

# Army Guide monthly



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## Contracts

### Ceradyne wins \$59.1M Army body armor order

Ceradyne Inc. has received a \$59.1 million ceramic body armor delivery order from the U.S. Army, Aberdeen Proving Ground, Maryland, the company said Thursday.

The order, which will be shipped against a five-year indefinite delivery/indefinite quantity contract announced in July 2006, is for enhanced side ballistic inserts and will be delivered from February to June 2008, according to a release.

Costa Mesa-based Ceradyne develops, manufactures and markets ceramic products and components for defense, industrial, automotive/diesel and commercial applications.



## Future Technologies

### QinetiQ team helps develop test for 'over-roofing' structure to protect against indirect fire mortar and rocket attacks



QinetiQ's force protection engineering team took just 10 weeks to establish and deliver a method of testing over-roofing structures for protection of UK forces against indirect fire mortar and rocket attacks in Iraq – currently a daily occurrence in camps across the country.

A number of potential protective systems had to be tested against the blast, fragmentation and ballistic penetrative capabilities of dynamically fired rockets and mortars so an intensive series of technically challenging trials were planned and executed. These used QinetiQ's long test track facility at Pendine and were undertaken by the force protection engineering team from QinetiQ Land Division, working in conjunction with its Test and Evaluation Capability Services Division.

"Special test sleds were designed to secure rockets to the track that allowed them to spin at several thousand RPM, arming them in flight – something that had never been attempted before," explained Angus Williams, head of QinetiQ's force protection engineering team. "The launch point on the track was also adjusted to achieve an

impact velocity of 300 metres per second, replicating real events in theatre. The joint team worked together extremely well to overcome the technical challenges and tight timescales, including the development of a method of dynamically firing the armed rockets down the track reliably, consistently and safely."

Major Bob Sheldon, HQ Engineer in Chief and military subject matter expert for the project, added: "I was delighted by the success of the trial and the dedicated effort put in by QinetiQ to providing increased levels of protection for British Service personnel in camps in Iraq."

The trial was completed successfully within the timescales and the recommendations are being incorporated into the design. QinetiQ's initial success has also led to significant interest from the US, Canada and Israel amongst others and a second phase of trialling is being planned.



## Defence Industry

### AxleTech International Renews Long Term Remanufacturing Agreement with Oshkosh Truck for Planetary Axles on HET / PLS Vehicles

AxleTech International, a specialist in high-speed planetary axles for the defense, off-highway, and specialty truck markets, has signed an exclusive long term agreement with Oshkosh Truck Corporation.

AxleTech International, a specialist in high-speed planetary axles for the defense, off-highway, and specialty truck markets, has signed an exclusive long term agreement with Oshkosh Truck Corporation. The five-year deal strengthens AxleTech's position as supplier of remanufactured axles for the fleet of Oshkosh Truck HET and PLS tactical trucks used by the US armed services.

The five-year agreement is expected to generate an average of US\$7 million in annual revenue. In 2007, AxleTech's HET and PLS remanufactured axle business generated almost US\$9 million in sales. AxleTech is the exclusive original equipment supplier of the AxleTech 5000 Series high-speed planetary axles used on all PLS and HET vehicles that have been produced. The PLS (Palletized Loading System) is a five-axle 10x10 all-wheel-drive tactical truck. The HET (Heavy Equipment Transporter) is a four-axle 8x8 vehicle.

Both have been in production since 1991 with 8,000 vehicles currently in the armed services fleet. With over 30% of the PLS and HET fleet deployed in Iraq and Afghanistan, RESET requirements are expected to remain high. The remanufactured axles are warranted by AxleTech as original equipment.

"We are pleased to team with Oshkosh Truck Corporation to provide remanufacturing services that sustain the current fleet of PLS and HET tactical trucks," said Mary Petrovich, AxleTech's Chief Executive Officer. "AxleTech is proud to refurbish equipment that

is so crucial to our soldiers. Our troops depend on these trucks to be reliable, and AxleTech has the expertise to help put the trucks back in service quickly."

AxleTech's PLS and HET axle remanufacturing operation is based at its 275-employee Oshkosh, Wisconsin plant. AxleTech's agreement with Oshkosh Truck encompasses 100% of Oshkosh's global axle remanufacturing requirements for all current and future PLS and HET vehicles.



## Contracts

### General Dynamics Awarded \$349 Million for Abrams Tank-Related Work



STERLING HEIGHTS, Mich. -- The U.S. TACOM Lifecycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics, a contract for the Egyptian tank co-production program.

The \$349 million contract, announced in December, is for the production of 125 M1A1 Abrams tank kits for the tenth increment of the Egyptian co-production program.

Since 1992, General Dynamics has provided components for kits used in the co-production program. The parts are shipped to a production facility near Cairo, Egypt, where the tanks are manufactured for the Egyptian Land Forces.

This latest increment will increase the number of Egyptian co-production-built tanks to 1,005. Work on the components will be performed in Anniston, Ala.; Tallahassee, Fla.; Sterling Heights, Mich.; Lima, Ohio; and Scranton, Penn. Deliveries will begin in April 2009 and continue through July 2011.



## Exhibitions

### Plasan Wins Best Provider of Vehicle Survivability Protection Solutions



Plasan, a world leader in the development, integration and production of ballistic protection and crew survival, was awarded first place for excellence in ballistic protection technologies for

vehicles, as part of the annual international conference in LMAV (Light & Medium Armoured Vehicles) in London.

Plasan's CEO, Dani Ziv, said when receiving the award: "We are convinced that our advanced survivability solutions save lives and provide the best defense for fighting forces as they carry out their tasks on the battlefield. We are very proud to receive this award," he said and added, "...and we see it as proof of the trust which our customers, worldwide, place in us with respect to the quality and reliability of our solutions, and to the advanced technology on which they are based."

Plasan received the award at the conclusion of the three-day international conference on ballistic protection technologies for vehicles (which took place on January 22nd-25th) where world-leading protection technologies companies from around the globe presented cutting edge developments in the area of vehicle protection.



## Contracts

### Ultra TCS Awarded \$12,900,000 Contract Amendment for the U.S. Army's WIN-T Program

Ultra Electronics - Tactical Communication Systems awarded contract amendment valued at US \$12,900,000 for the supply of AN/GRC-245A HCLOS™ radio spares and ancillary products for the U.S. Army's WIN-T Program.

Montreal -- Ultra Electronics Tactical Communication Systems Division (Ultra TCS) announces the award of contract modifications valued at more than US\$12,900,000 through the Canadian Commercial Corporation, for the supply of spares and other products associated with its AN/GRC-245 HCLOS™ radio, for the U.S. Army's WIN-T Program under contact no. DAAB07-98-C-F505.

"We are honoured that the U.S. Army continues to show confidence in our products and our ability to support its missions," states Alan Barker, president of Ultra Electronics Tactical Communication Systems Division, adding "HCLOS™ radio is our flagship product and we're proud of its record and market acceptance as the most successful tactical Line-Of-Sight (LOS) high capacity radio on the market today."

The AN/GRC-245A HCLOS™ radio is a state-of-the-art Software Defined Radio (SDR) using the Software Communications Architecture (SCA) open framework. The HCLOS™ radio is currently shipping with 16Mb/s traffic capacity, but is software-upgradeable to 34Mbps full-duplex capacity. Ultra-TCS has already delivered thousands of HCLOS™ radios to North American and International customers, many of which are operating in the most demanding battlefield conditions. Many thousands more HCLOS™ radios are on order.





## Contracts

### DRS Receives Two Contracts Totaling Approximately \$20 M to Manufacture and Provide Target Acquisition Assemblies for IBAS

DRS Receives Two Contracts Totaling Approximately \$20 M to Manufacture and Provide Target Acquisition Assemblies for IBAS

Parsippany, N.J. -- DRS Technologies, Inc. (NYSE: DRS) announced today that it received two contracts totaling approximately \$20 million to provide the target acquisition assemblies used in the Improved Bradley Fighting Vehicle (IBFV) aboard the M2A3 Bradley Fighting Vehicle.

One contract is for \$11 million from the U.S. Army's Aviation and Missile Command at Redstone Arsenal in Alabama, and the second is for \$9 million from a prime contractor.

The work for these contracts will be executed by the company's DRS Sensors & Targeting Systems unit - Optronics Division in Palm Bay and Melbourne, Florida. The manufacturing will begin immediately, the first deliveries are expected to start in December 2008, and final deliveries are scheduled to occur in September 2009.

DRS' target acquisition assemblies are part of the IBAS system that provides target acquisition, tracking and engagement, and fire control of the Bradley vehicle's tube-launched, optically tracked, wire-guided (TOW) missile system, and its 25 millimeter and 7.62 millimeter weapon systems. The company's assemblies use second generation forward looking infrared technology, and eye-safe laser rangefinder capabilities to give soldiers advantageous opportunities on a battlefield during the night or in visually-obscured environments.

The IBAS equipped with DRS technology enables the commander or gunner of a Bradley vehicle to detect, identify and acquire targets while moving and at greater ranges, thus maximizing the effectiveness in engaging targets with the vehicle's weapon systems.

"These contracts confirm our company's position as a premier supplier of technology for one of the Army's most important land vehicles, and as a premier supplier of products equipped with forward looking infrared technology," said James M. Baird, president of DRS' Reconnaissance, Surveillance & Target Acquisition (RSTA) business segment.

Force Protection and General Dynamics have a partnership to share in the production and program management of the MRAP contract.



The contractor logistics support and spare parts are for maintaining the operational readiness rates of MRAP vehicles deployed with the U.S. armed forces overseas. MRAP spare parts will be ordered by field service technicians employed by General Dynamics Customer Service and Support Company operating from Shelby Township, Mich.

## Defence Industry

### Harris Corporation to Provide American Forces Network With a Broadcast Communications System to Reach One Million Troops

CINCINNATI -- Harris Corporation, an international communications and information technology company, has been awarded a contract from broadcast systems integrator Snader and Associates to provide a comprehensive broadcast communications system for the American Forces Network.

The American Forces Network delivers news, information and entertainment to almost one million troops worldwide outside of the United States.

Snader and Associates is designing the new broadcast system, which will be installed at the Defense Media Center in Riverside, California, and is expected to be completed in the summer of 2008. Under the agreement, Harris will provide broadcast routing, automation, video servers, core processing and asset management products.

The system includes the first members of the new Harris® NEXIO AMP™ product family — the NX3601HDI media platform with integrated storage and the NX3601HDX media platform for use on a NEXIO™ storage area network. NEXIO AMP™ pairs a high-performance, high-definition/standard-definition (HD/SD) server architecture with best-in-class content protection. The new system combines the highest levels of I/O, data pathway and storage redundancy with all the features broadcasters have come to expect in NEXIO™ servers — including integrated software codec support and automatic up/down/cross conversion. In the near future, the platform is also expected to have the ability to host software-enabled media applications, which will allow customers to reduce hardware expenditures and improve overall workflow efficiency.

## Defence Industry

### GD Receives \$44 M for Mine-Protected Vehicle Spare Equipment

Sterling Heights, Mich. -- Land Systems, a business unit of General Dynamics, has received \$44 million in two work orders from Force Protection Inc. for contractor logistics and spare parts for the Mine Resistant Ambush Protected (MRAP) vehicle program.

Snader and Associates Inc. is an independent reseller and integrator serving production, post-production, audio visual presentation, 3D animation and federal government professionals around the globe.

Harris Broadcast Communications offers products, systems and services that provide interoperable workflow solutions that span the entire broadcast delivery chain. The Harris ONE approach brings together highly integrated and cost-effective products that are ideal for emerging media business models and for customers upgrading media operations to digital and high-definition services.

### Defence Industry

#### Ceradyne, Inc. Receives Order for Lightweight HEMTT Prototype Armor Kit



COSTA MESA -- Ceradyne, Inc. announced it has received an initial order for its B-Kit prototype armor kit from Oshkosh Truck Corporation for a lightweight HEMTT A3 crew cab armor applique program.

This prototype order, in excess of \$200,000, is scheduled to be completed in the second quarter of 2008.

Marc King, President of Ceradyne Armor Systems, Inc., commented: "We are pleased to have received this prototype order as it will incorporate Ceradyne's LTAS (Long Term Armor Strategy) certified design. We believe that the Ceradyne armor solution shall result in a cost effective lightweight armor program."

Ceradyne develops, manufactures and markets advanced technical ceramic products and components for defense, industrial, automotive/diesel and commercial applications. Additional information about the Company can be found at [www.ceradyne.com](http://www.ceradyne.com).

### Defence Industry

#### Delivery of the 100th upgraded AMX10RC to the French Army



On 29th January 2008, Nexter Systems delivered the 100th upgraded AMX10RC armoured vehicle to the French Army.

This delivery took place in the scope of a contract, awarded by the French Procurement Authority (DGA) in December 2000, for the upgrading of 256 AMX10RC armoured vehicles.

The upgrading of the AMX10RC consists in improving the reliability of the chassis, completely accommodating the turret and integrating the SIT V1 Battle Management System. By last August, SIT V1 was qualified by the DGA, notably on board the AMX10RC. The vehicle operational evaluation was achieved without any problem and, in 2006, a squadron of upgraded AMX10RC from the Foreign Legion 1 Cavalry Regiment, was sent to the Ivory Coast to take part in the Operation Licorne.

The French Army Material Command (DCMAT), as a MoD partner, produces the upgraded chassis by using systems delivered by Nexter Systems. Nexter Systems upgrades the turrets and completes the vehicle final integration.

### Army

#### U.S. Army Outlines Fiscal Year 2009 Budget

The U.S. Army announced on the 4th of February the details of its budget for Fiscal Year (FY) 2009, which covers the period from the 1st of October, 2008, to the 30th of September, 2009. The FY 2009 budget request is \$140.7 billion.

The FY 2009 budget is structured to provide trained and equipped forces to the combatant commanders, balancing immediate warfighting needs with the development of future enhancements. The Army will focus on regaining balance in the near term in order to provide strategic flexibility and to build capacity for future challenges.

#### The Army's FY 2009 budget addresses these five key themes:

- 1) Sustain American Soldiers, Families and Civilians
  - Recruit and retain quality Soldiers.
  - Improve quality of life for American Soldiers, Families, and Civilians.
  - Continue medical improvements.
- 2) Prepare Soldiers for Success in Current Operations
  - Adapt and enhance the rigor of institutional, individual, and collective training.
  - Train Soldiers and units to conduct full-spectrum operations as part of a joint, interagency, or multinational force.
  - Fully implement the Army Force Generation model to increase readiness of the Operating Force over time.
- 3) Reset to Restore Readiness and Depth for Future Operations
  - Fund procurement programs to sustain readiness and strategic depth.

- Retrain Soldiers to accomplish the full spectrum of missions they will be expected to accomplish.
- Revitalize American Soldiers and Families.

#### 4) Transform to Meet the Demands of the 21st Century

- Upgrade and modernize U.S. Army units in order to remain an agile, globally responsive force.
- Change the organization to become more deployable, tailorable, and versatile.
- Implement institutional change in order to support more effectively and efficiently an expeditionary Army during an era of persistent conflict.
- Develop leaders who can handle the challenges of a joint, interagency, intergovernmental, and multinational environment.

#### 5) Grow the Army and Restore Balance

- Increase Active Army end strength to 532,400.
- Increase Army National Guard end strength to 352,600.
- Provide necessary forces in an era of persistent conflict.
- Reduce stress on deploying forces by increasing dwell time at home station.

### Budgeting for Military Personnel

The Army's objective is to provide combatant commanders with fully capable units manned by well-led, well-trained, and well-supported Soldiers. Current and future funding levels are critical indicators of U.S.A.'s commitment to recruiting and sustaining the All-Volunteer Force. This budget request emphasizes manning the force, taking care of Soldiers and Families, and sustaining the quality of Army personnel.

The FY 2009 budget differs significantly from previous years' submissions in that it funds a permanent base budget end-strength increase of 43,000 Soldiers to enhance combat capability and to reduce stress on the force. This growth will enable the Army to continue its transition to a more agile, more lethal, and more deployable modular force that is better able to meet combatant commanders' and the nation's needs.

The budget request continues to take care of Soldiers and Families by providing an across-the-board 3.4 percent military pay increase in FY 2009.

### Budgeting for Operation and Maintenance

The Army's FY 2009 Operation and Maintenance budget provides for:

- Sustaining the All-Volunteer Force, consisting of Soldiers, Families, and Army Civilians.
- Preparing Soldiers and units with the best available training and equipment so that they can successfully execute missions across the full spectrum of operations.
- Resetting U.S. Army units-in both a human and materiel sense-to build current and future readiness to meet the demands of the current conflict, and create the depth and breadth of Army capabilities needed to respond to other contingencies.
- Transforming to be able to develop and employ forces in new ways to deal successfully with the complex challenges inherent to an era of persistent conflict-by adapting how American soldiers fight,

train, modernize, develop leaders, and support American Soldiers, Families, and Civilians.

The Army remains committed to fully executing its operating tempo (OPTEMPO) strategy for those units not currently participating in Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF). However, in recognition of the uncertainties inherent in this highly dynamic period of rotational deployments, the Army continues to assume risk in this portion of the budget. OPTEMPO increases reflect the realignment of units required to execute Home Station Training (HST) based on the revised OIF/OEF deployment schedule. The Army will evaluate the units' execution of the Combined Arms Training Strategy (CATS) during the fiscal year to reassess and to mitigate risks to readiness, as necessary.

- Ground OPTEMPO-The FY 2009 budget funds collective training for non-deployed units in support of the Ground OPTEMPO CATS, encompassing actual miles driven for HST and Combat Training Center rotations, as well as virtual miles associated with using simulators, such as the Close Combat Tactical Trainer and the Unit Conduct of Fire Trainer.
- Flying Hour Program-The CATS and Aircrew Training Manuals establish specific flying-hour requirements for each type of aircraft. The FY 2009 budget supports training in cockpits and simulators for individual crewmembers and units according to approved aviation training strategies, thereby ensuring individual and collective proficiency.
- Combat Training Center Rotations-This budget supports tough, realistic, combat training: 10 Active Component brigade rotations through the National Training Center, 10 brigade rotations (8 Active Component and 2 Army National Guard) through the Joint Readiness Training Center, and 8 brigade rotations through the Joint Multi-National Readiness Center. The Battle Command Training Program will conduct 3 Corps Warfighter exercises and train 7 division-level command and staff groups.

The Army's Depot Maintenance Program is funded to provide an adequate baseline. When combined with supplemental funding, it assures the timely availability of weapon systems to support unit training, readiness, and combat operations.

Installations are essential to maintaining the premier Army in the world. They support Soldiers where they live, work, train, mobilize, and deploy to fight. The installations enhance power projection and, in wartime, they serve as integral components of a battle space that extends from home station to foxhole by providing reach-back capability. The Army is adapting its installation programs and facilities to better support its role as a member of the Joint Team.

- The well-being of American Soldiers, their Families, and Civilians is inextricably linked to the Army's readiness. The Army's well-being programs and family support systems must be synchronized with rotation schedules and optimized to support deployed units. Active Army Community Service and Reserve Component family programs include a network of integrated support services that directly support Soldier readiness and retention.



- Base operations support programs are funded to operate the worldwide bases, installations, camps, posts, and stations of the Department of the Army. They include: family programs, environmental programs, force protection, municipal services, and audio-visual and base communication services.
- Sustainment, Restoration, and Modernization programs, such as the maintenance and repair of facilities to include emergency repairs, plumbing, electrical, heating, air conditioning, replacement of roofs and repairs, ensure Soldier and Family well-being while making the best use of available resources.

The Army's recruiting and training programs are essential to increasing Army end-strength.

- The effort to grow the Active Army to 532,400 and the National Guard to 352,600 in FY 2009 will be supported by the dual strategy of an assertive advertising campaign ("Army Strong") and an increase in the number of recruiter billets.
- As end-strength grows, the influx of new Soldiers will require increased funding for the administrative and logistic infrastructure that operates the Army's training centers and schools. The growth in operational forces also will require more combat arms and combat support Military Occupational Specialty training, such as explosive ordnance disposal and human intelligence interrogation. Basic skills training, follow-up advanced training, and professional development education are supported with training funds.

Administration and Servicewide Activities support the global-reach infrastructure. Current deployments are being sustained simultaneously over great distances, in multiple locations, at a faster pace, and over longer periods of time. These operations require a combat support infrastructure that is based in the continental United States and provides real-time support to Active, Reserve, and National Guard units. The centralized infrastructure programs funded in the FY 2009 budget in Administration and Servicewide Activities include:

- Intelligence and security efforts supported through the Consolidated Cryptologic Program, General Defense Intelligence Program, Foreign Counterintelligence Program, National Geospatial-Intelligence Program, security and intelligence activities, personnel security investigations, the Defense Joint Counterintelligence Program, and arms control treaty implementation.
- Logistical operation resources for the movement of Army materiel worldwide, end-item management, and ammunition and logistics support activities. Also supported is the Sustainment System Technical Support (SSTS) program, a major readiness factor that prevents costly repairs and delivers the latest post-production technology to the battlefield at a faster pace. SSTS provides vital engineering and technical support to post-production weapons systems by reengineering existing core systems to meet the demands of contemporary battlefield environments.
- Army Claims, the Defense Finance and Accounting Service, Army Contracting Agency, Army Audit Agency, Public Affairs, Criminal Investigation

Command, vital Army-wide telecommunications and information systems, Defense Commissary Agency, and Army Headquarters activities.

- Support of Other Nations, fulfilling U.S.A.'s commitment to the North Atlantic Treaty Organization.

## **Budgeting for Procurement and Research, Development, Test, and Evaluation (RDTE)**

U.S.A.'s current force is engaged in ways that could never have been predicted. The Army continues to adapt to meet current and future threats, but a measured approach will not work. Thus, in response to today's security situation, U.S.A. has accelerated the transformation of its Armed Forces. The department has increased resources commensurate with immediate and most urgent demands.

The Future Combat Systems (FCS), with a requested budget of \$3.6 billion for FY 2009, is the foundation of Army Transformation and the cornerstone of the Army's future modular force. The program develops and fields FCS brigade combat teams (BCT), smaller in size than Current Force Heavy BCTs and with integrated, advanced manned and unmanned weapons systems and the Soldier Battle Command Network, yet more lethal, survivable, flexible, strategically and operationally mobile, reliable, supportable, and capable of exploiting the full range of net-centric operations. The first comprehensive modernization effort in nearly four decades, FCS consists of 14 air- and ground-based maneuver, maneuver support, and sustainment systems linked by a networked Battle Command architecture that includes communications, sensors, embedded training, and manned and unmanned reconnaissance and surveillance capabilities. In addition to providing full-spectrum warfighting capabilities, FCS will be adaptable to other types of operations such as civil support and disaster relief. The FCS program also will provide key, early capability packages for spinout (procurement and fielding) to the Current Force.

The FY 2009 FCS program will continue System Development and Demonstration for the networked system of systems, including prototype platform development and network and software development and testing. Among those efforts are:

- Continuing development, testing, and delivery of unmanned aerial vehicles, unattended ground sensors, and unmanned ground vehicle prototypes.
- Completing preliminary platform design reviews and initiating critical design reviews.
- Continuing development of the FCS network, including delivery of the battle command network and software to support key testing events and Spin Out 1 Initial Operational Test and Evaluation in FY 2011.
- Continuing delivery of prototypes of the Non-Line-Of-Sight-Cannon (NLOS-C) Manned Ground Vehicle and production of initial NLOS-C systems for the training base.
- Continuing development of the short-range countermeasure active protection system.

OIF and OEF have highlighted the success of

network-enabled operations. The network offers a powerful competitive edge that includes shared situational awareness, improved collaborative planning, and enhanced combat responsiveness and agility. The Army is expanding its communication bandwidth, in addition to fielding critical battle command systems, to standardize capabilities. This will greatly enhance Soldiers' ability to see the enemy, assess the situation, avoid surprise, and plan and execute a decisive battle, with far fewer friendly losses. In an effort to provide the latest technology to the battlefield without an extended acquisition and build phase, the Army is procuring greater amounts of commercial-off-the-shelf technology.

The Army is working diligently to find immediate technical and materiel solutions to meet challenges around the world. Even though the transformation efforts are focused primarily on the future, U.S. Army will continue to assess and to fulfill the needs of Soldiers involved in the current fight.

The Army continues to build the Modular Force to provide more combat power, to enable force tailoring and to increase operational flexibility. It also will provide a less stressful deployment schedule, resulting in more stability and predictability for Soldiers and their Families. The budget includes \$9.3 billion to support modularization. Modular equipment categories include: Move, Shoot, Communicate, Intelligence-Surveillance-Reconnaissance, Force Protection, and Strike.

The budget includes \$1.8 billion for the Science and Technology (S&T) program to develop technology that is relevant both to the Army and the Joint Team. The S&T program leverages the work of other services, defense agencies, and private industry, as well as the international community. By synchronizing operational concept development with transformational business practices, the Army can get technology to Soldiers faster. The S&T program has been balanced to satisfy the high-payoff needs of the current force while seeking and developing critical capabilities for the future force.

The Army's largest S&T investment area is force protection technologies that provide improved active and passive protection to increase the survivability of Soldiers, rotorcraft, and ground vehicles. Key investments include directed-energy weapons and active and passive protection technology suites, such as increased performance armor and electronic warfare technologies. Other S&T investments include command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), lethality, Soldier systems, medical technologies, logistics, unmanned systems, advanced simulation, and basic research. Key investments in basic research include nano-materials for ballistic protection, biotechnology for improved materials and network sensors, robotics, neuroscience, and immersive simulation capabilities for training and mission rehearsal.

While seeking opportunities to enhance the future force, the S&T program is pursuing limited quantities of advanced technology applications to support units

currently deployed. The Army accelerates mature technologies from on-going S&T efforts and leverages the expertise of the scientists and engineers to develop solutions to unforeseen problems encountered during current operations.

### **Other Research, Development and Acquisition (RDA) efforts include:**

- Non-Line-of-Sight Cannon (NLOS-C), a subsystem of the FCS. It will provide a high-rate, sustained volume of long-range precision fire in all-weather conditions. FY 2009 funding for NLOS-C is \$90 million RDTE and \$155 million Procurement.
- Non-Line-of-Sight Launcher System (NLOS-LS), also a subsystem of FCS. It will provide the maneuver commander with immediately responsive, precision fires on high-payoff targets, and is coupled with real-time target acquisition and battle damage assessment capabilities. Funding for NLOS-LS is \$200 million in FY 2009.
- Procurement of 29 M1A2 Abrams systems enhancement program tanks (\$351 million) and M1 Abrams Tank Mods (\$342 million). Funding covers Abrams Power Pack improvements, operational enhancement, field upgrades, situational awareness, Abrams Integrated Management tanks, and armor.
- Procurement of 119 Stryker vehicles for Stryker Brigade Combat Teams and non-Stryker brigades (\$1.2 billion). Funding covers 79 Mobile Gun Systems, 40 NBC Recon vehicles, survivability enhancements, and system support.
- Procurement of 21 M2A3 Bradley vehicles (\$176 million) and M2A2 Bradley ODS (Operation Desert Storm) systems enhancement program vehicles (\$312 million).
- Procurement of 88,964 M4 Carbines/Combat Optics Machine Guns in support of BCT modularity efforts (\$151 million).
- Procurement of 28 Armed Reconnaissance Helicopters (\$439 million); 36 LH-72 Light Utility Helicopters (\$224 million); 16 new and 23 remanufactured "F" model CH-47 Cargo Helicopters (\$1.2 billion); AH 64 Apache upgrades/conversions, including 32 Longbow (Block II) models, Target Acquisition Designation Sight/Pilot Night Vision Sensors, and other safety and reliability modifications (\$637 million); 63 UH-60 Black Hawk Helicopters (\$1.1 billion); and aircraft survivability equipment (\$491 million).
- Procurement of 108 Patriot Advanced Capability (PAC-3) missiles. Twenty-three percent (\$512 million) of the Missile Procurement, Army, appropriation is for PAC-3 missiles.
- Family of Heavy Tactical Vehicles program and associated equipment (\$923 million). Funding covers Palletized Load Systems, flat racks, Container Handling System, Movement Tracking System, and Heavy Expanded Mobility Tactical Trucks (HEMTTs) to fulfill the Army's Tactical Wheeled Vehicle Modernization Strategy.
- Family of Medium Tactical Vehicles program (\$945 million). Procures 3,171 vehicles to replace over-aged 2.5-ton and 5-ton trucks to fulfill the Army's Tactical Wheeled Vehicle Modernization Strategy.



- The High Mobility Multipurpose Wheeled Vehicle (HMMWV) program (\$947 million). Procures a total of 5,065 HMMWVs, including M1151A1s, M1152A1s, M1165A1s, XM1211s, XM1212s, XM1213 with integrated armor, and an XM1167 TOW variant.
- Night Vision, Thermal Weapon Sight (\$316 million). Funding provides Soldiers situational awareness, lethality, mobility, and survivability during periods of significantly reduced visibility.
- Force XXI Battle Command Brigade and Below (FBCB2) (\$231 million). FBCB2 incorporates state-of-the-art information technology to allow commanders to concentrate on combat system effects rather than combat forces, enabling units to be both more survivable and more lethal. Funding will procure 5,820 ground and 563 aviation variants.

The Army's Top 10 Research, Development and Acquisition programs based on total dollar value are shown below:

#### **System (Excepting FCS, systems include procurement funding only)**

- Future Combat Systems (includes NLOS-C/NLOS-LS; does not include tank and medium caliber ammunition) \$3,555M
- Ammunition (does not include facilities costs and ammunition demilitarization)-- \$1,930m
- Stryker Vehicle -- \$1,175M
- CH-47 Chinook Helicopter (includes MODS)-- \$1,168M
- UH-60 Black Hawk Helicopter -- \$1,063M
- Patriot Air Defense System (includes MODS) -- \$1,037M
- Family of Medium Tactical Vehicles -- \$945M
- High Mobility Multipurpose Wheeled Vehicle -- \$947M
- Family of Heavy Tactical Vehicles -- \$923M
- AH-64 Apache Helicopter MODS -- \$637m

#### **Training And Simulators**

##### **The Royal Netherlands Army select Thales for 13 additional simulators for TACTIS**



The Royal Netherlands Army has amended their contract with Thales for an additional CV90 simulator platform to be integrated into their Thales networked simulation system, TACTIS.

The Netherlands Defence Materiel Organization has

ordered a CV9035 NL vehicle platform including five fixed simulators and eight mobile systems which will be interconnected to the existing TACTIS System currently being set to work.

The CV9035 is a new vehicle, which will enter service with the Royal Netherlands Army (RNLA) from now to 2011. To provide the corresponding technical and tactical training to the Army, the Netherlands MoD decided to expand the RNLA's Thales Tactical Indoor Simulator (TACTIS).

An extension of the separate Logistic Support subcontract was signed with Thales Netherlands for the maintenance of the simulators for a period of 13 years. The partnership with Cap Gemini has been renewed and Van Halteren B.V. is welcomed as a key Dutch expert in CV9035NL design and development.

Chris Gane, VP Thales Simulation business and Adri Blokhuis, Thales Netherlands CEO are both very pleased to see the renewal trust of the Netherlands' Armed Forces in Thales as the TACTIS system extension has been ordered while the system is still being developed.

#### **Defence Industry**

##### **Thales and Boeing Sign FRES Contract with UK Ministry of Defence**

ST. LOUIS, Feb. 06, 2008 -- The UK Ministry of Defence (MoD) today announced the award of a contract to Thales UK in partnership with The Boeing Company for the System-of-Systems Integrator (SOSI) role on the Future Rapid Effect System (FRES) program.

The initial six-month contract, valued at J4 million (US\$8 million), defines the framework for the SOSI's ongoing role in the subsequent phases of this key program, which will provide the British Army with a new family of medium-weight, network-enabled armored vehicles. The role of the SOSI is to drive the successful delivery of a coherent FRES capability.

The Thales UK-Boeing SOSI team will be integrated into the MoD's FRES project team to form an Integrated Customer Team that will manage the delivery of FRES. The SOSI will provide expertise in the following areas:

- Program management
- System-of-systems engineering and integration
- Through-life capability and technology management
- Alliance development and supply chain management
- Development of MoD's SOSI competence

"The rapid downselect and now contract award for the FRES SOSI reflects not only MoD's desire to inject pace into the program, but also our ability to work together effectively," said Alex Dorrian, CEO of Thales UK. "The SOSI role highlights Thales UK's position at the heart of UK land systems integration, alongside FIST and WATCHKEEPER."

Rick Bailly, vice president and general manager, Boeing Combat Systems, added, "We look forward to working with the MoD and the entire FRES industry

team to deliver the optimal capability for this important program for the British Army."

## Training And Simulators

### New Wireless Technology for Virtual Simulations from Cubic Corporation

Cubic Corporation has added a new feature to its EST 2000 Engagement Skills Trainer, which is used by thousands of military personnel throughout the world.

Cubic has developed a tetherless M-4 training rifle that uses a wireless technology rather than computer cables to allow greater freedom of movement and more realism during tactical simulations.

Cubic's Simulation Systems Division, delivered its first tetherless system last year to the Mississippi Air National Guard at the Combat Readiness Training Center. The division is under contract to deliver more tetherless M-4 rifles to the Wisconsin Air National Guard's Combat Readiness Training Center later this year. More than 1,000 EST 2000 systems are operational at Army and Air Force installations worldwide, including the continental United States, Alaska, Hawaii, Korea, Germany, Afghanistan, Kuwait and Iraq.

The new simulator weapons have a CO2 driven recoil with 2.4GHz wireless connection. The electronics are battery powered and the recoil is provided by the CO2, which can be housed in either the ammunition magazine or in attachments to the simulated weapon. They can be used either with Cubic's Engagement Skills Trainer or its Warrior Skills Trainer, an enhancement to EST 2000 that enables soldiers to move around either on foot or in a moving vehicle in a simulation environment that replicates the weather conditions, convoy attacks and judgment issues that arise in certain combat situations.

Cubic's Orlando division is now working on converting other weapons used in EST 2000 and the Warrior Skills Training to operate in a tetherless environment. Cubic could potentially create tetherless technology for law enforcement users in the future.

combat-proven Army Tactical Missile System (ATACMS).

Work will be conducted at the company's facilities in Dallas and Horizon City, TX, with completion expected by the second quarter of 2010.

The contract includes the ATACMS Quick Reaction Unitary and the Block IA Missiles. ATACMS is the world's premier long-range missile artillery round designed specifically for destroying high-priority targets at ranges up to 300 kilometers. Able to deliver a wide variety of warhead options, it can operate in all climate and light conditions while remaining beyond the range of most conventional weapons.

"Combat-proven ATACMS adds to the concept of 'joint fires interdependence' by offering the right munition to achieve the right effect at the right time, regardless of the color of the uniform you're wearing," said Col. Gary S. Kinne, Training and Doctrine Command Capabilities Manager for Rocket and Missile Systems at Fort Sill, OK. "The Army's first surface-to-surface, long-range, all-weather, precision attack capability used in combat, ATACMS provides the Joint Force Commander an immediately available, lethal asset to attack time-sensitive and high value stationary or fixed targets in both open and constrained environments (complex/urban terrain). ATACMS will continue to provide a Joint complementary option by its inclusion in the air tasking order for planned attack and defeat of high value targets and/or in a support role to provide Joint suppression or destruction of enemy air defenses. Its precision reach affords the ability to provide responsive, long-range lateral supporting fires as well as shaping fires that set the conditions for decisive victory. This flexibility enables support of non-standard and direct support missions in addition to the more traditional role of general support to a corps or Joint Task Force. Evolving tactics and techniques will enhance its utility well into the foreseeable future."

During the first Operation Desert Storm, ATACMS became the first tactical surface-to-surface missile ever fired in combat by the U.S. Army. ATACMS is an evolutionary family of missiles which scored numerous successes again in Operation Iraqi Freedom, during which 456 missiles were fired.

"ATACMS is performing excellently for our Warfighters," said Jim Gribshaw, director of Precision Fires at Lockheed Martin Missiles and Fire Control. "A veteran of many battles, ATACMS is indispensable to the present fight, and gives commanders the ability to accurately engage the enemy at depth on the battlefield. And ATACMS' pinpoint accuracy helps minimize collateral damage."

The Army TACMS Unitary missile is a responsive, all weather, long-range missile, with a high explosive, fragmentation, multifunctional warhead fired from the Multiple Launch Rocket System (MLRS) family of launchers, including the MLRS 270A1 launcher and the High Mobility Artillery Rocket System. This system will have a much more efficient logistical footprint, while it will expand the traditional target-set for Army TACMS.

## Contracts

### Lockheed Martin Receives \$194 Million Contract for Army Tactical Missile System



DALLAS, TX, February 7th, 2008 -- Lockheed Martin has received \$194 million from the U.S. Army Aviation & Missile Command for production of the

ATACMS is fired from the Multiple Launch Rocket System (MLRS) family of launchers, including the original M270, the M270 Improved Position Determining System (IPDS), the M270A1 and the new High Mobility Artillery Rocket System (HIMARS) launchers. The M270, M270-IPDS and M270A1 launchers can carry two ATACMS missiles, or 12 MLRS rockets, in a full load. HIMARS carries a single ATACMS missile, or six MLRS rockets, and is C-130 transportable.

Each ATACMS missile is approximately 13 feet long, two feet in diameter and has a range of up to 300 kilometers. A single ATACMS missile can defeat company-size targets beyond the range of current Army cannons and rockets. The first launch of an ATACMS missile was April 26, 1988, at White Sands Missile Range, NM.

Headquartered in Bethesda, Md., Lockheed Martin employs about 140,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The Corporation reported 2007 sales of \$41.9 billion.

### Future Technologies

#### Northrop Grumman and University of Illinois Researchers Make History With All-Carbon Nanotube Radio

BALTIMORE -- Northrop Grumman Corporation and the University of Illinois at Urbana-Champaign have created the first fully-functional, all-carbon nanotube transistor radio, demonstrating that carbon nanotubes can be used as high-speed transistors, while consuming only one-thousandth the power required by current transistor technology.

"Leading researchers have long theorized that carbon nanotube transistors possess the kind of material properties that could allow for very low power, high-speed transistors," said Dr. John Przybysz, a senior consulting engineer at Northrop Grumman. "Carbon nanotube technology changes the way we look at power requirements for military sensor systems because they perform equally with other microwave transistors but use a lot less power than current semiconductor devices."

"Since carbon nanotube transistors use less power, the implications for battery operated radio frequency electronics is dramatic. Instead of a battery lasting two days, the same battery providing power to sensor systems built with carbon nanotube transistors may last up to two weeks," said Przybysz.

"By using thousands of perfectly aligned, single-walled carbon nanotubes as a type of semiconductor thin film, our researchers have become the first to successfully bring together all of the pieces required for building real radio frequency analog electronics, including amplifiers, mixers, and resonant antennae," said Dr. Hong Zhang, lead for carbon nanotube development at Northrop Grumman.

Northrop Grumman and the University of Illinois researchers have published their findings with the Proceedings of the National Academy of Sciences. The document is available on the Web at [www.pnas.org](http://www.pnas.org).

"Carbon nanotube devices made up all the active, vital components of the prototype radio system we built," added Zhang. "The user listens to regular radio broadcasts that flow directly from a carbon nanotube transistor to a pair of headphones or speakers."

"Typical nanotube devices are structured such that they use a single tube to carry current, but the array format provides thousands of conduction channels in each device. Carbon nanotube arrays have high current capacities and enable high power gain at low impedances. That's a significant advantage," said Dr. John Rogers, founder professor of the Materials Science and Engineering department at the University of Illinois at Urbana-Champaign. Roger's team created these large arrays of carbon nanotubes.

Funding was provided by the National Science Foundation and the Department of Energy.

Northrop Grumman Corporation is a \$32 billion global defense and technology company whose 120,000 employees provide innovative systems, products, and solutions in information and services, electronics, aerospace and shipbuilding to government and commercial customers worldwide.

### Contracts

#### U.S. Army Awards General Dynamics \$39 Million for Abrams Upgrades



STERLING HEIGHTS, Mich. -- The U.S. Army TACOM Lifecycle Management Command has awarded General Dynamics Land Systems, a business unit of General Dynamics, a multi-year contract to upgrade 435 M1A1 Abrams main battle tanks. The vehicles will be converted to the M1A2 Systems Enhancement Package (SEP) Version Two (V2) configuration.

The first increment of the multi-year contract is valued at \$39 million and will fund the upgrade of 20 M1A1 Abrams tanks.

This multi-year procurement contract will complete the modernization of all remaining M1A1 tanks which have been in the Army's inventory for more than 20 years.

The most technologically advanced digital tank, the M1A2 SEP V2 includes improved displays, sights, auxiliary power and a tank-infantry phone. It also can accommodate future technology improvements to ensure



compatibility with the U.S. Army's Future Combat Systems.

This award is in addition to \$12.4 million awarded in January to fund parts for the upgrades. Work will be performed in Anniston, Ala.; Tallahassee, Fla.; Sterling Heights, Mich.; Lima, Ohio; and Scranton, Penn. The upgrade program is expected to be completed in June 2013.

General Dynamics, headquartered in Falls Church, Va., employs approximately 83,500 people worldwide and reported 2007 revenues of \$27.2 billion. The company has leading market positions in mission critical information systems and technologies, land and amphibious combat systems, shipbuilding and marine systems, and business aviation. More information about the company is available on the Internet at [www.generaldynamics.com](http://www.generaldynamics.com).

### Defence Industry

#### The Brazilian Marines ordered further 5 MOWAG PIRANHA IIIC 8x8 Vehicles



Rio de Janeiro, Brazil -- General Dynamics European Land Systems (GDELS) announces that on December 17, 2007 the Brazilian Navy and MOWAG GmbH signed a contract for a further batch of 5 PIRANHA IIIC 8x8 in amphibious version.

The newly signed contract comprises 5 PIRANHA IIIC 8x8 APC vehicles in the configuration as delivered previously. The contract signed now is a follow-on order to the 7 vehicles ordered in 2006 (6 APCs and 1 Recovery Vehicle). The PIRANHAs will be used primarily within the framework of international UN mission of the Brazilian Marines in Haiti.

MOWAG believes that its products will appeal to many other customers in South America because of those countries' interoperability requirements with NATO and/or UN forces, in the light of joint peace keeping operations. The threat situation in such missions specifically calls for a high level of protection for the vehicle crews against mines, ballistic weapons and IEDs. With the worldwide operating PIRANHA IIIC 8x8, the technology-advanced company from Kreuzlingen-Switzerland offers a proven product, which fulfils this high-ranking requirement of protection, comfort and mobility.

#### The MOWAG PIRANHA IIIC 8x8 - a well-proven platform

The PIRANHA IIIC amphibious has a length of 7.57 m, a width of 2.71 m, and a GVW of 18.5 t. The vehicle reaches a speed of up to 100 km/h on the road. The

PIRANHA IIIC easily manages gradients of up to 60%, fording depths of up to 1.50 m and is able to swim up to a speed of 10 km/h. The 400 HP engine, together with the 7-speed automatic transmission, the modern independent wheel suspension, the tire pressure control system, and the disengageable all-wheel drive, give the PIRANHA IIIC a high degree of mobility even in difficult terrain. Moreover, the protection against ballistic threats and against mines provides the crew with a maximum degree of protection in a mission. The vehicle is equipped with all necessary features (NBC system, autonomous power supply, A/C system, etc.) that are required for the 24-hour operation of the integrated systems.

### Defence Industry

#### Rheinmetall intends to take a stake in South Africa's Denel Munitions

Germany's Rheinmetall Group signed an agreement with Denel (Pty) Ltd, indicating its intention to take a majority equity stake in Denel Munitions.

The agreement was signed in Pretoria by Mr Armin Papperger, President Rheinmetall Waffe Munition and Denel's Group Executive, Ms Lana Kinley.

The Dusseldorf-based Rheinmetall Group is currently negotiating with the Denel Group for an interest in Denel Munitions, a business division of Denel located in the Western Cape and North West province.

As part of continuing moves to internationalize its defence technology operations, Rheinmetall plans to take a 51% stake in the South African munitions entity. The agreement signed today is subject to approval from the competition authorities and still tied to various suspensive conditions that need be resolved before the transaction is finally concluded.

In embarking on this planned buyout, Rheinmetall wishes to expand its market presence and highlight its role as a leading supplier of systems and equipment for ground forces.

"The product ranges and market penetration of the two companies complement each other perfectly. With this planned acquisition of Denel Munitions, we want to expand our core business as well as penetrate new markets with major strategic potential", declares Klaus Eberhardt, Chairman of the Executive Board of Rheinmetall AG.

Rheinmetall is a premium supplier of ammunition for fighting vehicles and infantry weapons as well as propellant systems for large-calibre ammunition. Denel Munitions possesses special expertise in artillery and mortar systems.

Whereas the bulk of Rheinmetall business is with NATO countries, Denel Munitions is well established in South Africa, Asia, the Middle East and South America. Rheinmetall and Denel Munitions will in future be able to serve their main markets with a complete portfolio of products.

"This agreement with Rheinmetall ties in with Denel's

turnaround strategy,” Lana Kinley explained. “In fact, as one of the crucial pillars of the strategy, equity partnerships with major global players will provide the Denel businesses like Munitions with world-class technology and skills, operational improvements, market access and scale to best serve its clients.”

During the course of restructuring, Denel Pty Ltd (state-owned armaments group), Denel Munitions was spun off as an independent business unit. Denel Munitions has approx 2000 employees at five locations and annual sales of around R 900 million (E90 million). The holding company, Denel Pty Ltd of Pretoria, will continue to hold a minority stake of 49% in Denel Munitions.

In terms of the agreement Rheinmetall and Denel will boost investment in the South African company as soon as Rheinmetall’s acquisition of its equity stake is finalized. This will modernise the South African business operations and improve its production structures and flows, thus setting the stage for solid, profitable growth.

## Defence Industry

### The Year 2007 Saw a Rise in Production Output of JSC Degtyarev Plant



According to ITAR-TASS, the total value of the products sold by JSC Degtyarev Plant rose in 2007 by 17%, reaching RUR5.5 billion.

This amount constitutes 92% of the planned value. The manufacture of products for civil applications rose by a factor of 1.95 (reaching RUR8.6 billion, or 101% of the planned value). The manufacture of products for military applications rose by a factor of 2.5, i.e. the defence-related production had been increasing quicker than the production of items for civil applications. The total share of defence-related products increased by 18% and now constitutes 84%.

The main reason of the production rise at this world-famous plant is an increase in export deliveries.

For example, the plant exported a larger number of Kornet anti-tank missile systems and 3UBK20 Invar guided missiles that are included in the unit of fire of the T-90S main battle tanks. Besides, in 2007 the Degtyarev Plant started producing a number of types of products that had been previously produced by the Kovrov Mechanical Plant. These products include Ataka and Strela-10 MZ guided missiles, Malyutka anti-tank guided missiles, ammunition for RPG, RShG-1 and other weapon systems, hand anti-tank grenades, Kalashnikov

infantry machine guns, 9A-91 small-size sub-machine guns, Kashtan automatic pistols, and flare pistols.

JSC Degtyarev Plant produces missile systems and small arms. These products are exported mostly to Latin America, Africa, Middle East, and South-Eastern Asia. 94.9% of the plant's shares belong to Moscow Bank.

## Defence Industry

### Elbit Systems Unveils New Family of Thermal Weapon Sights for Infantry



Haifa, Israel. -- Elbit Systems Electro-Optics Elop Ltd. (Elop), a world leader in Thermal Imaging, is introducing LILY, a new family of lightweight Thermal Imaging Weapon Sights (TWS) designed for use by individual infantry soldiers; and POPEYE, a low cost lightweight head/helmet mounted thermal imaging monocular.

Based on Elop's many years of experience and feedback from combat operational use of its Thermal Imagers worldwide, the new systems provide significant advantages for operations in total darkness and in even the most difficult environmental conditions.

The LILY TWS contribute significantly to the ability to acquire targets and increase the first-hit capability. They enable the soldier to more easily discriminate between false and valid targets in conditions of dust, smoke, total darkness (such as in caves and/or underground facilities), camouflage and clutter. By enabling the infantryman to see without being seen, the LILY TWS considerably increase survivability probability. Providing infantry soldiers with weapon mounted TWS also has the added value of supporting increased intelligence collection.

The LILY family's main advantages include their lightweight (1 kilogram) and an operating time exceeding 8 hours with no need to recharge the batteries. The LILY TWS family includes three main products. The first two members of the family are based on Elop's innovative 3rd generation uncooled micro-bolometer technologies:

- LILY-S for short-range use for guns and sub-machine guns
- LILY-M for medium-range use for machine guns
- The third member of the family, the LILY-L, is a cooled Thermal Imager for long range use for snipers.

## Exhibitions

## BAE Systems And Mahindra Defence To Discuss Joint Development Of Indian Mine Protected Vehicle



DEHLI, India -- BAE Systems and Mahindra Defence are in discussion to jointly develop an Indian mine protected vehicle based on BAE Systems' highly successful RG-31 mine protected vehicle.

BAE Systems has already supplied 165 mine protected vehicles known as Casspir to the Indian Army since 1999.

At this year's 5th Defence and Naval Exhibition (DEFEXPO), a BAE Systems RG-31 will be on display on the Mahindra Defence stand.

Nearly 600 RG-31s are in service with the U.S., Canada, and other forces, including the United Nations. Under the U.S. Department of Defense's Mine Resistant Ambush Protected (MRAP) programme, 624 RG-31s have been ordered.

"Mahindra is an enormously capable world class company with the skills to become a strong partner for BAE Systems on the development of a mine protected vehicle for India," said Mike Mendoza, BAE Systems' managing director India.

"Mahindra Defence Systems is in the business of providing vehicle protection to defence forces," said Brigadier Khutub Hai, chief executive of Mahindra Defence Systems. "Our cooperation with BAE Systems, who are leaders in this field, for joint production of mine protected vehicles is a strategic fit for our vehicle armouring business."

The all-steel, welded armor, monocoque hull of the RG-31 protects occupants from anti-tank mine detonations and is proven to have saved the lives of countless crews from mines and roadside bomb attacks. With a modular interior layout the vehicle can be configured as an APC, command vehicle, ambulance, surveillance vehicle and for many other uses. In standard APC configuration, this air-conditioned vehicle carries a crew of 8-10.



Industry in partnership with the Defense Exhibitions Organization, the Ministry of Defense and the Government of India. It showcases armored vehicles, artillery, small arms, air defense weapons, EW and communications equipment, army aircraft, naval weaponry, satellite and space technologies, electro-optical devices, and dual-use products. The exhibition area (pavilions and outdoor display areas) occupies about 18,000 sq. m.



Russia is a regular participant in DEFEXPO India. Since the first ever DEFEXPO 1999 the Russian arms exporters have been seeking to actively use this important platform to promote the achievements of the domestic defense industry. At DEFEXPO India-2008, whose holding falls on the opening of the Year of Russia in India, 25 Russian defense enterprises and organizations will show their latest products. The exposition totaling 400 sq. m, organized by Rosoboronexport, encompasses full-scale hardware, models, mock-ups, posters, reference and promotional materials on over 550 export defense and dual-use products targeted to meet the needs of India and other South Asian and Asia Pacific countries.

The Land Forces section is the most saturated one and displays both modern and upgraded versions of armored vehicles, missile and artillery systems, fire control systems, radar reconnaissance and engineering equipment, all-service and special small arms, optical and electro-optical devices.

Foreign customers may get acquainted with the T-90S MBT, which entered service with the Indian Land Forces within the framework of the Russian-Indian militarytechnical cooperation, upgrading variants for the Indian T-72 MBTs and BMP-2 IFVs.

Russia's proposals on T-72 upgrading feature several technological 'know-hows' like an advanced fire control system, a new explosive reactive armor system, and a special aerosol screen-laying system.

The range of the exhibited defense products for the Land Forces also includes self-propelled artillery guns and howitzers, antitank missile and missile/gun air defense systems, small arms and close-in weapons.

Special emphasis in the Russian exposition is given to the Smerch and Grad multiple rocket launcher (MRL) systems and to a wide range of artillery rockets for them.

Being the most powerful and cost-effective means for neutralization of the enemy forces at 20 to 90 km, these systems are in demand worldwide. The Smerch MRL system has successfully undergone qualification tests in India and substantiated its unique combat characteristics. In view of the growing role and importance of artillery

## Exhibitions

## Russian Defense Industry At DEFEXPO INDIA-2008

The 5th International Land and Naval Systems Exhibition DEFEXPO India-2008 will be held at the Pragati Maidan grounds in New Delhi, India on February 16-19, 2008. It is justly viewed as one of the prestigious defense events in the Asia Pacific region.

The exhibition, which takes place for the fifth time, is traditionally organized by the Confederation of Indian



fire control automation, the Russian exposition contains detailed information on the Kapustnik-B and Mashina-M automated fire control systems. These systems make it possible to conduct day/night reconnaissance in any climate and terrain conditions, plan combat actions, control fire and fire maneuvering, and provide operational security to artillery fire in an ECM environment. In addition, the operational effectiveness of artillery units increases on average by 30-40%.



The professionals will definitely show interest in a wide range of highly efficient small arms and ammunition displayed at the Russian exposition: improved 5.56 mm AK-101 and AK-102 and 7.62 mm AK-103 and AK-104 Kalashnikov assault rifles, 5.45 mm AN-94 Abakan assault rifle, 9 mm Bizon-2-01 submachine gun, 12.7 mm OSV-96 sniper rifle, night and day optical sights for small arms, 30 mm AGS-30 automated grenade launcher, RPG-7V2 handheld antitank grenade launcher with an optical sight and UP-7V sighting device, as well as rounds, grenades, mines and cartridges of different purpose and lethality.

The Russian delegation and Rosoboronexport representatives hope that Russia's participation in DEFEXPO India-2008 will become an important milestone in expanding military-technical cooperation between Russia and South Asian and Asia Pacific countries, while talks held here will lay the basis for signing new contracts with them on acquisition of Russian armaments and military equipment and their further integration into the national and regional collective security systems.



### Future Technologies

#### BAE Systems' Non-Line-Of-Sight Cannon Fires 1,000th Round

YUMA, Arizona -- BAE Systems recently fired the 1,000th round from the Future Combat Systems' Non-Line-of-Sight (NLOS) Cannon firing platform.

BAE Systems will continue NLOS Cannon firing platform testing with a goal of firing 4,400 rounds through the system by spring 2008 in order to receive a safety certification for the fully automated howitzer. Lessons learned from the firing platform are being applied to the build of the first FCS Manned Ground Vehicle, the NLOS Cannon pre-production prototype, scheduled for delivery by summer 2008.

"The data we've gathered from these tests are being

directly applied to the prototype chassis and gun assemblies we are now building and will begin integrating later this winter," said Mark Signorelli, NLOS Cannon program manager at BAE Systems.



The NLOS Cannon, being developed in partnership with the Lead Systems Integrator team of Boeing and SAIC, will be the first of the eight Manned Ground Vehicle (MGV) variants to be developed and fielded as part of the FCS program. "FCS MGVs will provide the Army with a new family of networked vehicles, based on a common chassis, that will feature next-generation survivability and sustainability features," said Roger Bescancenez, Boeing Integrated Product Team leader for FCS Manned Ground Vehicles.



### Contracts

#### Raytheon Receives \$17 Million in Orders for Army Sensor Development

MCKINNEY, Texas -- Raytheon Company has received two U.S. Army orders totaling \$17.2 million for 18 common sensor payloads as system design and development continues.

The orders are part of an indefinite delivery-indefinite quantity contract let in November 2007 with options up to \$1.2 billion.

"We are still relatively early in the Army Common Sensor Payload program. However, our broad core market strength and experience in building electro-optical infrared systems are proving to be distinct advantages as we move forward," said Tim Carey, vice president for Intelligence, Surveillance and Reconnaissance at Raytheon Space and Airborne Systems.

"SAS is developing a robust advanced sensor for the soldier and Army air-ground team that will provide tactical reconnaissance, surveillance, and mission support in target acquisition."

An important advantage in this program is the integration experience of Raytheon as the prime sensor payload provider for the Army's Extended Range Multi-Purpose unmanned aerial system. The company has delivered 10 AN/DAS-2 sensors.

The common sensor payload, which will eventually equip ERMP and other Army unmanned and manned

aircraft, calls for design and development, testing and air vehicle integration of a variant of Raytheon's multi-spectral targeting system. Follow-up production of the payload in McKinney could reach 875 units.

## Robots

### General Dynamics Awarded \$40 Million Army Contract to Produce Robotic Security Vehicles

WESTMINSTER, Md. -- The U.S. Army has awarded General Dynamics Robotic Systems an indefinite delivery/indefinite quantity contract with a total potential value of \$40 million for production of the robotic Mobile Detection and Assessment and Response System (MDARS).

General Dynamics Robotic Systems is a part of General Dynamics Land Systems (Sterling Heights, Mich.), a wholly owned subsidiary of General Dynamics.

General Dynamics Robotic Systems will manufacture the semi-autonomous security vehicles and provide spare parts, training and technical services for a five-year period. The work will be done at its Westminster, Md., production facility.

Hawthorne Army Depot in Nevada will receive the first four robotic security vehicles produced under this program. Since 2005, the MDARS demonstration vehicles have been evaluated at the depot logging more than 8,000 hours and 28,000 miles of service.

MDARS autonomously conducts surveillance activities including checking for intruders, remotely investigating alarm sources, monitoring high-value inventory and assessing facility barriers, such as the doors of storage bunkers. MDARS is a diesel-powered, 4-wheel hydrostatic-drive vehicle, with a payload capacity of 500 lbs. The vehicle is equipped with a real-time obstacle avoidance system and 360-degree sensors. It can operate for 16 hours without refueling and at speeds up to 20 miles per hour.

"General Dynamics Robotic Systems has taken MDARS from concept to full-scale production," said Phil Cory, vice president, General Dynamics Robotic Systems. "MDARS will minimize numerous physical burdens to Hawthorne's human security force while reducing their exposure to potentially deadly situations."

## Term of the day

### Anti-tank mine



An anti-tank mine, (abbreviated to "AT mine"), is a type of land mine designed to damage or destroy vehicles including tanks and armoured fighting vehicles.

Compared to anti-personnel mines, anti-tank mines typically have a much larger explosive charge, and a fuse designed only to be triggered by vehicles or, in some cases, tampering with the mine.

More modern anti-tank mines are usually more advanced than simple containers full of explosives detonated by remote or the vehicles pressure. The biggest advances were made in the following areas:

- \* Power of the explosives (explosives such as RDX).
- \* Shaped charges to increase the armour piercing effect.
- \* Advanced dispersal systems.
- \* More advanced or specific detonation triggers.

Most modern mine bodies or casings are made of plastic material to avoid easy detection. They feature combinations of pressure or magnetically activated detonators to ensure that they are only triggered by vehicles.

There are several systems for dispersing mines to quickly cover wide areas, as opposed to a soldier laying each one individually. These system can take the form of cluster bombs or be artillery fired. Cluster bombs contain several mines each, which could be a mixture of anti-personnel mines. When the cluster bomb reaches a preset altitude it disperses the mines over a wide area. Some anti-tank mines are designed to be fired by artillery, and arm themselves once they impact the target area.

## Defence Industry

### BAE Systems and Navistar Unveil Joint Light Tactical Vehicle Prototype

FT. LAUDERDALE, Fla. -- BAE Systems and teammate Navistar International Corporation today unveiled a fully-operational system the team will use for the competitive Joint Light Tactical Vehicle (JLTV) program. JLTV is the U.S. multi-service initiative for fielding a family of future light tactical vehicles.

"Our approach to the JLTV program is focused on the Warfighter," said Matt Riddle, vice president of Wheeled Vehicles at BAE Systems. "The BAE Systems-Navistar JLTV team has taken a warrior-centric design approach that provides the foundation for a future family of vehicles that will meet the Joint Services' light tactical vehicle requirements for decades to come."

The BAE Systems-Navistar JLTV design optimizes

what's referred to as the "iron triangle" - payload, protection and performance - to meet all requirements of the JLTV program. The 16,000-pound vehicle incorporates lessons learned from the U.S. Department of Defense's Mine Resistant Ambush Protected (MRAP) vehicle program and features the latest in lightweight, advanced armor and a v-shaped hull design to provide unmatched crew protection. The vehicle will out-perform existing tactical systems by providing exportable power that exceeds JLTV requirements and existing MRAP capabilities. Its modular design maximizes commonality across JLTV variants and enables the seamless integration of future technologies.

BAE Systems and Navistar announced their collaboration in October 2007 to take advantage of combined capabilities that most effectively support the JLTV program.

"BAE Systems' proven combat vehicle design excellence combined with Navistar's world class supply chain management, logistics and production capabilities provides unmatched JLTV design, production and support capability from concept to combat," said Archie Massicotte, president of Navistar Defense, an affiliate of Navistar International Corporation.

The teaming arrangement builds off the two company's current leadership in armored and tactical vehicle development and support, which includes the team working together for the benefit of the joint U.S. customer on programs like MRAP. Combined, the BAE-Navistar team maximizes JLTV program value through proven capabilities, lean manufacturing and extensive worldwide logistics support. The BAE Systems-Navistar team combined has received nearly three-quarters of all MRAP vehicle orders.

Navistar is the highest-volume MRAP supplier while BAE Systems provides the most MRAP variants.

On average, Navistar produces more than 100,000 vehicles per year and produced more than a half-million engines in 2007 while BAE Systems has successfully produced and supported more than 200,000 combat and tactical vehicles - making them the largest non-governmental producer of armored vehicles in the world.

The JLTV will be on display in booth number 2411 during the AUSA Winter Symposium at the Broward County Convention Center in Fort Lauderdale, Fla.

Source: BAE Systems

JLTV is the U.S. military's next-generation family of tactical wheeled vehicles and trailers, designed to be lightweight and highly-survivable with increased mobility and payload, using technology that is both innovative and practical.

DRS Sustainment Systems will serve as prime contractor for the team, providing overall program management and system integration, drawing upon decades of experience in developing and producing subsystems and integrated solutions in ground mobility for the U.S. military. Force Protection will design and produce the JLTV base vehicle, including the supplemental armor package, leveraging the proven designs of its Cougar, Buffalo and Cheetah vehicles.

## Defence Industry

### Force Protection Announces New Foreign Orders for Cougar Mastiff



Ladson, SC – Force Protection, Inc. today announced that it has received an order for an additional 174 Cougar Mastiff vehicles, vehicle spare parts, and field support for the UK Ministry of Defense.

Under the contract, valued at approximately \$115 million, vehicle production will be performed exclusively by Force Protection at its Ladson, SC facility and is scheduled for completion by December 2008, with spare parts and field support coverage continuing through mid 2009.

Force Protection Chairman and Interim CEO Michael Moody, commented, "We are proud of and grateful for our strong relationship with the UK Ministry of Defense. A successful sales effort to foreign military customers is an important part of our long-term strategy to fully leverage our position as the innovator and leading supplier of tactical wheeled vehicles and blast and ballistic survivability solutions, while ensuring a solid return on our investments in manufacturing capability. We believe that this order reflects a wide and growing recognition of the high level of quality and capabilities inherent in our vehicle designs, which offer the best available protection for soldiers in the field."

The Company noted that its successful program of capacity expansion and operational capability improvement enables it to now serve both the continuing needs of the U.S. military for these vehicles as well as to provide these much-needed products to foreign military customers.

## Defence Industry

### DRS Technologies and Force Protection Team to Compete for Joint Light Tactical Vehicle Program

PARSIPPANY, N.J. & LADSON, S.C. -- DRS Sustainment Systems Inc., a business unit of DRS Technologies, Inc., and Force Protection, Inc. announced today they will team to compete for the U.S. Department of Defense's Joint Light Tactical Vehicle (JLTV) Program.



## Contracts

### Force Protection Announces Order for Italian Ministry of Defense



Ladson, SC – Force Protection, Inc. today announced that it has received an order for six Cougar 6X6 troop transport vehicles and four Buffalo route clearance vehicles for the Italian Ministry of Defense.

Under the contract, vehicle production will be performed exclusively by Force Protection at its Ladson, SC facility and is scheduled for completion by July 2008, with spare parts and field support coverage continuing through mid 2009.

Michael Moody, Chairman and Interim Chief Executive Officer of Force Protection, commented, “There is, across the world, a community of nations that recognizes that their finest men and women either are now or will eventually serve in harm’s way. These nations also clearly want to provide those same soldiers the very best equipment possible to protect them and enable them to complete their missions. We are proud today to announce an additional foreign military sales order for the Italian Ministry of Defense for just such purposes. We believe that this order further underscores a sizable international opportunity for our technology and our products.”

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