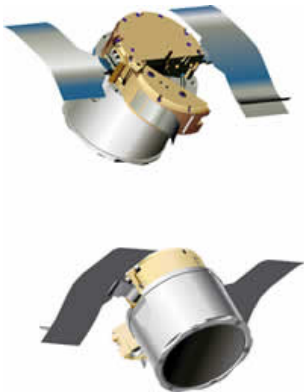
four business streams: Land Systems Hagglunds, Land Systems Weapons & Vehicles, Land Systems Munitions & Ordnance and Land Systems OMC. Land Systems' product portfolio includes military vehicles, main battle tanks, munitions, artillery, armoured personnel carriers, infantry fighting vehicles, turreted weapon systems, engineering vehicles and bridging equipment that can be fully integrated and supported to meet a range of customer requirements. Land Systems Hagglunds designs, manufactures and markets military vehicle systems.

The company's primary products are infantry fighting vehicles (IFV), armoured all-terrain vehicles (ATV) and turret systems.



Defence Industry

Sweden and France Take Bonus into Service



In a test earlier this month, the Swedish Artillery fired four 155mm artillery shells against seven gas heated objects.

Seven of eight possible submunitions hit the target. The shell also demonstrated fully accurate flight despite experiencing very strong winds conditions.

This result (more than 1, 7 target hit per shell) confirms result from last Acceptance Test firing, conducted in France in December 2004.

During this test, seven shells were fired against electrical heated objects. Twelve of 14 possible submunitions hit the target.

"The test's success marks a key milestone for fielding the Bonus with the Swedish and the French Army", said Borje Nyquist, the Bofors Defence Product Director.

The Bonus system was developed by Bofors and GIAT and is now in serial production in both Sweden and France under multi-year production contracts.

Bonus brings to cannon artillery a precise, cost-effective method for destroying enemy armored and hard targets.

It consists of a 155-mm spin-stabilized projectile that enhances cannon artillery precision by dispensing – during flight – two Sensor Fuzed Munitions that can attack and destroy tanks and other armored combat vehicles.

The system is the only cannon-fired precision munition currently in full rate production.



Exhibitions

Omsk hosts international military weapons and technologies exhibition



The 6th international exhibition of military equipment, technologies and weapons for ground forces, VTTV Omsk 2005, opens in Omsk, West Siberia, on Tuesday.

It will also present civilian conversion products, such as science-driven technologies, new materials and high-capacity equipment.

The Omsk exhibition is the world's largest military show with over 200 Russian and foreign participants, the region's main department for press, broadcasting and mass communications reported.

The riding and firing qualities of the exhibits will be demonstrated at a testing ground in the region. This will be the most spectacular part of the event, the organizers say, and will be broadcast live by satellites to over 30 countries.

The immobile exposition will take place in the new exhibition center Kaskad, in central Omsk. The area of the exposition is about 6,000 sq m.

The zest of the event will be the Kosmos 3M light launch vehicle (made by the Omsk-based Polyot plant), which will be shown for the first time after modification. The vehicle, whose nose was broadened, has been dubbed "the dolphin".

On the sidelines of the exhibition the 3rd International Technological Congress "Military Equipment, Weapons and Dual-Use Technologies" will take place.

The organizers expect that the exhibition will be visited by some 100,000 people and about 40 foreign delegations, which will come with business purposes.

"The experience of previous exhibitions has shown that regional exhibitions provide unique opportunities for a majority of our enterprises to fully demonstrate their products and capabilities," said Omsk region governor Leonid Polezhayev in the run-up to the opening of the show, which will be held on June 7-11.

The exhibition is held once in two years. The first one was organized in 1996 and became one of the first such events in Russia.



Defence Industry

Patria to Take Part in Vehicle Bidding Process in the Czech Republic



Patria has received an RFQ for the rearmament of the Czech Armed Forces with new wheeled Armoured Personnel Carriers and Infantry Fighting Vehicles.

Patria now officially declares its intention to take part in the public tender process and capitalize on the efforts invested and local knowledge developed during its presence in the Czech Republic during the last three years.

The procurement includes 199 vehicles and an option for 35 and its total value is approximately EUR 700 million. Patria offers the Czech Republic the Patria AMV 8x8 vehicle, the only fourth generation armoured wheeled vehicle now in serial production. Patria is an internationally operating Aerospace and Defence Group with significant positions in the Baltic region. Patria's key business areas are armoured wheeled vehicles, mortar systems, helicopters and aircraft, and life cycle support of these products. Patria delivers internationally competitive solutions to global markets based on its own specialist know-how and partnerships.

Patria's owners are the Finnish State and European Aeronautic Defence and Space Company EADS N.V.



Defence Industry

U.S. FCS Program May Be Opened to Britain, Australia



Facing budgetary limits, rising costs, increased scrutiny, and difficulties with several major components including the JTRS radio/networking system, the U.S. Army's \$120+ billion Future Combat System led by prime contractors Boeing and SAIC Corp. may be about to look abroad for assistance.

While FCS was not designed with several participating nations in mind, the Army's Security Assistance Command has been involved in FCS for the past several

years to anticipate foreign military sales and government-to-government collaboration. In addition, several nations have expressed interest in buying specific FCS platforms once they are developed.

Kevork Juskalian, a Booz Allen Hamilton contractor in the PM UA-T office, tells National Defense magazine that the possibility of foreign military sales is "still on the drawing board."

With that said, several U.S. coalition partners, such as the United Kingdom, Australia, Singapore and France, are in the process of developing their own future force and/or advanced infantry programs that could be compatible with FCS technologies. The most significant step this year will be to sign technology-partnering agreements with the United Kingdom and Australia, said Juskalian. In addition, the U.S. Army and the Defense Advanced Research Projects Agency signed a general agreement with Singapore last year to conduct experiments and develop land warfare concepts and technology.



Defence Industry

Army's Future Combat Systems Could See International Partners

U.S. Army officials are in the early stages of discussing foreign military sales and international collaboration on the service's most ambitious modernization program.

Like all Army programs, the Future Combat Systems, a network of 18 manned and unmanned systems, is designed to respond to the service's requirements, and not overtly to foreign military demands. But the Army's Security Assistance Command has been involved in FCS for the past several years to anticipate foreign military sales and government-to-government collaboration.

Unlike the multi-service, multi-national joint strike fighter program, FCS was not designed with several participating nations in mind, said Lt. Col. John Hinds, who works in the office of the program manager for unit-of-action technologies at Fort Belvoir, Va.

But several nations have expressed interest in buying FCS platforms once they are developed, officials said.

Since the \$120 billion plus program is in its beginning stages, the possibility of foreign military sales is "still on the drawing board," said Kevork Juskalian, a Booz Allen Hamilton contractor in the PM UA-T office. FCS program officials recently had to iron out oversight problems in the contract with Boeing, the prime contractor. The program also is likely to face a series of technology and timeline hurdles.

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The U.S. Army and the Defense Advanced Research Projects Agency signed an agreement with Singapore last

year to conduct experiments, and develop land warfare concepts and technology. These agreements ultimately are aimed at establishing interoperability with coalition partners and are not necessarily intended to spur FCS sales abroad, said Neil Baumgardner, who works for Boeing's FCS international business development office. "We are in agreement that we are a long way away before foreign military sales of individual platforms will take place," he said. "It is our understanding that the U.S. government is still reviewing the implications of FCS and potential foreign military sales."

Boeing and SAIC Corp. are the system integrators. Boeing accepts proposals from foreign companies, but all those are subject to State Department technology transfer regulations, said Baumgardner.

Boeing, through its FCS international business development office, is marketing the system-of-systems common operating environment. But as discussions are taking place on how to communicate and work with U.S. allies, the backbone for FCS communications now is suffering a serious setback. The joint tactical radio system, known as JTRS, is experiencing delays and is undergoing a management shakeup.

Apart from JTRS, there are a series of other challenges in developing FCS technology, said Murphy, a senior engineer in the PM UA-T office. FCS vehicles have to be transportable in the Air Force's C-130 cargo planes, and have to be able to be dropped from the air.



Contracts

DRS Technologies Receives \$43 Million In U.S. Army Contracts For Next-Generation Thermal Weapon Sights

Parsippany, NJ, -- DRS Technologies, Inc. announced that it has received \$43 million in new orders to produce a family of next-generation Thermal Weapon Sights for U.S. Army ground force applications.

DRS received the new orders from the U.S. Army's Communications-Electronics Command (CECOM) in Fort Monmouth, New Jersey, acting on behalf of Program Executive Office Soldier. For these awards, DRS will produce light, medium and heavy Thermal Weapon Sights (TWS), which will utilize the company's uncooled infrared technology. Work for these contracts will be accomplished by the company's DRS Optronics facilities in Palm Bay and Melbourne, Florida, and DRS Infrared Technologies facilities in Dallas, Texas. Deliveries of more than 4,000 high-performance, affordable, reliable and soldier-friendly TWS will commence in October 2005 and continue through October 2006.

These orders are part of a competitively secured five-year contract awarded to DRS in March 2004. The contract has a base value of \$118 million and a total value of \$375 million, including options.

"DRS is an industry leader in uncooled, high-performance, thermal imaging systems, and the

TWS is a cornerstone program for DRS in this core technology area," said Fred L. Marion, president of DRS's Surveillance & Reconnaissance Group. "The TWS is optimized to place increased lethality in the hands of individual war fighters, enhancing their survivability on the open and urban battlefields. Moving a key DRS soldier systems product line into high-rate, multi-year production, the TWS program will contribute immediately to the military's current and future force objectives."

Using advanced microbolometer-based infrared technology, the DRS family of light, medium and heavy TWS will provide U.S. Army soldiers and armament crews with greater range of threat detection and wider field of view at a reduced cost. These sights will better equip the war fighter to see the battlefield and safely engage the enemy.

The TWS produced under these latest orders will mount onto a variety of light, medium and heavy weapons, including M2 and M240 machine guns, M4, M16 and M82 assault rifles, M24 Sniper Weapon System, M107 anti-materiel gun, M136 rocket launcher, MK19 and M203 grenade launchers, and M249 Squad Automatic Weapon.

Similar next-generation thermal weapon sights produced by DRS have broad application for various missions of U.S. military services, including the Marine Corps, Navy, Air Force, Coast Guard and Special Operations, in addition to the Army. The variety of DRS's uncooled infrared sensors ensures availability to international militaries, as well. The company's thermal weapon sights product line can be used for homeland defense initiatives, such as first responders and government customs and border control/protection agencies, in addition to private security companies, domestic law enforcement agencies, and for applications where the protection of high-value assets and critical infrastructure from terrorist threats are priorities.



Defence Industry

EU and Ukraine Seal Galileo and Aviation Agreement

Brussels --- Negotiations on Ukraine's participation in Europe's satellite radio navigation programme finally reached approval. The agreement was initialled today in Kiev by Francois Lamoureux, Director-General for Energy and Transport at the European Commission, and by Oleh Shamshul, deputy Minister of Foreign Affairs of Ukraine.

A first agreement between the EU and Ukraine in the field of civil aviation was also initialled today. The agreement will give any European airline access to the Ukrainian market from any Member State of the EU and is a first step towards the creation of a Common Aviation Area with Ukraine.

The Galileo agreement initialled today with Ukraine provides for co-operative activities on satellite navigation in a wide range of sectors, particularly in science and technology, industrial manufacturing, service and market

development, as well as standardisation, frequency and certification. It also represents the first step towards the extension of EGNOS (European Geostationary Navigation Overlay Service) to Ukraine and the participation of the country in the programme through a stake in the GALILEO Joint Undertaking. Ukraine is one of the eight countries within the world space community with significant technological knowledge on space programmes and important achievements on GNSS (Global Navigation Satellite System) applications, equipment, user segment and regional technology.

The Ukrainian space industry is among the world's leader in the design and production of launchers and GNSS components. The Galileo agreement with Ukraine confirms the European Union's ambition to further stimulate international cooperation. Ukraine is the third country formally joining the GALILEO programme after China and Israel. Discussions are under way with India, Morocco, Brazil, Mexico, Chile, South Korea, Canada, Argentina and Australia. The ever growing interest of third countries to participate in the GALILEO programme represents a big boost for the GNSS market, which is potentially considerable: 3 billion receivers and revenues of some 275 billion euros per year by 2020 worldwide, and the creation of more than 150.

000 highly qualified jobs in Europe alone. The aviation agreement is the first agreement in the field of civil aviation between the European Union and Ukraine. The agreement brings existing bilateral air services agreements between the Member States and Ukraine in line with EU legislation. It ends the national provisions that do not authorise European carriers to fly to Ukraine unless they leave from their countries of origin. All 25 bilateral agreements between EU Member States and Ukraine will remain in force with the exception of those provisions changed by today's agreement.

The Commission has initialled similar agreements with 15 countries worldwide including Australia, New Zealand, Bulgaria, Romania, Morocco as well as Georgia and Azerbaijan.

officer Michael Woodson at the Marine Corps Systems Command in Quantico, VA.

The U.S. Marine Corps recently asked Lockheed Martin to modify the shoulder-fired, short-range Predator anti-tank weapon into a direct-attack urban assault weapon for use in Iraq. Renamed the Short-Range Assault Weapon-Multiple Purpose Variant (SRAW-MPV), the new urban assault missile has a multiple-purpose blast warhead instead of a top-attack anti-armor warhead, enabling it to defeat a variety of targets such as buildings and bunkers as well as light-armored vehicles, "technicals," et. al.

These modifications put the weapon in the rare class of a short-range soft-launch assault weapon that can be fired from inside enclosures like buildings with just single hearing protection. In addition, its point-and-shoot, fire-and-forget inertial guidance system minimizes the both gunner exposure and involvement in the middle of a firefight, and corrects for in-flight disturbances such as cross-wind to ensure greater accuracy.

The Lockheed Martin Predator is a lightweight close range anti-tank missile system which complements the Javelin anti-tank missile. The shoulder-mounted fire and forget missile weighs less than 10kg. Predator fills an intermediate role, beneath the Javelin but with a longer range and higher lethality than the AT4 and other assault rockets.

Both the Predator and SRAW-MPV versions are fully ready to deploy.

A total of 700 rounds are due to be retrofitted with the new warhead, which is most of the USA's missile stockpile. In February 2002, the United States Marine Corps signed a contract with Lockheed Martin for low-rate initial production (LRIP) of 330 Predator systems. A second LRIP contract for 400 systems was signed in January 2003, after which further production was cancelled.

Lockheed Martin, MBDA and Insys also came together to propose a modified version called Kestrel for the UK Next Generation Light Anti-Armour Weapon (NLAW) requirement, but lost out to MBT-LAW led by Saab Bofors Dynamics in May of 2002.

Nevertheless, the Predator system may still have a future beyond the current upgrade cycle. The U.S. Army is currently evaluating options for upgrading its urban assault weapon capabilities, and many U.S. allies have similar urban warfare requirements or are considering them in light of Iraq's lessons.

Army

Fast Predator Turnaround Delivers Urban Assault Punch to Marines



Responding to an urgent request from warfighters, Lockheed Martin expanded the capabilities of its Predator anti-tank weapon and delivered 400 rounds to the U.S. Marine Corps in less than six months, prompting praise from, SRAW project

Defence Industry

United Defense Successfully Demonstrates Course Correcting Fuze for Cannon Artillery

MINNEAPOLIS - United Defense Industries, Inc. demonstrated a cost-effective system to improve cannon artillery accuracy with the successful firing of inert M795 155-mm cannon projectiles equipped with a two-directional Course Correcting Fuze

(CCF). United Defense has developed this new system with teammates Bofors Defence, Rockwell Collins and BT Fuze Products.



The CCF is a revolutionary, GPS-based innovation that dramatically improves the effectiveness of existing cannon artillery ammunition and provides near-precision accuracy that is critical in combat environments. It can be employed on all types of U.S. 155-mm and 105-mm projectiles in the U.S. Field Artillery inventory, and is ready for a fast track full scale development and early fielding.

United Defense successfully fired M795 rounds equipped with the CCF from a M109A6 Paladin to ranges of 14.5 kilometers at Yuma Proving Ground. Preliminary analysis from the demonstration confirmed United Defense's laboratory analysis and the projectiles equipped with the CCF achieved a precision error of less than 50 meters - three times more accurate than the control rounds.

"Urban conflict in Iraq has re-validated the need for accurate and responsive cannon fired artillery," said Jim Unterseher, director of Army Programs at United Defense. "This successful CCF demonstration proves an affordable solution for dramatically improving the accuracy of cannons has arrived and can be quickly fielded. With CCF, we're doing for cannon artillery what JDAM did for air delivered munitions - we're making existing iron projectiles smart."

The CCF makes projectiles more accurate by integrating G-hardened, military GPS with proven flight control technology. Before a CCF-equipped round is fired, the target's GPS coordinates are programmed into the fuze. After the round is fired, the CCF guides the projectile to the target by deploying three different types of brakes (deployable fins) that adjust the projectile's range and deflection. During the projectile's flight, satellites communicate with the fuze to ensure the brakes deploy at the right time and continually adjust the projectile's trajectory to guide the round to its intended target.

United Defense's successful demonstration of the two-directional CCF prototype in a gun-fired environment is an industry first and it places the system at Technology Readiness Level 6.

"United Defense is pleased to be teamed with the premier munitions and fuze experts at Bofors Defence and BT Fuze Products, and munition GPS experts at Rockwell Collins to develop and produce the CCF," said Keith Howe, vice president and general manager, United

Defense Armament Systems Division. "With more than five years already invested by this team in the CCF program, we are positioned to deliver this new capability to the Army in less than 12 months."

Building on the success of these latest CCF demonstrations, the United Defense-led team will continue to enhance its preliminary CCF design and research a broader range of applications for the technology.

Defence Industry

Stewart & Stevenson Secures Funding for Option Vehicles Contract Modifications Valued at \$264 Million



HOUSTON -- Stewart & Stevenson Services, Inc. announced that Stewart & Stevenson Tactical Vehicle Systems, LP (TVS) received two contract modifications valued at approximately \$264 million. These modifications call up the remaining 1,310 option vehicles for the third program year of the current Family of Medium Tactical Vehicle (FMTV) production contract which begins on October 1, 2005. It also marks the first contract modifications funded by the 2005 Supplemental Spending Bill to the President's budget.

Dennis Dellinger, President of Stewart & Stevenson TVS, said, "This award marks the first stage of a significant increase in FMTV sales as a result of the Supplemental Spending Bill. It also reflects the importance of the FMTV and its operators to every facet of land operations and demonstrates the direct support the FMTV provides in the war on terror."

Max Lukens, Stewart & Stevenson's President and Chief Executive Officer, said, "These awards and the additional orders that may result from the recently approved Supplemental Spending Bill demonstrate the US Army's commitment to the FMTV. Its adaptability and reliability allow the FMTV to meet our customer's needs, and we are proud of the efforts of our employees in delivering this product to the US Army."

Stewart & Stevenson has produced over 27,000 FMTV vehicles since 1991 from their state-of-the-art facility in Sealy, Texas. The FMTV, which includes 2.5-Ton, 5-Ton and 10 Ton trucks in more than 15 active variants, has become the platform of choice for the U.S. Army. In April 2005, Stewart & Stevenson widened their military product range to include the 4x4 and 6x6 Pinzgauer all-terrain vehicle. Stewart & Stevenson continues to deliver its Low Signature Armored Cabs

which are protecting the soldier in the field of battle.

Command to provide additional M1114 Up-Armored HMMWVs.□

Defence Industry

KMW Hands Over First DINGO 2 To Austrian Army



The Austrian Army on Monday in the presence of the Federal Minister of National Defence, Mr. Gunther Platter, as well as numerous representatives from business and the media took delivery of the first security and patrol vehicle, type DINGO 2. At a checkpoint, the guests were given a demonstration of the operational role of the DINGO 2 as a security vehicle. Austria has ordered a total of 20 DINGO 2 vehicles for armoured personnel transport missions and is at the same time the first export customer.

"Our soldiers are doing their best in whatever mission they are deployed. We must provide them with the best possible equipment and maximum protection. The roll-out of the DINGO is therefore an important milestone for the Austrian Army", says Gunther Platter.

"With the DINGO 2, Austria is receiving a vehicle optimally matched to the new threat scenario and challenges of armed forces. A protected squad compartment is therefore high up on the list of priorities and the modern system layout of the DINGO 2 is the right answer to this", said Frank Haun, managing director and deputy chairman of the KMW Board of Management. Aside from Austria, orders are in hand for 52 DINGO 2 for the German Army and 220 (plus 132 options) for the Kingdom of Belgium.

The company indicated that the majority of the Up-Armored HMMWVs will be delivered to the U.S. Army with quantities also purchased for the U.S. Marine Corps, the U.S. Air Force, and two international customers through the Department of Defense Foreign Military Sales program.

Work will be completed in 2005 and early 2006 by Armor Holdings' Aerospace and Defense Group facilities located in Fairfield, Ohio. The company also stated that it will provide an update to previously provided fiscal year 2005 financial guidance during its July second quarter conference call. Robert Schiller, President of Armor Holdings, Inc., said, "We continue to support the Army's Tank-automotive and Armaments Command as the U.S. Army acts as the executive agent for HMMWV armoring programs to all of the U.S. Armed Services and international military partners.

It is truly an honor to serve our Nation's needs and we pledge to continue to do all that we can on behalf of our men and women in harm's way."

Army

Army Battalion Becomes First Unit Equipped With Lockheed Martin's Future Force HIMARS Launcher



DALLAS -- The U.S. Army today introduced its first unit equipped with the Lockheed Martin High Mobility Artillery Rocket System (HIMARS), helping the service meet its goal of fielding a lighter, more mobile and more flexible fighting force.

Lockheed Martin's HIMARS was presented to Lieutenant Colonel William Turner, commander, 3rd Battalion, 27th Field Artillery, XVIII Airborne Corps, in a ceremony at Fort Bragg, NC, as the 3-27th Field Artillery Regiment (FAR) became the first certified HIMARS Battalion. The ceremony was witnessed by hundreds of soldiers, suppliers, dignitaries and Lockheed Martin personnel, many of whom supported user training and transition of the HIMARS system to the warfighter.

"The efforts of the HIMARS fielding team have been outstanding," said Turner. "This professional team, composed of various agencies, has served us extremely well and has delivered a first-class product. Our Soldiers are excited about the fielding and feel extremely proud and privileged to be the first unit equipped with HIMARS. Our Soldiers are trained and ready to meet the challenges of the future." "HIMARS has met and

Contracts

Armor Holdings, Inc. Receives \$95.6 Million Up-Armored HMMWV Order



JACKSONVILLE, Fla. -- Armor Holdings, Inc., a leading manufacturer and distributor of security products and vehicle armor systems serving law enforcement, military, homeland security and commercial markets, announced today that it has received a \$95.6 million contract award from the U.S. Army Tank-automotive and Armaments

surpassed all expectations and requirements," said Dick Moyer, HIMARS program director at Lockheed Martin Missiles and Fire Control. "This event symbolizes the incredible effort and level of professionalism that the HIMARS team has demonstrated in achieving this defining moment.

HIMARS is C-130 transportable, supports existing and new munitions and meets all of the requirements of the Future Force." Total joint procurement of the system for the Army and Marine Corps is expected to be more than 900 launchers. HIMARS can accommodate the entire family of Multiple Launch Rocket System (MLRS) munitions, including all variants of the Army Tactical Missile System (ATACMS) missile. Additionally, HIMARS is capable of launching the new Guided MLRS and its unitary variant, the next major step in the evolution of the MLRS Family of Munitions, offering advanced capabilities, reduced logistics support and precision attack.

Designed to enable troops to engage and defeat artillery, air defense concentrations, trucks, light armor and personnel carriers, as well as support troop and supply concentrations. HIMARS can move away from the area at high speed following launch, before enemy forces are able to locate the launch site. Because of its C-130 transportability, HIMARS can be deployed into areas previously inaccessible to heavier launchers. It also incorporates the self-loading, autonomous features that have made MLRS the premier rocket artillery system in the world. HIMARS carries a single six-pack of MLRS rockets, or one ATACMS missile.

Its fire control system, electronics and communications units are interchangeable with the existing MLRS M270A1 launcher, and the crew and training are the same. HIMARS prototypes were successfully employed in Operations Iraqi Freedom.



Defence Industry

BAE Gets Overseas Orders



South Africa's leading designer and manufacturer of armoured vehicles, BAE Systems Land Systems OMC, has had to rearrange its production facilities to meet the needs created by its recent hat-trick of significant international orders for its products.

"We have already had to employ 150 new contract workers to meet the demand," reports company international marketing director Tony Savides. Since late February, the company has announced orders for 148 RG-31 medium mine-protected vehicles from the US army, an order for 102 RG-32M mine-hardened patrol vehicles from the Swedish army and an order for 30 RG-12 public-order vehicles from the Italian national militarised police force, the Carabinieri. The announcements of the latter two orders were made only five days apart, in the second half of May. The Swedish order is worth R180-million, the Italian order R64-million and the US order R468-million (of which Land Systems OMC will get a substantial portion). In total, this comes to 280 armoured vehicles - exports on a scale that is unprecedented for the South African industry since the Second World War - worth R712-million. South Africa supplied hundreds of locally-designed and -built armoured cars to the South African and British armies in the Middle East and North Africa during the war. Of the three production lines, two already exist - the one for the RG-12s and that for the RG-31s; the new line will produce the RG-32Ms for Sweden. These orders are likely to be followed by others. The company is currently involved in a number of new light armoured-vehicle programmes in Europe, including Belgium, Ireland and some of the Baltic states. The company has already built six preproduction RG-12s for the Carabinieri, and the announcement of the follow-on order for 30 full production examples came as the firm was preparing to deliver the five remaining vehicles of this preproduction batch. The Carabinieri's RG-12s will use Iveco engines, instrument clusters, transfer boxes and other mechanical components - indeed, Iveco is the prime contractor for the project and will supply in-country support for the vehicles. The Italian RG-12s have a number of customised features, including the seats, a chilled drinking-water facility, a rear-view camera with a visual display on the driver's panel, an observation cupola, ABS braking and fire-suppression systems for the engine compartment and the wheel arches, ENGINEERING NEWS informs.



Defence Industry

Force Protection Moves from Bases to Battlefield



As casualties continue to mount in Iraq and Afghanistan, the Defense Department is seizing on technology to protect combat soldiers from snipers, mortars and roadside bombs. As of early-June, more than 1,660 U.S. personnel had died in Iraq, and 12,762 had been wounded. In the wider war on

terrorism—including Afghanistan, Pakistan, the Philippines and Djibouti—another 188 had died and 472 had been wounded.

As these conflicts have dragged on, the whole concept of force protection has changed dramatically, said retired Army Gen. Barry McCaffrey, who has dealt with the issue repeatedly during a military career that included four combat tours.

For a long time, force protection didn't receive the attention it deserved, said McCaffrey, now an independent national security and terrorism analyst.

"The low point was Khobar Towers," he told National Defense. In 1996, a terrorist truck bomb struck the towers, which housed U.S. personnel in Saudi Arabia. "That attack—which killed or wounded 300 of our people—was absolutely preventable."

Even as recently as the 2001 attack on the Pentagon, "we didn't know what we were doing," McCaffrey noted. Since then, however, improvements have been made.

No longer is force protection largely a matter of stacking sandbags and stringing concertina wire. "Now, we're seeing technology—and the people using it—performing miracles," McCaffrey said. "Technology is not only saving thousands of lives, but it also is providing an overwhelming deterrent capability."

Some of the equipment being deployed is so formidable that terrorists are dissuaded from launching attacks, he said.

McCaffrey got a close look at the latest technology during the fifth biennial Force Protection Equipment Demonstration, which was held recently at Quantico Marine Corps Base, Va. The event is sponsored by the Defense Department's Physical Security Equipment Action Group, which is made up of representatives from each of the services and the Defense Treat Reduction Agency.

The amount of equipment on display has increased tremendously over the years, said a spokesman, retired Marine Sgt. Maj. Joe Houle. The first FPED, held shortly after the Khobar Towers attack, exhibited force-protection products from 184 vendors and was intended primarily for the military services. The focus was on protecting U.S. military installations at home and abroad.

FPED V attracted more than 500 companies showing off more than 2,500 pieces of equipment designed for use by U.S. and foreign military troops; federal, state and local police officers; emergency-response teams, and prison guards.

This year, more than in the past, the emphasis seemed to be on equipment that could help hold down U.S., coalition and civilian casualties in the streets of Iraq and the mountains of Afghanistan.

For example, Kontek of New Madrid, Mo., displayed a family of portable steel structures that are 75 percent lighter than concrete shelters and strong enough to withstand 81 mm and 120 mm mortar shells, according to operations manager Roger Allen Nolte.

"We test fired mortar shells into them, and they didn't

penetrate," he said. Mortars are popular weapons of choice among insurgents because they are highly mobile, he said.

Kontek's modular structures "can be used as sleeping quarters, guard shacks, office space, shops, even dining facilities," he said.

The structures, 9.5 feet high, come as small as 8 feet by 8 feet and as long as 45 feet. They can be outfitted with built-in, foldaway bunks, gun racks or workstations. One canopy design can serve as covered parking for trucks or aircraft, Nolte said.

Special Tactical Services LLC, of Virginia Beach, Va., exhibited a four-foot-high portable shield designed to replace sandbag and concrete emplacements at security checkpoints at military bases and ports. The shields, which are used by all the services, have been deployed in Afghanistan for about a year, according to company spokesman Dale McClellan.

The barriers—called Modular Armored Security Shields—are constructed of three-eighth-inch armor plating able to withstand repeated hits from virtually any shotgun, handgun or rifle, he said.

The shields are intended to protect guards from the chest and below. "We assume they'll be wearing helmets and body armor to protect their upper portions," McClellan said.

The shields can be fitted with crew-served weapons, such as the M-60 7.62 mm and M-2 .50 caliber machine guns, enabling guards to shoot while minimizing their exposure. The structure's walls are built at a 20-degree downward angle to help deflect incoming rounds, McClellan noted.

Unmanned vehicles are being adapted for roles in force protection. Foster-Miller, of Waltham, Mass., demonstrated a ground robot about half the size of a riding lawn mower that was mounted with an M249 5.56 mm squad automatic weapon.

The vehicle, called a Talon Special Weapons Observation Reconnaissance Direct-Action System, also can be outfitted with an M16 rifle, M240 machine gun, .50 caliber sniper rifle, 40 mm grenade launcher or M202 antitank rocket, explained General Manager Robert E. Quinn.

"It can perform urban combat missions, armed reconnaissance and perimeter defense," Quinn said. Like a tank, Talon is equipped with tracks, giving it an all-terrain, all-weather capability, he noted. The tracks can be removed, allowing the vehicle to move on paved roads and streets like an automobile or a truck, he added.

With high-tech optics and night-vision technology, Talon "has a very precise aiming capability," he said. "See that truck on the far side of the air field?" He indicated a vehicle about half a mile away. Then, using a attach#233; case-sized control unit, he zoomed in the lens of a camera mounted on the robot. Suddenly, the truck loomed large on the control unit's monitor.

"I could take out that truck with the flip of a switch," Quinn said. "Perhaps a skilled sniper could do that, but not without putting himself at risk." The Talon can be operated from a distance of 300 to 400 meters, out of

sight from enemy shooters, he asserted.

Talons also can be equipped to detect chemical and radiological weapons and to dispose of unexploded ordnance, including roadside bombs. They have completed more than 20,000 explosive-ordnance disposal missions in Bosnia, Afghanistan and Iraq, Quinn noted.

Another vehicle being put to use in force protection is the Segway human transporter. This two-wheeled, electric-powered, self-balancing vehicle, made by Segway LLC, of Bedford, N.H., is a cross between a bicycle and a chariot.

At FPED, Segway attracted a lot attention from security personnel from all of the services. Marine Lance Cpl. Elizabeth Boylan, who helped provide security at the event, took time to try it out. "It would be useful for patrols," she said.

The Segway goes up to 12.5 miles per hour. It can be outfitted with all-terrain tires, fenders, saddlebags and cargo racks.

RF Intelligent Systems Inc., of Oak Hill, Va., demonstrated a Segway equipped with its mobID ruggedized, handheld biometric computer. "MobID offers a lot of security features, including 2D facial recognition, 500 [dots-per-inch] fingerprint technology and barcode reading," said David Handcock, marketing director. "Putting it on a Segway gives a security guard the ability to gather and transmit a lot of information while on the move."

Some of the equipment is intended to help security units do a better job inspecting civilian vehicles and performing patrols. Salient Manufacturing & Security Products Inc., of Brampton, Ontario, has developed a family of handheld, lightweight mirrors, called "Portable Detectives."

The mirrors are "a low-tech way of inspecting cars and trucks passing through a checkpoint for bombs," said the company president, Beth Gravelle. "They speed up the process of moving traffic through a security point."

The Portable Detectives come with handles ranging in length from three to eight feet, and they can be equipped with battery-powered lights and even lightweight wheels, she said.

The M-II FlashCam looks like a traditional, long flashlight, but it does a lot more than that, said Jon W. Blanks, general manager of the manufacturer, mobileLED of San Antonio, Texas.

"It includes a powerful flashlight—with 85,000 candlepower—but it also has a video camera system and night vision," he said. "You can instantly download images to your laptop, desktop or on-board computer."

The 17-inch long M-II is designed for use by tactical military units, EOD teams and law enforcement agencies of all sorts. It is waterproof and shock resistant, Blanks said.

Another product intended to survive tough treatment is the Zx20 Ballistic Camera, offered by Extreme CCTV, of Burnaby, British Columbia. The company subjected the camera, which is designed for surveillance in harsh environments, to a live-fire demonstration by Marines from Quantico's Weapons Training Battalion.

The Marines peppered the device with rounds from an M9 9 mm pistol and M16 5.56 mm and M14 7.62 mm rifles. The Zx20 was pockmarked with hits, but "the camera still works," said the company president, Jack Gin. "We have video shots of the shooter."

Some devices are meant to prevent civilian casualties. General Dynamics Ordnance and Tactical Systems, of Redmond, Wash., exhibited a portable vehicle-arresting barrier. The PVAB is a system that automatically releases a net to trap a vehicle attempting to speed through a checkpoint.

During a demonstration, the net captured a five-ton truck moving at 45 miles per hour. The system can be set up in 10 to 15 minutes, said senior manufacturing and test engineer John Osterhout.

"This thing can save a lot of civilian lives in Iraq," Osterhout said. Specifically, he said, it could help prevent tragic mishaps, such as the killing of an Italian intelligence agent at a U.S. checkpoint earlier this year. "If we want to regain the high ground over there, we should be using more technologies like this and doing less shooting."

Sometimes, the demonstrations did not go as planned. During a blast-mitigation exercise, conducted by Quantico's explosive ordnance detachment and designed to show the capabilities of the Counterterrorism Technologies Corporation's portable bomb neutralizer, three pounds of C-4 plastic explosives blew a hole in the half-inch steel floor of the device.

"Wow, I've never seen that before," said company representative Tony Fox. He was quick to point out that the explosion did not penetrate deep into the ground beneath the neutralizer and to note that the device would never be used again. "It's a one-time use thing. We use it once and throw it away."



Army

Army Displays Latest Warfighting Innovations

WASHINGTON -- The Army showcased its Future Force Warrior system, the latest in war-fighting technology, at Soldier Modernization Day on Capitol Hill June 16. Military researchers, developers, testers and engineers displayed current innovations in soldier technology to senators and congressional staffers who witnessed how technology can impact soldiers' lives while sampling the Army's newest field rations.

"What we're doing today is showing members of Congress how American dollars are being well spent to benefit our soldiers everyday," said Brig. Gen. James Moran, commanding general, Soldier Systems Center in Natick, Mass., and Program Executive Office Soldier at Fort Belvoir, Va. He explained the Future Force Warrior system is a designed as an integrated "system of

systems" as part of the Army transformation to a soldier-centric force that will complement future combat systems. "Under the concept of managing the soldier as a system, two uniform systems are under development," Moran said. The Future Force Warrior system will be available to soldiers in 2010. The Vision 2020 Future Warrior system, which follows the concept of the 2010 Future Force Warrior system, will be fielded 10 years later.

"The result is a single integrated combat system that enhances soldier performance in all critical areas: increased effectiveness, decreased load and improved mission flexibility and enables continuous upgrades. By managing the soldier as a system, Program Executive Office Soldier will save soldiers' lives, improve their quality of life and increase their combat effectiveness," Moran said. The uniforms, which are designed to increase lethality and survivability, will lighten the soldier's load from approximately 100 pounds, currently carried by combat soldiers, Moran said, to 45 pounds.

"soldiers have been treated like Christmas trees in the past, and not just because they were wearing green – each year the Army hung something extra on them," said Philip Brandon, director, Soldier Systems Center. "Their equipment was not an integrated system, but rather a series of add-ons." Brandon said the soldier's warfighting needs must be considered as a single platform, functioning as a system and integrated with other systems. "Once a soldier has too much weight strapped on, he or she may start a process of elimination in order to reduce weight. In a 'Black Hawk Down' movie scene, soldiers were forced to ditch equipment," he said.

"That type of decision-making is not necessary in this world of technology." Other items featured at Soldier Modernization Day included: new types of Meals, Ready to Eat, or MREs, Unitized Group Rations, and components of the new First Strike Ration. "We interview 13,000 soldiers annually to determine which MREs they like best. With that data, we introduce five new menu items and delete five items that soldiers don't enjoy," said Richard Walunas, chief of strategic communications at the Natick Soldier Center. "To be fit on the battlefield, soldiers need fuel and we provide them with exactly what they want because they deserve the best.

"Other new technologies at the exhibit included the Cargo Aerial Delivery Systems, camouflage net systems, space heaters, field kitchen and food service equipment, shelters, shear thickening fluid for personnel protection, lightweight armor technologies, the Advanced Combat Helmet, and photovoltaic technologies. "The precision air-drop technology system, which is attached to guide actuators, allows supplies to be dropped to soldiers from 20,000 feet, so they can receive much-needed assistance without the plane having to expose itself to danger," Walunas said. Soldiers deployed to hot-climate areas such as Iraq can make use of solar sun shades.

"The shades are material strips that when placed on top of tents, use photovoltaic technology to convert light

to electricity. The energy can also be stored for use at night and can generate approximately one to two kilowatts of electricity. Soldiers will make use of natural resources to aid them in their missions too," he said. Soldiers of yesterday were also present to view today's technology on Capitol Hill. World War II veterans Oliver Benson Medcalf and Logan Council, who visited the Russell Senate Office Building by chance, stumbled across the display. "There's a lot of new-fangled technology out there now that we surely could have made use of," Council said, who served with a signal corps in the Philippines in 1943.

"It's not easy to be a soldier during war times, and technology can make a big difference in troops' abilities." Sgt. Daniel Harshman, from Hagerstown, Md., knows about the role technology plays in soldiers' lives. He spent four years in the Army on active duty, has served four years in the National Guard and Army Reserve, and works as a Department of Defense civilian employee for Operational Forces Interface Group in Natick. "Technology can improve our infallibility and survivability so we can get the mission accomplished and get home sooner. We can fight, win a war and be home in time for dinner when we have the right equipment to do the job," Harshman said.

A Shreveport, La., soldier who joined the Army to "do something different and be a part of something big" said having cutting-edge technology available to soldiers is vital to readiness. "It's crucial that we have what we need when we need it," said Master Sgt. Roy Pipkin.

Defence Industry

MTC Awarded \$5.7 Million in Army Task Orders

DAYTON, Ohio -- MTC Technologies, Inc. and subsidiaries, a significant provider of engineering, information technology, and other technical solutions, to the Department of Defense and national security agencies, announced that it has been awarded a total of \$5.7 million in potential value under four task orders for various U. S. Army programs.

MTC was awarded a \$3.2 million task order for the continuation of anti-terrorism training supporting the U.S. Army Forces Command (FORSCOM) Provost Marshal Office (PMO). This task order includes a base year and four one-year options. MTC's Anti-Terrorism Mobile Training Team provides Level II Anti-Terrorism and Force Protection training to FORSCOM units, Army Reserve Command units, and Army Special Operations Forces. The team also has trained Marine Corps personnel and Central Command personnel located at CENTCOM Forward Headquarters in Qatar. MTC's anti-terrorism training program is widely regarded as the best of its sort available in the Army today. MTC's team has supported the FORSCOM/PMO with anti-terrorism training since 1998.

A \$1.2 million task order was awarded for continued coordination and execution of the U.S. Army Forces

Central Command (ARCENT) Host Nation Support agreements for ongoing Army and joint operations throughout the CENTCOM Area of Responsibility (AOR), including Iraq and Afghanistan. The task order has a base year and four option years and involves researching and identifying specific logistical support for units conducting operations throughout the AOR. Identified requirements are then matched against supply and services support capabilities existing among nations of the region. The work is performed from the Third Army/ARCENT forward headquarters in Kuwait; MTC has performed this task for more than two years.

The Company also won two new task orders with the U.S. Army totaling approximately \$1.3 million. The first is a one-year task order to provide excess property management services to the Second Infantry Division (2ID) in Korea, where, as part of the Army's restructuring process, one brigade has been sent to Iraq and will return to the U.S. once it completes its tour. As sole provider on this task order, MTC will provide receipt, maintenance, storage, and asset visibility for 2ID excess equipment, including development of classification packets to help the Army decide where to relocate each piece of equipment.

The second is a one-year task order to provide support to the U.S. Army's Ground Based Air Defense Capabilities Development Documents effort. MTC will provide project management and Marine Corps air defense expertise to the project, while ORSA Corporation, Computing Technologies, and BAE Systems will provide subcontracting assistance.

"We are indeed honored to have been selected to lend our support in a variety of ways to the on-going global war on terrorism," said Chief Executive Officer David Gutridge. "I am proud of our MTC team and it's dedication to providing outstanding service to our country's warfighters."

MTC, through its wholly owned subsidiaries, provides systems engineering, information technology, intelligence, and program management services to the federal government. Cited by BusinessWeek as the 11th fastest growing small company in the United States, by Forbes as 23rd of America's 200 best small businesses, by Washington Technology as 59th in revenue growth among the "Top 100" of IT Federal Prime Contractors, and ranked 2nd by Aviation Week & Space Technology as the "Top Performing Small Company", MTC employs approximately 2,700 people in more than 40 locations. The company was founded in 1984 and is headquartered in Dayton, Ohio.

"Safe Harbor" Statement under the Private Securities Litigation Reform Act of 1995: The statements contained in this release that are not present or historical fact, are forward-looking statements that are subject to risks and uncertainties that could cause actual results to differ materially from those set forth in, or implied by, forward-looking statements. These risks and uncertainties include: risks related to the growth of our FAST program, including strains on resources and decreases in operating margins; federal government

audits and cost adjustments; differences between authorized amounts and amounts received by us under government contracts; government customers'; failure to exercise options under contracts; changes in federal government (or other applicable) procurement laws, regulations, policies and budgets; our ability to attract and retain qualified personnel; our ability to retain contracts during re-bidding processes; pricing pressures; undertaking acquisitions that might increase our costs or liabilities or be disruptive; integration of acquisitions; and changes in general economic and business conditions. For more information concerning these risks and uncertainties, see the Securities and Exchange Commission filings for MTC. These statements reflect the Company's current beliefs and are based upon information currently available to it. Be advised that developments subsequent to this release are likely to cause these statements to become outdated with the passage of time, and we specifically disclaim any obligation to update these statements.

Training And Simulators

Canadian Forces Members to Participate in International Training Exercise in Ukraine

The aim of CBE-05 is to develop individual and small field unit light infantry skills needed for NATO-led multinational peace support operations. Canadian soldiers are training as sections within international platoons in a variety of tasks such as patrolling, medical evacuation, search operations, convoy escorts, interacting with media, and the preparation and operation of check points and observation posts.

OTTAWA -- Thirty-six Canadian Forces (CF) members left Canada last week to participate in Exercise CO-OPERATIVE BEST EFFORT 2005 (CBE-05), a Partnership For Peace (PfP) exercise that began Sunday in the Yavoriv Training Area near Lviv, Ukraine. Approximately 700 personnel from 27 nations are involved in CBE-05, which concludes June 30. The majority of CF personnel participating are from the 2nd Battalion, The Royal Canadian Regiment, based in Gagetown, New Brunswick.

"This exercise provides our members with a valuable collective training opportunity, where they can share Canada's expertise and experience in soldiering with military personnel from a variety of countries," said General Rick Hillier, Chief of the Defence Staff. "As outlined in the Defence Policy Statement, we are working with our friends and allies to better prepare for the challenging global security environment in which we operate."

The Partnership for Peace program brings together NATO, PfP, Mediterranean Dialogue and Istanbul Cooperation Initiative nations in a series of joint defence and security-related activities. It was launched in 1994 in an effort to help increase stability and security throughout Europe.

This exercise brings together the NATO member states of Bulgaria, Canada, Greece, Hungary, Lithuania, Poland, Slovakia, Spain, Turkey, the United Kingdom and the United States; the PfP nations of Austria, Armenia, Azerbaijan, Belarus, Croatia, the Former Yugoslav Republic of Macedonia, the Republic of Georgia, Moldova, Kazakhstan, Ukraine, and Switzerland; two Mediterranean Dialogue nations, Israel and Egypt; and two members of the Istanbul Cooperation Initiative, Kuwait and Qatar.

modification was issued by the FCS Lead System Integrator (LSI), The Boeing Company.



This modification increases the number of prototypes being delivered from 17 to 19, with the first prototypes delivered in the third quarter of 2010. Deliveries will consist of Transport, Armed Robotic Vehicle – Assault Light (ARV-A(L)) and Countermine variants, with final deliveries in spring 2011.

“The MULE is a key component of the FCS system of systems with its high versatility and unique mobility,” said Gene Holleque, director of Unmanned Systems at Lockheed Martin Missiles and Fire Control. “This family of vehicles will increase the warfighters’ survivability and the efficiency of the total force by complementing, not replacing, man and manned platform functions. Lockheed Martin is at the forefront of new, advanced technologies, and our goal is to provide warfighters with the necessary equipment to safely accomplish their missions.”

The FCS LSI selected MULE to move into the SDD phase in 2003, and ultimately into production. The SDD phase is anticipated to be a \$290 million-plus program.

The MULE/ARV-A(L), a 2.5-ton class vehicle for the FCS, offers an extraordinary capability that will support the U.S. Army’s transformation to a lighter and more mobile fighting force. The vehicle’s unique mobility will enable it to go everywhere the soldier can go and more. It will allow soldiers of the transformed Army to use technology to do the dull, dirty and dangerous jobs of the current forces, freeing them to focus on the success of their missions. It provides for future growth through spiral development and possesses an open architecture designed to take full advantage of the rapid evolution of technology.

The MULE/ARV-A(L)’s highly mobile platform is a unique, highly advanced 6x6 independent articulated suspension. Coupled with in-hub motors powering each wheel, the suspension system provides extreme mobility in complex terrain, far exceeding that of vehicles utilizing more conventional suspension systems.

It will climb at least a 1-meter step and provides the vehicle with the mobility performance and surefootedness required to safely follow dismounted troops over rough terrain, through rock and debris fields and over urban rubble. This technology also allows the vehicle to cross 1-meter gaps, traverse side slopes greater than 40 percent, ford water to depths over 0.5 meters and overpass obstacles as high as 0.5 meters, while compensating for varying payload weights and center of gravity locations.

The Transport MULE configuration is designed to

Contracts

General Dynamics Awarded \$141 Million to Upgrade Abrams Tanks



STERLING HEIGHTS, Mich. - The U.S. Army TACOM Lifecycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics (NYSE: GD), a \$141 million contract to upgrade 60 M1A2 Abrams tanks to the latest System Enhancement Package (SEP) configuration (M1A2 SEP).

The M1A2 SEP fully digitized platform is the latest, most technologically advanced Abrams tank. It has the latest command and control system, second-generation thermal sights and improved armor. This retrofit is part of an overall M1A2 tank upgrade program that integrates new information technologies to improve soldier warfighting capability with enhanced command and control features like color maps and displays, high-density computer memory, increased microprocessing speed and networked communications. These 60 M1A2 tanks have been in service for the past 15 years.

Work is slated to begin in July 2005 and will be performed in Lima, Ohio; Anniston, Ala.; Sterling Heights, Mich.; Tallahassee, Fla.; Scranton, Pa.; and Fort Hood, Texas, by existing General Dynamics employees. Vehicle deliveries to General Dynamics are scheduled for January through October 2007, with vehicle hand-off to the U.S. Army expected in January 2008.

Contracts

Lokheed Martin Receives \$61 Million Contract For Multifunction Utility/Logistics And Equipment Vehicle

Lockheed Martin has received a \$61 million plus-up to the Multifunction Utility/Logistics and Equipment (MULE) System Development and Demonstration (SDD) contract as a result of the recent Future Combat System (FCS) restructure. The contract

support the Future Force soldier by providing the volume and payload capacity to carry the equipment and supplies to support two dismounted Infantry Squads. Multiple tie-down points and removable/foldable side railings will support virtually any payload variation. It is suited to support casualty evacuation needs as well.

The ARV-A(L) version will be armed with a line-of-sight gun and an anti-tank capability. It is designed to provide immediate, heavy firepower to the dismounted soldier.

The Countermine variant is designed to provide detection and neutralization of mines, and marking of cleared lanes through minefields, greatly increasing the safety and mobility of the infantryman.

Lockheed Martin's experience in unmanned systems is unmatched with proven capabilities across all domains including – air, land, sea and space. An integrated system-of-systems approach allows Lockheed Martin to meet the challenges of network-centric warfare where both manned and unmanned technologies work collaboratively, increasing the affordability of the technology, the efficiency of the total force and ultimately, the success of their missions.

Contracts

Raytheon Awarded \$48 Million Contract to Help Protect U.S. and Coalition Forces

TEWKSBURY, Mass. -- Raytheon Company has been awarded a \$48.4 million U.S. Army contract to provide 41 RAID (Rapid Aerostat Initial Deployment) systems, along with systems engineering and life cycle support.

RAID consists of infrared sensor systems carried via an aerostat or stationary platform capable of detecting hostile troop and/or equipment movement at great distances. This enables U.S. forces to respond rapidly to any threatening situation. RAID was first developed by Raytheon to meet the Army's developing critical needs in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). This is the second such contract awarded to Raytheon for the RAID system.

"The RAID systems have proven to be an invaluable tool to the soldiers as they execute their missions in support of Operation OEF and Operation OIF," said Peter Choate, Raytheon RAID program manager. "These systems provide protection for American and Coalition forces, along with local nationals. In short, these systems save lives."

The contract calls for 41 elevated sensor systems, with deliveries beginning in July 2005 and ending in April 2006. In addition to supplying the systems, Raytheon is responsible for implementing a systems engineering approach on the RAID Program, linking it to other existing Army systems and providing a "cradle to grave" life cycle support capability. By providing life cycle support, Raytheon will insure that these systems work the first time, every time for the soldiers deployed in OEF/OIF.

Work under the contract will be done by Raytheon's Integrated Defense Systems in Andover, Mass., and Huntsville, Ala., along with support from Raytheon Technical Services Company LLC. Major suppliers involved in this contract include TCOM in Columbia Md., and US Tower, Wichita Kan.

Contracts

United Defense Receives Contract Modification worth \$12.8 Million for Marine Corps Assault Amphibious Vehicles



SANTA CLARA, Calif. -- United Defense Industries, Inc. United Defense Industries, Inc. has received a \$12.8 million contract modification from the U.S. Marine Corps Systems Command to upgrade 56 Assault Amphibious Vehicles (AAVP7) to the RAM/RS configuration to support Marine Corps units.

This program is a joint effort with the Marine Corps Logistics Command in Albany, Ga., under the direction of the Program Manager, Amphibious Assault Vehicle Systems, Marine Corps Systems Command, in Quantico, Va. Under this modification, United Defense will remanufacture government furnished AAVP7 hulls to the RAM/RS (Reliability, Availability and Maintainability/Rebuild to Standard) configuration.

Under the contract, machining and procurement of parts for the government furnished hulls will be done at United Defense's facility located at the Marine Corps Logistics Base in Albany, Ga. Vehicles are being assembled by depot personnel. Work will be completed during 2006. The AAVP7 RAM/RS system provides superior mobility for transporting troops and cargo from ship to shore. The RAM/RS version was originally designed for the U.S. Marine Corps to include a more powerful turbocharged diesel engine and power train and a Bradley Combat System suspension, providing superior durability and maintainability.

Defence Industry

CACI Awarded \$25 Million Contract to Support U.S. Army Ammunition Management System

ARLINGTON, Va. -- CACI International Inc. announced that it has been awarded a four-year prime contract, valued at \$25 million if all options are exercised, to support the Total Ammunition Management Information System (TAMIS) for Headquarters, Department of the Army in Washington, D.C. Awarded by the U.S. General

Services Administration through the Millennia Lite Functional Area 3 vehicle, the contract includes one base year and three option years.

Under the terms of the award, CACI will provide program management and technical services in support of munitions modernization efforts for both the Army and U.

S. Marine Corps. The award increases the size and scope of CACI's work with this Army client and expands its core systems integration business. By delivering enhanced ammunition management capabilities and integrating new applications into a central system, the web-based TAMIS is expected to bring the Army and Marine Corps new efficiencies in developing requirements and managing weapons training programs. The enhanced system will include capabilities for managing more than \$1.3 billion in both training and war-time munitions. CACI's team will provide program management and a full range of systems integration services to TAMIS and its 7000+ users.

This includes reengineering and consolidating existing systems, delivering user training and help desk support for the system, and providing ongoing software maintenance and development. CACI will also integrate a range management component and install and manage an enterprise-wide business intelligence solution, interfacing with other Defense Department systems. CACI has a strong legacy of support for stand-alone Army ammunition systems and the Department of the Army, offering the benefits of in-depth experience and proven technical solutions in the TAMIS environment. The company also provides high-quality software development services certified at Level 3 of the Software Engineering Institute's Capability Maturity Model.

This combination of functional and technical expertise assures the Army of effective systems and software support, delivered on time and within budget. According to Dr. J.P. (Jack) London, CACI Chairman, President, and CEO, "The Total Ammunition Management Information System is a pivotal program for U.S. Army and Marine Corps support. CACI has worked with the Department of the Army for many years on the legacy systems that will go into TAMIS, and we offer proven high-quality support for its development. Our experts will continue to leverage new technologies to enhance TAMIS performance as it grows to meet the Army's emerging requirements."

Contracts

Force Protection, Inc. Announces Another \$24.9 Million Contract Under Counter-IED Funding

Force Protection, Inc. continues to supply U.S. armed forces with cutting-edge blast protection technology as it announced today a delivery order for 34 additional mine-protected Cougar Joint Explosive Ordnance Disposal (EOD) Rapid Response Vehicles (JERRV) for an amount not to exceed \$24.9 million.

This is the third such order made in the past month under a joint contract awarded by the Department of Defense for approximately 120 Cougar JERRV vehicles to be used in Iraq and Afghanistan. It is funded by the Joint Explosive Device (IED) Defeat Task Force and fulfills the contract, bringing the total number of vehicles ordered to 122 for an amount not to exceed \$87 million. Under the contract, Force Protection will manufacture the vehicles and provide training, spare part blocks and technical data. The first vehicles are expected to reach the field by early fall 2005.



"There has never been a more critical time for our troops to receive these vehicles," said Force Protection CEO Gordon McGilton. "This order has been funded with a sense of urgency that we as Americans can all be proud of. These Cougar vehicles will be delivered with that same speed and attention to detail."

The Cougar has been deployed with the Marines in Iraq since last fall, where it has been used to transport soldiers over thousands of miles of dangerous roads. The Cougar H series is a family of medium-sized blast-protected vehicles that is produced in both 4 and 6 wheel layouts. It can be customized for multiple tasks including troop transport, mine and EOD disposal, command and control, reconnaissance, ambulance, and as a lead convoy vehicle.

Contracts

General Dynamics Awarded \$14 Million for Abrams Tank Systems Technical Support

STERLING HEIGHTS, Mich. - The U.S. Army TACOM Lifecycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics, a \$14.4 million contract modification for Abrams tank systems technical support (STS).

STS funds engineering studies and investigations on Abrams tanks with the purpose of identifying improvements and change-out of obsolete parts, while keeping Abrams tanks current to their base configuration. The STS program's objective is to maintain Abrams tanks at high operational readiness rates.

Work will be performed at General Dynamics Land Systems headquarters here and is expected to be completed by July 31, 2006. The contract was initially awarded Nov. 23, 2001.

Defence Industry

Heckler & Koch Defense Wins Multi-year Contract for New U.S. Army Grenade Launcher



Sterling, Virginia -- Heckler & Koch Defense Inc. was awarded a competitive contract to produce the new add-on grenade launcher for the U.S. Army. The U.S. XM320 40x46mm Grenade Launcher Module may replace the inventory of M203 grenade launchers currently in use by the Army, including those launchers used by Army units in Iraq and Afghanistan.

This award marks the completion of a full and open competition among several companies to provide a commercial off-the-shelf (COTS) shoulder-fired grenade launcher that met or surpassed all user-developed requirements. The total potential value of this contract is \$29 million with a potential purchase of more than 11,000 launchers, day/night sights, and assorted items (tools, parts, and accessories) over the life of the contract.

The XM320 Grenade Launcher Module was selected after months of rigorous bid sample testing, including a user evaluation at the Army's Aberdeen Test Center in Aberdeen, Maryland. The XM320 is a multi-functional single-shot launcher that can be attached to a wide range of current issue U.S. weapons including the M16A2 and M16A4 rifles, and M4, M4A1 and M4 MWS carbines.

The open architecture of the XM320 will enable soldiers to easily attach the launcher, in seconds and without tools, to current and newly emerging weapon platforms ranging from compact carbines to light machine guns. The XM320 can also be used as a stand-alone weapon when the add-on, multi-position sliding buttstock is added. The XM320 GLM is unique in that it uses a side-opening barrel that permits the use of all current 40x46mm ammunition as well as many longer cartridges that, due to their overall length, could not be fired from the M203 grenade launcher. The use of a double-action trigger system allows the XM320 to be safely loaded and unloaded while the launcher remains in an uncocked condition. The double-action trigger system is controlled by the use of an ambidextrous manual rotary safety lever and also permits multiple primer strikes without the need to open the breech.

The sights for the XM320 are attached directly to the grenade launcher's receiver ensuring the zero (aiming/impact point) of the weapon is retained when it

is removed and later reinstalled on another weapon or when its used in the stand-alone mode. The building block design approach of the XM320 allows for a choice of three distinct sighting systems. A ranging day/night sight produced by Insight Technology Inc. of Londonderry New Hampshire provides a high probability of 24-hour first round target engagements within 5 meters out to 350 meters. A mechanical ladder sight can also be used in combination on the XM320 launcher.

Lighter in weight than the U.S. M203 grenade launcher, the XM320 is a combat-proven design produced by Heckler & Koch based on lessons learned from producing more than 30,000 similar launchers that have been in service since 2000 with the military forces of Britain, the Netherlands, Spain, Germany, and Portugal.

During U.S. Army testing the robust HK Grenade Launcher Module received superior marks for accuracy, reliability, and modularity. The XM320 Grenade Launcher Module provides unmatched performance and combat capability for the U.S. warfighter—permitting the destruction of point targets and the suppression of area targets under both day and night conditions. Current plans call for the first Army deliveries to begin in early 2006.

Heckler & Koch Defense Inc. of Sterling, Virginia is the U.S. affiliate of Heckler & Koch, GmbH of Oberndorf, Germany.

HK Defense supplies the U.S. military and federal law enforcement agencies with technologically advanced firearms, logistical support, training, and specialized design services. Parent company Heckler & Koch is the firm behind some of the most of well known firearms of the last fifty years including the G3 rifle, MP5 submachine gun, USP pistol, and newer models such as the G36 weapon system, the UMP submachine gun, the MP7A1 personal defense weapon, and the HK416 enhanced carbine.



Defence Industry

Back to the Drawing Board: Army Rewrites Small Arms Plans



Army leaders have concluded that the service's current inventory of small arms is ill suited to the guerilla wars that U.S. ground forces now are fighting.

The M16 5.56 mm assault rifle—the standard combat weapon for all services since the Vietnam War—is considered too long, with its 20-inch barrel, for close-in urban fighting. Many Army, Marine and special operations forces have adopted a shorter version of the M16, the M4 carbine, which has a barrel only 14.5 inches long.

Another factor is that infantry weapons are too difficult to maintain and repair, said Lt. Col. Mathew Clarke, product manager for individual weapons at Picatinny Arsenal, N.J.

“Today, if a barrel wears out, the weapon leaves the unit,” he explained. “You’re short until it is repaired. It could be days; it could be weeks, depending upon where it’s got to go and whether parts are available.”

The Army has been working to develop a so-called “objective individual combat weapon” to replace both the M16 and M4. The OICW is envisioned as two weapons in one, a rifle that fires a 5.56 mm round and a grenade launcher that expends a 20 mm air-bursting munition. A decade ago, the Army awarded a \$105 million contract to a team headed by ATK Integrated Defense, of Plymouth, Minn. The venture included Heckler & Koch Defense Inc., of Sterling, Va., as the weapon’s designer and manufacturer.

The Army eventually concluded that the XM29—with inseparable rifle and grenade-launcher components—was too bulky and of limited utility, since not every soldier needs a grenade launcher. Thus, it was decided to develop the two elements separately.

In 2002, the Army awarded a \$5 million contract modification to the ATK-HK team, calling for rapid development of the rifle component, which became known as the XM8 lightweight modular weapon system. Until recently, the Army planned to begin fielding it later this year.

The XM8 has been designed in four variants, Clarke said. These include a carbine, compact carbine, sharpshooter version and automatic rifle.

XM8 parts—such as the barrel, butt stock, magazine, sighting system and carrying handle—can be interchanged, he noted. Barrel lengths range from nine inches for a compact carbine to 20 inches for a sharpshooter rifle.

HK Defense produced 300 XM8s for testing, and the Army put them through their paces in a series of trials. The weapons have earned high marks, Clarke said.

“The final environmental test took place this winter in -53 degree weather at the Army’s Cold Regions Test Center at Fort Greeley, Alaska,” he said. “Fifteen to 20 soldiers fired 1,000 rounds each over two weeks. The weapons performed well under those conditions.”

In the meantime, however, the Army Infantry Center at Fort Benning, Ga., changed its requirements, Clarke said.

Instead of an automatic rifle, the Infantry Center wanted a light machine gun to replace the 5.56 mm M249 Squad Automatic Weapon. The center wanted the three rifle components—a carbine, special compact weapon and designated marksman rifle—to share at least

80 percent of the same parts, and the light machine gun at least 50 percent.

“With such a major change in the system’s concept, we felt we should put the project up for re-bidding,” Clarke said. A request for proposals was posted in May. Competitors have 180 days to respond. In addition to written submissions, they must provide four copies of each variant for testing.

“All of the major gun houses in the United States and many in Europe have shown interest,” he said.

“For us, the issue of a light machine gun is not a problem,” said Sal Fanelli, XM8 program manager at HK Defense. “Getting it to 50 percent commonality is going to be difficult, but we think we can do it.”

Colt Defense LLC, of West Hartford, Conn., is going after the job. “Yes, absolutely, unquestionably,” said Kevin Brown, Colt’s government relations director. Colt designed both the M16 rifle and M4 carbine. It also produces a 9 mm submachine gun similar to the M16 and M4, as well as the M203 grenade launcher.

In 1988, Colt lost the contract for producing M16s for the military services to FN Manufacturing LLC, of Columbia, S.C. FN’s parent company, FN Herstal, of Liege, Belgium, is preparing its own proposal for the OICW, said Marvin Memmert, business unit manager for FN’s M16 and M249 programs.

“It will be something completely different from the M16,” he said. “It will be something along the lines of SCAR.” SCAR is the special forces combat-assault rifle—a family of 5.56 mm and 7.62 mm weapons with a grenade-launcher attachment—that FN Herstal is producing for the U.S. Special Operations Command.

The process of evaluating the proposals and testing prototypes could take another year to 18 months, Clarke said. “The linchpin is going to be coming up with a system that is compatible with a light machine gun,” he said. “There are plenty of people out there who make a good 5.56 mm rifle.”

Meanwhile, “we’re still working the M4s,” he said. “We’re buying several thousand a month from Colt,” he said. “Also, we’ll probably buy a few more M16s to replace those that can’t be repaired. We have to maintain our current fleet while we develop a new one.”

At the same time, progress is being made toward fielding other weapons high on infantry shopping lists. In March, for example, the Army approved a new .50 caliber sniper rifle, the M107. “We’re in full-scale production,” said Peter Errante, deputy product manager for crew-served weapons. He declined to say how many weapons will be produced, adding only, “We’re making them as fast as we can.”

The M107 semi-automatic long-range sniper rifle, as it is known, is a commercial, off-the-shelf product based on the Marine Corps’ M82A3, Errante explained. “We made a lot of changes to improve durability and reliability.”

The M107 comes with two 10-round magazines; a variable-power day optic sight; a hard carrying case for storage, transportation and protection, and a soft case for tactical operations.

Like the M82A3, the M107 is made by Barrett

Firearms Manufacturing Inc., of Murfreesboro, Tenn. Both are designed to target vehicles and aircraft at long distances.

Although the M107 can be fired by an individual soldier using a bipod, it is considered a crew-served weapon because snipers work in teams of two, Errante said.

The rifle is big, nearly five feet in length, and heavy, with a weight of 32 pounds. It packs “a pretty significant recoil,” the backward motion of a discharged firearm, he admitted. In the hands of skilled snipers, however, it is extremely accurate, he said. “We’ve had confirmed kills at 3,500 meters in Afghanistan.”

The M107 can be placed on special operations’ ground mobility vehicles, Strykers and even unmanned ground vehicles. “It can be mounted facing to the rear of armored vehicles to keep enemy troops from approaching the vehicle from that direction,” Errante said.

An M107 atop an unmanned ground vehicle can be fired by remote control by an operator at a safe distance, Errante said.

A weapon developed “very quickly as an urgent operational requirement,” Clarke said, is the XM26 12 gauge modular accessory shotgun system. The Army already has shipped 199 of these weapons—made by C-More Systems, of Manassas, Va.—to Afghanistan.

The XM26 attaches underneath the barrel of the M4 and M16, providing troops with the ability to fire lethal, non-lethal and door-breaching rounds, he explained. It also can be fitted with its own butt stock and used as a standalone shotgun.

Still another weapon getting considerable attention in infantry circles is the XM307 25 mm advanced crew-served machine gun. The XM307 is being developed by General Dynamics Armament and Technical Products, of Burlington, Vt., under a 2004 contract worth up to \$95 million through December 2007.

The weapon fires 25 mm air-bursting and armor-piercing munitions. Its fire-control system includes a laser range finder and a day-night sight.

The weapon fires 25 mm air-bursting and armor-piercing munitions. Its fire-control system includes a laser range finder and a day-night sight.

The XM307 is intended to replace the two decades-old MK-19 40 mm grenade machine gun and the World War II-era M2 .50 caliber heavy machine gun, said Lt. Col. Kevin Stoddard, product manager for crew-served weapons. Within minutes, it can be converted to the XM312 lightweight .50 caliber machine gun. At 50 pounds, the XM312 is one-third the weight of the M2. The XM307 and XM312 share 95 percent of the same parts.

Both the XM307 and XM312 are being developed for use with the Army’s Future Combat Systems, Stoddard explained. The service plans to have them in the hands of soldiers by fiscal year 2008, he said.

Defence Industry

Custom-Designed Rifle Aims to Fit Commandos’ Special Needs



U.S. special operations forces this summer will begin testing a new assault rifle, which is expected to be more accurate and less cumbersome than current weapons.

Known as the special operations combat assault rifle, or SCAR, the weapon comes in 5.56 mm light and 7.62 mm heavy versions that are designated the Mk 16 SCAR-L and Mk 17 SCAR-H. Variants include standard, close quarters combat and sniper.

The SCAR-L is intended for close combat while the SCAR-H is meant for longer ranges. The initial production plan also includes an Mk 18 enhanced grenade launcher. More variants are expected to evolve from the core design.

Troops will be able to fire a variety of ammunition from the same rifle, and the entire SCAR family will have interchangeable parts, said Army Lt. Col. Deac Heilig, systems acquisition manager at the U.S. Special Operations Command.

The manufacturer of the rifle, FN Herstal, is testing different interchangeable barrels, he said in an interview.

Commonality of parts between SCAR versions is meant to reduce the training, supply and maintenance burdens. “Currently our special operations folks have a golf bag filled with guns,” said Paul Evancoe, director of military operations at FN Manufacturing. “We’ve given them a truly modular weapon ... That eliminates the requirement for all the other clubs in the bag.”

The SCAR-L will replace the M4A1 close-quarters battle rifle and Mk 12 weapons now used by special operators. The SCAR-H will replace the M14 and Mk 11. All six variants of the two main versions share the same control arrangement, handling and maintenance procedures. “Once you’re trained on the gun, it’s the same for any variant,” said Evancoe.

Common parts also help cut costs, Evancoe noted. “They engineered it with a concept of keeping the cost of manufacturing down for both heavy and light by using just about the same stuff for everything.” The one-piece rail and frame of the new rifle enables the operator to change and level barrels quickly, which permits tailoring the gun to different situations.

All SCAR versions also use the same accessories, including sights and scopes. They will accommodate the accessory kit known as “special operations peculiar modification,” now under development for the current M4 rifle. SCAR can also be fitted with M4-style grips and other aftermarket items. “Special ops guys love to customize their personal weapons,” said Evancoe.

SOCOM launched the program in September 2003, and touted SCAR as the first assault-rifle competition since 1941. Fourteen operators tested competing

weapons at the Naval Surface Warfare Center in Crane, Ind.

After it was selected to make the rifle, FN Herstal continued to modify the design based on input from users. Operators, for example, asked for a folding sight. FN engineers at the company's rapid-prototyping facility in Belgium fabricated one overnight. A pushbutton lock for the sight was added in hours. "To duplicate that capability [in the United States] would require a heck of a capital investment," said Evancoe.

A SOCOM team continues to visit the Herstal facility to review engineering changes to the weapon. "This is a very efficient way to do it because the contracting officer who has to approve the changes is sitting right there with the operators," he added.

Relying on anthropometric analysis, SCAR designers sized the pistol grip to accommodate most hands. Ambidextrous safety mechanisms, magazine and bolt releases, and charging handles can be used by southpaws and even by operators wounded in combat. A telescoping, folding stock adjusts the length of the weapon to individual body size and firing positions, and makes the SCAR easier to hide under clothing or in small bags. The folding stock is also an advantage for operators parachuting from aircraft, fast-roping from helicopters or simply entering or leaving ground vehicles, explained Evancoe.

FN engineers gave the SCAR-L and SCAR-H a relatively low rate of fire of 600 to 650 rounds per minute on automatic. Most weapons like the M16 and M14 fire around 800 rounds per minute but make it difficult to hold the weapon on target for the full burst. "A high cyclic rate doesn't buy you anything," said Evancoe. "If you're more accurate with a lower rate of fire, you'll use less ammunition because you can put your first, second and third rounds on target."

SOCOM wants the rifle to fire both existing and yet-to-be-developed rounds, said Heilig. "The exact caliber and ammunition will be determined based on optimum accuracy and lethality in each of the intended operational scenarios as well as availability." A gas port selector was engineered into the SCAR to accommodate new types of ammunition.

Another SOCOM priority was reliability in harsh operating environments. Special coatings make the rifle suitable for Navy SEALs, who may have to fire weapons that were submerged for long periods.

The manufacturer claims that the weapon will fire 90,000 rounds without overhauls. The intended barrel life is 35,000 to 40,000 rounds—twice that of M16-family weapons. Barrels can be changed in the field, which cuts back on depot maintenance, said Evancoe.

SCAR prototypes will be distributed to operators for testing on an undisclosed schedule. "What they're going to do is tweak that gun and come back with engineering change proposals," said Evancoe. FN Herstal will produce the rifles at its South Carolina manufacturing line. The company has made M16A-2s and A-4s for U.S. military for the last five years and will use the same

production machinery and workers for SCAR.

The original SCAR solicitation specified production quantities of 84,000 SCAR-L standard, 28,000 SCAR-L for close-quarters combat, 12,000 SCAR-L sniper, 15,000 SCAR-H standard, 7,000 SCAR-H close-quarter combat and, 12,000 SCAR-H sniper variants.



Army

Army Developed Urban Tactics, but Lacked Doctrine



Urban warfare did not receive concentrated Army attention until the 1990s, despite a wealth of experience gained during conflicts spanning more than half a century. Army doctrine has evolved into a focused plan of identifying, isolating and destroying concentrated targets within cities, rather than avoiding key population centers or storming them with all resources available.

It wasn't until quite recently that troops received realistic training in urban mockups.

In World War II, soldiers learned city fighting the hard way as they battled and blasted their way through the Ruhr and Manila, said Arthur Durante Jr., deputy chief of doctrine at Fort Benning, Ga., who has studied the history of Army urban warfare methods.

"But at the end of the war, we didn't have a doctrine. What we had were tactics. We knew how to do it. But we had never written it down, thought it through and said, 'This is why we do it this way, and this is how we ought to approach it.'"

The first manual for urban operations appeared in the 1950s. Solidly rooted in World War II experience, the book "Combat in Fortified Areas" focused more on tackling entrenchments than cities. "For 30 years, that was the only book," said Durante. "Good for what it was, but it talked about Sherman tanks against dragon's teeth and pillboxes on the Siegfried Line."

In 1979 came Field Manual 90-10, which reflected the change in Army focus from jungle warfare in Vietnam to mechanized warfare in Europe. And therein lay the problem. The manual used examples of village fighting in Germany—though West Germany had become heavily urbanized by the 1970s. "If you got down to it, the manual said, 'avoid fighting in cities,' Durante said. "We bypass cities. We fight in the open. Cities are bad places to fight. Here are some things you can do if you're there, but don't fight there if you can avoid it."

So the Infantry School came out with a supplement in

1982: FM 90-10-1, "Infantry Guide to Urban Combat." Though it focused more on city combat than previous works, it came out when the infantry was mostly stuck with M-113s instead of Bradleys and Abrams. "We were still back in the days of the Sherman," said Durante.

Perhaps worse, training didn't simulate urban combat. Durante recalled conducting lessons learned surveys of 7th Infantry Division soldiers who had participated in the Panama conflict. "One of the things that struck us was that we heard the same statement over and over again: they didn't have any idea of what the effects of their weapons would be against urban targets. When we went to the range, we shot at tank hulls and pop-up targets. We didn't shoot at cinderblock walls and car bodies."

He cited an interview with a platoon commander who had been ordered to secure a Panamanian water treatment plant. The gate was locked, so he fired a LAW anti-tank rocket at it. All it did was punch a hole in the gate without even destroying the lock.

"He told me, 'Honest to God, sir, I expected that gate to blow open, because that's what it does in the movies.'" The platoon only entered the plant after one of the employees shouted that he had a key.

"They needed a picture in their mind, and the only one they had came from Hollywood," said Durante.

It wasn't until 1993, and the FM 90-10-1 supplement, "Infantry Guide to Combat in Built-Up Areas," that a current, comprehensive concept of urban operations began. Based on experience in Panama and Somalia, it "significantly increased our discussion of combat under restrictive conditions," he said. "We introduced the concept of high-intensity, precision and surgical operations, which were levels of violence and focused violence, as opposed to general attack."

Instead of bypassing or demolishing a city, current doctrine focuses on finesse and going for key "nodal points," such as communications centers and utilities. Combat is localized. "If he's concentrated his defense around an apartment complex of 25 or 30 small buildings, then you fight him there," said Durante.

In the 1990s, the concept of discriminatory engagement during room clearing operations also emerged. "Rather than just simply chucking in grenades from the outside until the screaming stops, we taught them to engage targets that need to be engaged, but don't engage others that don't need to be," Durante said.

The fundamentals of urban combat haven't changed much over the years, Durante said. Isolate, create breach, seize foothold, expand. But technology has changed some tactics. Instead of isolating a building with continuous artillery fire before assaulting it, UAVs enable commanders to call in fire only when needed.

Armor in urban terrain has become much more resilient. Durante admits that studying the disastrous Russian armored assault on Grozny in 1994 gave U.S. planners "an exaggerated sense of the vulnerability of armored vehicles in a large, modern city. So before Iraq, we had a little bit of reluctance to put heavy armored forces without a lot of dismounted infantrymen into

urban areas." But superior American vehicles and training enabled U.S. armor to function where Soviet armor was slaughtered.

Sophisticated computer simulations and urban combat training ranges have replaced plywood village mock-ups. American soldiers are much better trained and equipped to deliver lethal force. "But the issue isn't how many we can kill," Durante said. "It's how many we can avoid killing and still accomplish the mission. We're much prepared doctrinally to pursue the full range of urban operations, which includes offense, defense, stability and support operations."



Defence Industry

BAE Systems Receives Orders Worth \$1.127 Billion To Remanufacture And Upgrade Bradley Combat System Vehicles



BAE Systems has been awarded a series of delivery orders and contract modifications worth \$1.127 billion from the U.S. Army Tank-automotive and Armaments Command (TACOM) to remanufacture and upgrade more than 500 Bradley Combat System vehicles.

"We are pleased that the Army has asked us to provide additional Bradley Combat System vehicles to support the modular Army," said Andy Hove, director of Bradley Combat Systems for BAE Systems. "The Bradley A3 in particular is the most advanced digital combat system deployed today, and is most ready to integrate new technologies. Bradley A3 provides commanders with outstanding situational awareness in the harshest urban fights by providing the crew with two independent thermal sights, as well as proven mobility, survivability and lethality; we're looking forward to putting more of them into the hands of soldiers."

Under four delivery orders, BAE Systems will remanufacture and upgrade:

- 450 older Bradleys to Bradley A3 vehicles – the total value of this delivery order incorporates 55 vehicles and \$71.5 million awarded in March.
- 50 vehicles to Bradley A2 Operation Desert Storm (ODS) vehicles, plus provide kits to convert 100 additional vehicles to the A2 ODS configuration
- 33 vehicles to Bradley Fire Support Team (BFIST) vehicles
- Spares for Bradley A3 vehicles

Additionally, BAE Systems will provide 120 Commander's Independent Viewers for 120 Bradley vehicles ordered under a contract modification issued in February.

The Bradley Combat System has played a centrepiece role in Operation Iraqi Freedom and continues to provide outstanding survivability, mobility and lethality to U.S. soldiers in all types of close-combat urban scenarios or in open-combat terrain. The Bradley Combat System fulfils critical infantry, cavalry, fire support, battle command and engineer roles for the Army's heavy brigades.

Work on the remanufacture contract will begin immediately and will be performed at the company's facilities in York, Pennsylvania, Fayette County, Pennsylvania and Aiken, South Carolina, in conjunction with the Public/Private Partnership between Red River Army Depot (RRAD) and BAE Systems. Disassembly and component overhaul work will be performed at RRAD and the company's facility in Fayette County. Various components will be supplied by BAE Systems in Aiken, and final assembly and test will be conducted at the company's York facility. Vehicle deliveries are scheduled to begin in June 2006 and continue through January 2008.

