

TAPV delivery on course



The 5th Canadian Division Support Base (5 CDSB) Gagetown is preparing to receive initial deliveries of the Canadian Army's new 4x4 Tactical Armoured Patrol Vehicle (TAPV) capability following completion of reliability, availability, maintainability and durability (RAMD) trials last month.

The vehicle, which is being shown for the first time at CANSEC since the RAMD trials, will be delivered to 5 CDSB trainers in August prior to being fielded with the Army later this year.

To achieve RAMD sign-off, the TAPV was required to complete a series of rigorous operational tests, including driving more than 130,000km on challenging terrain that represented potential operational profiles prescribed by the Canadian Army.

Testing was conducted over

three months, day and night, six days a week. The final results showed that the TAPV exceeded contract requirements of 6,500 mean kilometres between critical failures (MKBCF).

"The eight vehicles that completed the RAMD trials performed extremely well – exceeding the customer's requirements," Textron Systems' Mike Gelpi, vice president of land vehicles, told the *Show Daily*. "We believe that these results prove that the TAPV is the most mobile, survivable and reliable vehicle in the world today."

In Canadian service, TAPV will be equipped with a dual remote weapon station (RWS), which is based on the Kongsberg M117 Protector RWS. RAMD testing also included firing the RWS and conducting more than 4,700 hours of RWS usage, including 1,650 hours of silent watch operations.

Textron Systems Canada was originally awarded a C\$603.4 million contract for 500 TAPV platforms – with an option for an additional 100 – in June 2012.

The TAPV will replace the RG-31 Nyala multi-purpose mine-resistant ambush protected infantry mobility vehicle and the LAV-25 Coyote armoured reconnaissance vehicle, currently in service with the Canadian Army, and will serve alongside the 4x4 G Wagon – Light Utility Vehicle Wheeled (LUVW). TAPV will be distributed across seven Canadian Army bases, with the service anticipating declaration of full operational capability by mid-2020.

Textron has also been awarded a five-year, performance-based logistics support contract, plus options for 25 years, in support of TAPV deliveries.

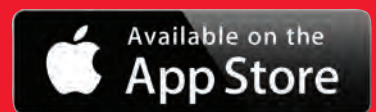
DAY 2



Synapsis selected for Canadian Coast Guard's OFSVs



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DISCOVER THE ADVANCED CAPABILITIES OF THE LAV CSV AT CANSEC: BOOTH 1301



Synapsis to equip OFSVs

ROBIN HUGHES

Raytheon Anschutz has been selected by Thales Canada to supply the Integrated Navigation System (INS) for the Canadian Coast Guard's (CCG's) new Offshore Fisheries Science Vessels (OFSVs), currently being built at Vancouver Shipyards.

Under the contract, Raytheon Anschutz will deliver a Canadian version of its Synapsis Intelligent Bridge Control system, the latest generation of INS and type-approved according to International Maritime Organisation INS performance standards.

The INS covers task-oriented workstations providing full access to all nautical functions, intelligent data and alarm management systems, high-performance sensors for target detection, heading, position and further navigation data, advanced steering control systems with standardised and harmonised user interfaces, as well as GMDSS radio communication systems.

The Synapsis package includes five NX multifunctional workstations – based on the ultra-compact and powerful Small Marine Computer – for radar, ECDIS and conning for the main bridge console. Further

multifunctional workstations are supplied for installation at the bridge wings, for the aft fishing and starboard stations, and as chart stations.

All workstations receive and share data through the Ethernet network, where sensor integration is simplified with the versatile NautoPlex data collectors. This enhances flexibility and reduces complexity in system design and cabling.

To further enhance the interoperability of ship systems and reach a higher degree of integration, the Synapsis INS decouples central services from individual applications

and concentrates them on an innovative infrastructure RAN 188e/1 software framework that follows service-oriented architecture and is built entirely on a stack of open source solutions and standard industrial components.

The INS framework provides functional integration of the automatic identification system, charts, radar, centralised target management and alarm management, system health status display and reliability indication for important sensors. The alarm management is enhanced to display alarms generated by the Ship Control and Monitoring Systems (SCMSs). The INS also integrates an onboard training simulator to provide simulated data for the factory acceptance test.

The navigation system is fitted with the advanced NP 5400 autopilot system that offers customised algorithms for precise cruising and trawling operations as well as low-speed side operations. The navigation system also includes a redundant gyro compass system featuring the maintenance-free Horizon MF sensors, and the new generation of NautoScan NX network radar transceivers. The NautoScan NX transceivers generate a raw radar video, which is distributed via Gigabit LAN without any analogue losses, enabling optimised performance for end-user applications.

Raytheon Anschutz, in co-operation with Imtech Radio Holland Canada, will also provide training to Thales in Canada and Vancouver Shipyards and technical support during factory acceptance test, setting-to-work and sea acceptance test, as well as ongoing maintenance and support as needed during operation.



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PHOTO: STEFAN PETERSEN/DISCOVERY AIR



A Wittmund-based A-4N of Discovery Air Defence Services operates with a Luftwaffe Eurofighter Typhoon fighter

Adversary experience

DAVID DONALD

Discovery Air Defence Services (Booth 408) has recently passed a number of important milestones. The company has just logged its 58,000th accident-free flying hour on contracted air combat training services around the world.

In the meantime, two of DA Defence's pilots have just notched up 3,000 hours flying the Dassault-Dornier Alpha Jet, becoming the first pilots in North America to achieve this feat. The total for each equates to around 10 years of full-time fast-jet flying. Both pilots already had thousands of hours flying Hornets, including tours as Fighter Weapons Instructors. Ten other DA Defence pilots have passed the 2,000-hour mark in the Alpha Jet.

"In 10 years, our pilots have accumulated an impressive volume of flight hours providing contracted services," said James 'Preston' Manning, vice president of iCATS, DA Defence. "It's no exaggeration

to say that we have some of the world's most experienced fighter pilots; their professionalism and airmanship is acknowledged and valued greatly by our customers."

These impressive milestones underline the experience that DA Defence brings to the contractorised training market. The company has been the exclusive provider of dissimilar air combat and other services to the Royal Canadian Air Force for several years, supplying Joint Terminal Attack Controller (JTAC) training to the Canadian Army and Special Operations Forces; Red Air, air-to-air gunnery, practice munitions drop, electronic attack and naval target tow training to CF-18 aircrews and the Royal Canadian Navy; and live fire target practice to the military. Now the CATS (Contracted Airborne Training Services) is up for review, and Discovery is bidding to retain its contract.

For the renewed contract, Discovery is proposing a mixed fleet approach of Alpha Jets,

A-4 Skyhawks and target-towing aircraft. The use of the Alpha Jet for some training requirements offers a lower-cost solution for missions that do not require the capabilities of the A-4. The company currently uses 16 Alpha Jets and two Westwind business jets to fulfil its contract, the latter being equipped with a Discovery-developed winch and government-supplied targets.

DA Defence highlights not only the long experience it has in providing contracted support, but also the high standards to which its fleet is maintained. Aircraft undergo a thorough overhaul and inspection prior to entering the fleet, while they are serviced and inspected at short intervals to ensure not only that they are safe, but also to maximise availability. Maintenance schedules and procedures exceed the specification of the OEMs.

Discovery also provides an all-Canadian service, using a local supply chain. Its aircraft are certified to both civilian Transport

Canada and RCAF military standards.

DA Defence is also active outside of Canada, with activities undertaken in the USA and Germany, where A-4N Skyhawks are operated from Wittmund in support of Luftwaffe front-line fighter training. That operation began in late 2014 and has already achieved 2,000 flight hours. The aircraft fly under a Canadian civil registration, and are also approved by EASA.

Looking to the future, DA Defence has secured the availability of F-16 supersonic fourth-generation aircraft, and is currently seeking contracts. The operation of supersonic aircraft is a natural extension of the adversary programme, helping to keep the training more realistic by representing potential threat aircraft types more closely.

Around the world there are many more opportunities for providing contracted adversary support. DA Defence suggests that there are sufficient suitable surplus fighters available to support a considerable expansion in operations over the next 10 years, and enough to see the CATS contract into the 2030s if required.

RICHARD SCOTT

Under the umbrella of the National Shipbuilding Procurement Strategy (NSPS), Canada has embarked on a multibillion-dollar recapitalisation programme that will see the Royal Canadian Navy's surface fleet replaced wholesale over the next 25 years.

Announced in June 2010, the NSPS has been established to end the 'boom and bust' cycle in Canadian shipbuilding, deliver much-needed equipment to the RCN and the Canadian Coast Guard, and support the Canadian economy by building ships in-country. Indeed, the programme represents the largest procurement sourcing arrangement in Canadian history: industry analysts have estimated that government ship projects could ultimately contribute 15,000 jobs across the country and more than C\$2 billion in annual economic benefit over a 30-year period.

The strategy has three pillars: large vessel construction; small vessel construction (ships under 1,000 tons); and vessel repair, refit and maintenance. The naval element of the programme is covered by the large vessel package, which is itself split into two threads: the combat package, for which Irving Shipbuilding has been selected as prime, includes the RCN's Arctic Offshore Patrol Ships (AOPS) and the Canadian Surface Combatant (CSC) vessels, the latter to replace the navy's current fleet of destroyers and frigates; while the non-combat package, for which Seaspan's Vancouver Shipyards is prime,

Rebuilding Canada's



includes the navy's Joint Support Ships (JSS) programme and the Canadian Coast Guard's Offshore Fisheries Science Vessel, the Offshore Oceanographic Science Vessel, and the Polar Icebreaker.

From the naval perspective, the planned 15-ship CSC programme – around which is wrapped a budget of C\$26.2 billion – represents by far the largest prize. Designed to replace three Iroquois class air defence destroyers and 12 Halifax class frigates, the CSC will be capable of meeting multiple threats in open ocean and complex coastal environments, ensure that

Canada can continue to monitor and defend its waters, and also deploy in support of international operations.

It is currently anticipated that two CSC ship variants will be acquired to replace the specific capabilities of the Iroquois class destroyers and Halifax class frigates. As such, while both variants will have the necessary combat capabilities to operate in air, surface and subsurface threat environments, a small number of ships will additionally incorporate the sensors, guided weapons and command and fire control facilities necessary to perform area air

defence. The remaining ships will replace the capabilities provided by the current fleet of Halifax class frigates.

In May 2015, the government outlined a CSC procurement strategy that would see Irving Shipbuilding – as prime contractor – work with a warship designer and a combat systems integrator (as first-tier subcontractors) to develop the ship design, and then perform build and integration. Last November, Public Services and Procurement Canada announced that seven companies had been pre-qualified in each category, marking the first step in the competitive procurement process.

For the combat systems integrator role, Atlas Elektronik, DCNS, Lockheed Martin Canada, Saab Australia, Selex ES, Thales Nederland and ThyssenKrupp Marine Systems made the shortlist. As for the warship designer, Alion-JJMA, BAE Systems, DCNS, Fincantieri, Navantia, Odense Maritime Technology and ThyssenKrupp Marine Systems were pre-qualified.

Earlier this year, however, it emerged that the new Trudeau government was rethinking the CSC acquisition plan. Instead of developing a 'bespoke' CSC solution, it is now looking at an acquisition that would use an

This image and above: two views of the Arctic Offshore Patrol Ships



navy



off-the-shelf reference design from overseas that already has a proven and integrated combat system. This approach is being favoured on grounds of reduced lower cost, reduced technical risks, and a more rapid introduction to service.

In advance of the CSC programme, Irving Shipbuilding has begun the construction of a class of six AOPS vessels, which will conduct armed



Queenston class Joint Support Ships will increase range and endurance

seaborne surveillance in Canada's waters, including in the Arctic. These vessels will enhance the government's ability to assert Canadian sovereignty and provide surveillance and support to other government departments.

A preliminary AOPS contract was signed with Irving Shipbuilding in July 2012. A definition contract followed in March 2013 to refine and complete the design-to-production level prior to construction. A build contract was signed in January 2015, with manufacture beginning

in September 2015. First-of-class *Harry DeWolf* is scheduled for delivery in 2018, with the final ship planned for handover in 2022.

The other programme of significance for the RCN is the C\$2.3 billion acquisition of two new Queenston class JSS vessels, with an option to acquire a third, to replace the service's now-retired Protecteur class auxiliary oiler replenishment vessels HMCS *Protecteur* and HMCS *Preserver*. The JSS will increase the range and endurance of naval task groups, enabling them to remain at sea for significant periods of time without returning to port for replenishment. They will also provide a home base for maintenance and operation of helicopters, a limited sealift capability, and support to operations ashore.

The JSS vessels will be built by Vancouver Shipyards under the NSPS non-combat package. In June 2013, following an evaluation of two options, the Canadian government announced that ThyssenKrupp Marine Systems Canada, proposing a Type 702 design variant off-the-shelf, had been selected as design agent.

The JSS project is currently conducting the initial design review contract. This will enable Vancouver Shipyards to fully review the ThyssenKrupp Marine Systems Canada ship design. A construction contract is planned for 2017, with the first delivery

(HMCS *Queenston*) to follow around 2020.

In advance of the JSS introduction to service, the RCN will rely on a commercially operated interim auxiliary oiler replenishment service to provide afloat support into the early part of the next decade. Under Project Resolve, Chantier Davie Canada of Lévis, Quebec, has purchased the commercial container ship *Asterix* for adaptation to the underway replenishment role. The interim service capability is planned to become available next year.

Munition flies in a pocket in water

ROBIN HUGHES

Nammo (Booth 1001) is showing a revolutionary 30mm munition designed to engage fast inshore attack craft (FIAC)-type surface threats out to more than 4,000m.

Shown for the first time in Canada, the 30mm x 173 Mk 258 Mod 1 armour piercing, fin stabilised, discarding sabot-tracer (APFSDS-T) 'Swimmer' munition is the outcome of a collaborative venture with the US Naval Sea Systems Command Naval Systems Warfare Center (NSWC) in Dahlgren, Virginia, to develop a counter-FIAC capability for amphibious platforms.

Weighing 230g, with a muzzle velocity of 1,430m/s and maximum dispersion of <0.4mils at 1,000m, the novel design of the Mk258 Mod 1 enables precision shooting in air and in water, expanding the lethality of ship-based cannons such as the Mk44.

"We had an idea to modify the front section of the penetrator to make it supercavitating – essentially it will fly in a pocket in the water," said Jan Hasslid, director of global sales and marketing for military ammunition and shoulder-fired systems at Nammo.



Previous analytical studies of water-penetrating projectiles concluded that a normal spin-stabilised projectile is ineffective at maintaining stability after water entry. This means immediate stoppage of the projectile and zero impact on a submerged target.

However, the Mk258 Mod 1 projectile is fin-stabilised, based on the same components as the MK258 Mod 0, which was designed for use with the Norwegian Armed Forces CV9030N combat vehicle. The only modification is the nose shape of the tungsten penetrator, which was patented by the US Navy and NSWC Dahlgren, but never turned into functional ammunition.

"Against a typical FIAC threat travelling at 30kts, the below-water impact is particularly destructive," Hasslid said. Nammo

recently achieved a world record in a demonstration to the UK's Defence Science and Technology Laboratory and Royal Navy at the Andoya Test Centre, Norway, where, fired from a shore-based Royal Norwegian Army CV9030N 30mm cannon – simulating a ship-based capability – it destroyed a representative FIAC target travelling at 30kts at a range of 4.8km with the first shot.

Comms lab comes to Ottawa

L-3 Communications plans to open a design, engineering and support facility in Ottawa under the name L-3 Communication Systems – Canada. The new facility will include a communications system laboratory that will provide an integration test bed and demonstration environment for future marine communications architectures for both the surface and submarine fleets of the Royal Canadian Navy.

L-3 has a growing business base in Canada, with an increasing focus on maritime systems. Recently, the L-3 Canada Marine Systems business was created to provide a single point of contact with access to the company's wide array of products and services.

The company is implementing communications solutions for the Arctic Offshore Patrol Ship and Project Resolve auxiliary oiler replenishment programmes.

Real-time 3D data fusion arrives

ROBIN HUGHES

Lockheed Martin CDL Systems (Booth 1311) of Calgary, Alberta, is showcasing Hydra Fusion Tools – a new software solution that simultaneously localises and maps incoming visual data from commercial or military manned or unmanned systems into a three-dimensional (3-D) environment.

Hydra Fusion Tools creates a fused common operational picture of different data streams such as maps, images, video and intelligence in an accurate, 3D world presentation that can be fully manipulated by the operator. These image streams are geometrically stitched together into an immersive 3D world view, showcasing buildings, trees, vehicles and terrain, to create a real-world model of any site – be it a tactical situation, an industrial plant, or an agricultural landscape.

The system runs on commercial computers leveraging state-of-the-art graphical processing units to render the entire evolving scenario in real time.

“Hydra Fusion Tools’ stand-out feature is its ability to turn big data into actionable intelligence,” John Molberg, business development manager at Lockheed Martin CDL Systems, told the *Show Daily*. “This is true world-leading technology – there is nothing else out there that does this, everything else is just post-processing.”

In development for the past two years, the Hydra Fusion Tools system comes in two variants – the baseline Hydra for commercial

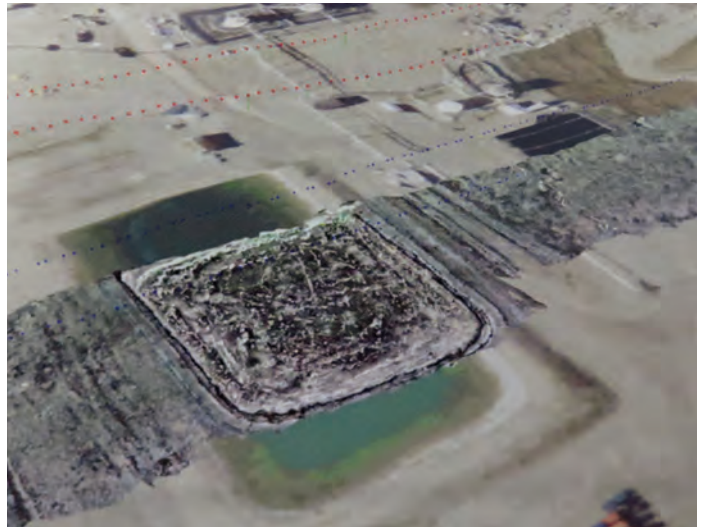
use, with agriculture and first responder application, and Hydra Tactical, which is specifically for military use.

CDL is demonstrating Hydra Fusion Tools at CANSEC with its man-portable, soldier-wearable tactical mobile ground control station (mGCS) and an Indago quadrotor unmanned air system (UAS) equipped with an EO/IR payload.

mGCS is a STANAG 4586 compliant commercial off-the-shelf (COTS) software application that serves as the UAS operator’s user interface for controlling and monitoring mini and small unmanned vehicle systems. Designed for use on portable computers and hand-held controllers, mGCS is engineered to be integrated with almost any UAS systems. In cases where sensor and/or vehicle control is not available, mGCS doubles as a remote viewing terminal (RVT).

CDL Systems is also showing its Northstar solution, an advanced localisation and mapping engine – currently under development – which computes a UAS’s position from a single frame-to-frame moving camera source. This is facilitated by performing thousands of feature detections in real time, and determining the vehicle position from the frame-over-frame movement of those features. The system can utilise inertial measurement unit and intermittent global positioning system input, to refine position calculations, but neither is mandatory.

The system, which can use existing camera payloads or a



A live orthomosaic creation using Hydra Fusion Tools software



Lockheed Martin CDL’s mGCS mobile ground control station

dedicated mapping lens, uses software that runs on COTS graphical processing units as either part of a PC, or as a

standalone GPU superchip.

“Hydra builds the map, Lockheed Martin Northstar extracts the position,” said Molberg.

Saving weight for agility



DAVID DONALD

Colt Canada (Booth 1029) has introduced a family of infantry weapons that offers lighter weight and better performance. The new Modular Rail Rifle (MRR) is based on the C8 carbine in 5.56mm calibre, but offers a new means of mounting accessories.

Instead of featuring mounting rails along the sides and underneath the barrel, the MRR family has a slotted system. The Magpul M-LOK rail attachment system allows accessories to be placed as desired, or even sections

of standard rail, without the penalty of carrying redundant sections of rail.

Overall the result is to reduce the weight of the rifle by around 0.75 pounds. With the weight reduction being mostly made at the front of the rifle, the effect is to make it quicker to raise, and easier to swing – enhancing response times in combat situations.

Four barrel lengths are offered for the 5.56mm MRR: 11.6, 14.5, 15.7 and 18in. The 18in version is also offered in a non-chromed version for DMR (designated marksman rifle) employment.



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HMCS *Calgary* is one of the nine upgraded combat ships to have returned to operations



Halifax class upgrade on finals

RICHARD SCOTT

Canada's C\$4.3 billion Halifax Class Modernization (HCM)/Frigate Equipment Life Extension (FELEX) programme is approaching its conclusion, with nine out of the 12 frigates returned to service, and the last refit now in its final stages.

The Royal Canadian Navy's (RCN's) Halifax class frigates, commissioned between 1992 and 1996, were originally designed for anti-submarine warfare and anti-surface warfare in the open reaches of the deep ocean. Under the HCM/FELEX project, the ships are receiving both a combat systems upgrade (including a new command and control system, new sensors and electronic warfare systems and upgraded communications) and a planned mid-life overhaul to ensure that they remain effective for the remainder of their service lives.

While planning, preparation and co-ordination of the HCM/FELEX project began back in 2002, it was not until November 2008 that Lockheed Martin Canada Mission Systems and Training was brought under contract as prime contractor and Combat System Integration (CSI) and in-service support agent. Under

the C\$2 billion CSI contract, Lockheed Martin Canada is taking responsibility for the development, integration and test of a new CMS, together with the procurement integration of new radars, ESM, Identification Friend or Foe (IFF) equipment, and a multi-link data processor. The company is additionally responsible for redesign of ship compartments and structures, modifications to the operations room, and the provision of a suite of simulation/training systems, and is also integrating other sensors and weapons acquired under prior standalone programmes.

Upgraded combat system

At the core of the upgraded combat system is the upgraded CMS330 command and control system, which introduces open architecture and functionality from Saab's 9LV Mk 4 CMS line. The SPS-49 2D long range air search radar is replaced by the Thales Nederland SMART-S Mk 2 E/F-band 3D surveillance radar, while the two legacy STIR 1.8 fire-control radars are replaced by a pair of Saab Ceros 200 fire-control radars. The existing Sea Giraffe 150HC is also being enhanced by Saab to improve performance in high clutter environments.

Other key equipments being introduced under the scope of the HCM/FELEX programme comprise a Telephonics IFF Mode 5/S interrogator, the Elisra NS9003A-V2HC ESM system (replacing the SLQ-501 CANEWS suite), an IBM multi-link (Link 11, Link 16 and Link 22 enabled) datalink processing system, and two Raytheon Anschütz Pathfinder Mk II navigation radars.

Lockheed Martin Canada is also responsible for integrating other equipments (acquired separately by the Canadian government and supplied to the programme as government-furnished materiel) into the upgraded combat system. For example, a tailored variant of Rheinmetall's Multi-Ammunition Softkill System (MASS), known as MASS_DUERAS, has been procured to replace the obsolete Plessey Shield decoy system.

BAE Systems Bofors is upgrading existing 57mm Mk 2 guns to Mk 3 standard. New 3P 'smart' pre-fragmented programmable ammunition is being introduced commensurate with the Mk 3 upgrade. Other weapons integrated as part of the HCM/FELEX upgrade include the Harpoon Block II surface-to-surface guided weapon, the Phalanx Block 1B close-in

weapon system, and the Evolved SeaSparrow Missile point defence missile system.

Refit streams

HCM/FELEX refit streams have been established on both the Pacific and Atlantic coasts. To date, HMCS *Halifax*, HMCS *Fredericton*, HMCS *Calgary*, HMCS *Winnipeg*, HMCS *Montreal*, HMCS *Vancouver*, HMCS *Charlottetown*, HMCS *St John's* and HMCS *Ottawa* have all been cycled through the upgrade and returned to operations. HMCS *Ville de Quebec* completed her modernisation in late 2015, but has yet to return to operations.

In April 2016, HMCS *Regina*, the fifth and final frigate on the west coast to complete its modernisation by Seaspan's Victoria Shipyard, was returned to the RCN to complete sea trials. HMCS *Toronto*, the seventh and final east coast frigate, and the last of the 12 ships to go through the HCM/FELEX modernisation, is due to complete its refit at Irving Shipbuilding's Halifax Shipyard in the third quarter of this year.

Following acceptance of *Toronto*, corresponding sea trials and project close-out activities are expected to be completed by January 2018.



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Polaris Defense, a division of Polaris Industries (Booth 3310), will introduce a high-performance MRZR turbodiesel (MRZR-D) to its MRZR off-road vehicle line-up for the first time outside the US here at CANSEC.

MRZR's have redefined ultralight, off-road mobility for military vehicles and are mission critical for expeditionary forces in the US and more than 20 allied countries to meet mission demands and threats while forward deployed.

MRZR vehicles can be transported in a V-22 Osprey helicopter and can be configured a number of ways, including for two, four and six persons. The turbocharged diesel engine in the new MRZR-D has been engineered to meet the performance and physical specs of the original MRZR vehicles. While many key features remain the same, Polaris incorporated feedback from the field in the new product, including updated occupant seating space, ergonomics and sight lines. The MRZR-D also provides increased auxiliary power and greater range.

"The new turbodiesel powertrain is significant in

High-performance diesel engine



reducing the logistics burden for select US services and many foreign militaries that have strict requirements for diesel fuel," said Jed Leonard, senior manager, Polaris Defense. "And as importantly for our military customers, we've engineered this diesel powertrain to meet the

same mission requirements and extreme off-road performance that Polaris and the MRZR are trusted for in peacetime, security operations, and conventional military missions."

Production continues for the original gas powertrain MRZR 2 and MRZR 4 under the Light

Tactical All Terrain Vehicle programme for United States Special Operations Command and other international contracts.

Orders for the four-seat turbo-charged MRZR-D are being accepted now, with production and deliveries also commencing this year.

Marshalling local support

Marshall Aerospace and Defence Group (Booth 1229), which is celebrating the 10th anniversary of the opening of its first office in Canada, at Abbotsford, British Columbia, is emphasising its decade of in-country support to the growing Canadian defence industry, especially its extensive experience with the Lockheed C-130 Hercules.

To date, the company has worked on more than 300 Hercules transports, for 52 customers in 33 countries, including the CC-130s of the Royal Canadian Air Force.

Steve Fitz-Gerald, chief executive of Marshall Aerospace and Defence, commented: "The provision of in-country support is very much a Marshall strength, and we have a proven track record of collaborating with military and commercial organisations to deliver quantifiable end-use benefits."

As well as providing local technical and engineering support, Marshall's offices in



Canada have access to the extensive skills and resources in Cambridge, UK, where the company employs more than 2,000 highly trained personnel.

Marshall Aerospace and Defence holds extensive

airworthiness accreditations, granted by a variety of military and commercial regulatory authorities, aerospace companies and defence organisations, including Canada's Department of National Defence.

Stinging the enemy

Allen-Vanguard (Booth 800) has launched Scorpion 2, the latest addition to its electronic countermeasures (ECM) product line.

Scorpion 2 is a software-defined man-portable ECM system that is programmable across its entire operating range of 20MHz to 6GHz, enabling it to provide highly effective protection against all current or emerging radio control IED threats. It can be customised for use in various roles, such as military foot patrol, VIP protection, EOD carry forward, special response teams and static or infrastructure protection.

Lighter, smaller and thinner than its predecessor, Scorpion 2 can operate in fully active, fully responsive or hybrid modes. It has a built-in GPS antenna/receiver that facilitates generation of a 1PPS signal to allow synchronisation and interoperability with other friendly-force ECM systems in the near vicinity.



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US Marines, Army go bionic



ROBIN HUGHES

Bionic Power (Booth 235) of Vancouver, British Columbia, has received US\$1.25 million from the US Office of the Secretary of Defense to supply low-volume production units of its PowerWalk Kinetic Energy Harvester for field trials under the Joint Infantry Company Prototype (JIC-P) programme.

Led by the US Marine Corps Expeditionary Energy Office, JIC-P is a joint effort between the US Army and US Marine Corps to deliver an energy production, scavenging, management and distribution capability as well as individual water purification capability for dismounted warfighters in austere environments – reducing logistics resupply and increasing self-sustainability. It consists of a kinetic energy harvesting backpack and knee braces, a pocket-sized solar panel, and a central battery networked to radios and electronics via a central power manager.

An important element of the JIC-P programme, PowerWalk is a lightweight, leg-mounted exoskeleton designed to accommodate a soldier's full range of motion and harvest energy from the natural action of walking, in much the same way regenerative braking works in hybrid cars.

With every stride, the PowerWalk's onboard microprocessors analyse the wearer's gait using Bionic Power's proprietary control software to determine precisely when to generate maximum power with the least amount of effort.

On level ground, the device requires minimal user effort to harvest power and, while power generation is its primary benefit, the PowerWalk also reduces muscle fatigue during downhill walking, easing metabolic effort and diminishing the potential for injuries.

Joint testing of the PowerWalk device under the new contract will begin with the Marine Corps and the Army in early to mid-2017.



GCS sets

DAVID DONALD

BAE Systems (Booth 711) has a number of programmes running in Canada, but arguably the most important is its bid to become Warship Designer and

MoU for SeaSpider ATT

Combat system integrator Atlas Elektronik (Booth 505) and Magellan Aerospace (Booth 1906) are signing a memorandum of understanding today, sealing their intent to collaborate on the development of the rocket motor and warhead sections of the SeaSpider Anti-Torpedo Torpedo (ATT).

During the co-development phase, Atlas Elektronik Canada, located in Victoria, British Columbia, will work with Magellan Aerospace out of its facilities in Winnipeg and Rockwood, Manitoba. Atlas Elektronik Naval Weapons Division in Wedel, Germany, will provide ongoing support.

Once completed, the SeaSpider will provide vital ATT capability for hard-kill defence against all torpedoes in use. By protecting ships and sailors, SeaSpider will enable navies to operate at lower risk when faced with a torpedo threat and will be designed for

both submarine and surface vessel torpedo defence systems.

Currently at technology readiness level 6, the co-development phase will work to transition the system to production maturity through the explosive section of the SeaSpider. Atlas Elektronik and Magellan Aerospace will seek concurrent qualification and certification for NATO and Allied force deployment.



The fully assembled SeaSpider system will employ Canadian rocket and propellant technology, while drawing upon a global knowledge base.

Atlas Elektronik Canada president and CEO Rick Gerbrecht said: "The SeaSpider ATT represents an unprecedented resurgence of the excellence in Canadian anti-submarine warfare capability. We are proud to be part of this effort that will offer the Royal Canadian Navy, in time for the construction of the Canadian Surface Combatant, the leading integrated ASW solution."



Stability for law enforcement

On show for the first time here is the Spyder F3-P police vehicle from Bombardier Recreational Products (Booth 215).

BRP offers a wide range of powersports and all-terrain vehicles for commercial and private use, and also specialised vehicles for military, law enforcement and search and rescue duties. The new vehicle demonstrator was completed at the start of the year, and the company has begun marketing it to law enforcement agencies.

BRP has created the Spyder F3-P in answer to requirements that

have been raised by a number of police organisations. The vehicle has a reverse-tricycle arrangement, and draws in some of the benefits of both an automobile and a motorcycle. The open nature of the configuration makes the rider more visible and accessible, and therefore more engaged with the public. However, the layout makes the vehicle far more stable than a motorcycle, and much safer to operate around people at low speeds. Other benefits compared to a motorcycle include greater storage capability, including a front compartment.



course for Canada

Combat Systems Integrator for the Canadian Surface Combatant requirement, for which a selection decision is expected next year.

For CSC the company is proposing a 'Canadianised' version

of the Global Combat Ship (GCS), which is currently in design for the UK Royal Navy as the Type 26 frigate to replace Type 23s in the early 2020s. The vessel has been designed to be a highly versatile warship that can undertake

a wide variety of roles, from high-intensity conflict to OOTW (operations other than war) activities such as humanitarian aid, evacuation and disaster relief, as well as long-distance coastal and Arctic patrol.

From the outset the GCS design was planned with adaptability in mind, allowing the vessel to be easily tailored to meet the individual requirements of different customers. The design has been shaped so that a change to one element has a minimum of impact on other areas. Also, as a brand-new design, the GCS has considerable growth capacity built in to cater for future technology insertion and new missions.

BAE Systems believes that the GCS is well positioned for the Canadian requirement. From a programme point of view, the UK's Type 26 is in the final stages of detailed design, with the first steel to be cut next year. With Canada around three years behind the UK in the procurement cycle, the CSC design could benefit considerably from input from the Type 26. According to Ric Elkington, business development surface

combatants for BAE Systems Canada, the CSC offering is in the "sweet spot of the development cycle".

In terms of capability, Elkington believes that the GCS is "pretty close to what Canada wants". The vessel has a flight deck large enough to handle a CH-147 Chinook helicopter, while the reconfigurable mission bay can accept containerised loads to allow the rapid re-rolling of the vessel. Such loads might include aid/rescue packages, underwater vehicles or boats.

BAE Systems has held conversations with more than 300 Canadian companies as it draws up a potential local team to answer the CSC requirement for eight ships.

Canadian companies have already been contracted to supply into the first three-vessel batch for the UK's Type 26 programme, including W.R. Davis here in Ottawa. Rolls-Royce Canada in Peterborough is providing the mission bay handling system, while L-3 MAPPs of Montreal is supplying the integrated platform management system.



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CHRISTOPHER F FOSS

Flensburger Fahrzeugbau Gesellschaft (FFG) is building up the export order book for its Wisent 2 Support Vehicle. This was originally developed as a private venture to meet emerging requirements for a Leopard 2 main battle tank (MBT)-based platform that could be rapidly retooled for the specialised armoured recovery vehicle or armoured engineer vehicle (AEV) battlefield missions.

Canada, which ordered 18 AEV variants, was the launch customer, with final deliveries due in December 2016. By May 2016, the Wisent 2 had been also been ordered by Qatar (6), Norway (6) and the United Arab Emirates (undisclosed quantity), with production expected to continue to at least 2019.

Canada and Norway use surplus refurbished Leopard 2 MBT hulls, replacing older vehicles based on the Leopard 1, while Qatari and UAE systems are based on brand-new Leopard 2 hulls supplied by Krauss-Maffei Wegmann.

The Leopard 2 hull is fitted with a brand-new all-steel armoured superstructure, with a spall liner for the crew of three, who are seated one behind the other on the left.

During operations in Afghanistan, Iraq and the Balkans, anti-tank mines were a major



Wisent 2 in the AEV role, with dozer blade raised and excavator arm with bucket traversed to the rear. This vehicle is also fitted with the Swedish Barracuda thermal reduction and camouflage system

problem and the Wisent 2 is fitted with an enhanced mine protection package that is stated to provide protection to STANAG 4569 Levels IVA and IVb. For a higher level of battlefield survivability, ballistic protection to Level V can be provided.

The standard Leopard 2 MTU 1,500hp (1,100kW) power pack is retained but a 17kW auxiliary power unit is fitted, which enables all the key subsystems to be run with the main engine switched off. Mounted on the right side of the hull is the hydraulically operated crane arm or excavator arm, which is traversed to the rear when not

required and can be operated from within the vehicle or by remote control.

The excavator arm can be fitted with special-to-role equipment for the engineer role, such as a bucket with a digging depth of 4.4m and reach of 9m, auger or pincer for removing trees or road blocks. Mounted at the front of the hull is the hydraulically operated support blade, which can be lowered to the ground when the crane, excavator or main winch is being used.

The dozer blade can be removed and replaced by more specialised combat engineer equipment, such as a track-width mine plough –

heavy, or a full-width mine plough – heavy, which are normally supplied by Pearson Engineering of the UK.

When being used in the mine clearing role, the vehicle can also be fitted with the safe lane marking system (LMS). This consists of two racks of pennants mounted one either side at the rear of the platform. These are coupled to the LMS control unit and the vehicle-mounted compressor.

The Wisent 2 Support Vehicle is fitted with an electronic architecture to make it easier to install new subsystems without a major rework of the hull.

Don't become ineligible

The Department of Public Works and Government Services Canada (PWGSC) has overhauled its Integrity Provisions and introduced a new Ineligibility and Suspension Policy, which are collectively referred to as the "Integrity Regime".

The central purpose of the Integrity Regime is to render suppliers ineligible to contract with the Government of Canada if they have been convicted of, or plead guilty to, specified offences. The offences range from criminal offences directly related to dealings with government (such as fraud against Her Majesty or bribery) and more general offences (such as drug trafficking or tax evasion) to offences under

the Competition Act, and similar foreign offences. In short, the Integrity Provisions set out the ethical requirements that suppliers must meet in order to be eligible to do business with the Government of Canada.

The Ineligibility and Suspension Policy sets out the process PWGSC will use to determine ineligibility and the circumstances in which PWGSC may reduce any period of ineligibility.

This Ineligibility and Suspension Policy also introduces the use of independent third-party monitors (such as independent legal counsel) to assess a supplier's involvement in ethical violations of its affiliates and to provide ongoing monitoring of a supplier's compliance with 'administrative

agreements', which may be used by PWGSC to reduce a stipulated period of ineligibility or avoid suspension.

Also, the Integrity Regime renders suppliers ineligible to do business with the Government of Canada if their affiliates have been convicted of, or pleaded guilty to, specified offences, depending on the extent to which the supplier was involved in the actions that resulted in the affiliate's offensive conduct.

The Integrity Regime extends its application not only to suppliers, but also prohibits the use of subcontractors that do not meet the requirements of the Integrity Regime.

For further information, visit Conlin Bedard LLP (Booth 210).

The CANSEC 2016 Show

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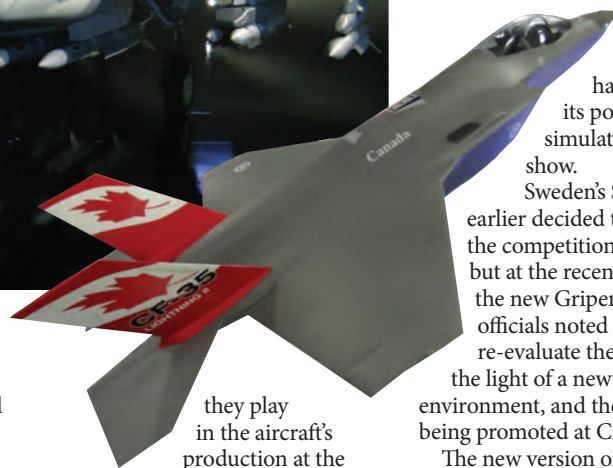


Saab rolled out its Gripen E last week in Sweden. Could this join the race to be Canada's new fighter? Right: model of F-35 on Lockheed Martin's stand

While the West's fighter manufacturers are not expecting an outcome to the government's deliberations on the Future Fighter Capability requirement any time soon, they are here at CANSEC to remind attendees of their products. Canada's next fighter aircraft will be one of

the largest national defence programmes of recent times, and there is much at stake for international bidders and local companies.

Canada remains an industrial partner in the F-35 Joint Strike Fighter, and a number of exhibitors are referencing the part



they play in the aircraft's production at the show. Not least of which is the OEM itself, Lockheed Martin, which is displaying a

model of the aircraft in Canadian colours on its stand. The JSF team is fresh from securing the recommendation of the Danish government to procure 27 F-35As, although there is still a final parliamentary approval to be overcome.

Meanwhile, other bidders are anticipating a reopening of the competition. The Dassault Rafale (on the Thales stand) and Eurofighter Typhoon (at Airbus) are on display here in model form, as is the Boeing Super Hornet. The

St Louis fighter manufacturer has also brought its popular mobile simulator to the show.

Sweden's Saab had earlier decided to back out of the competition in Canada, but at the recent roll-out of the new Gripen E, senior officials noted that they may re-evaluate their position in the light of a new procurement environment, and the aircraft is being promoted at CANSEC.

The new version of the Gripen offers extra range and weapons-carrying capability, as well as state-of-the-art systems.

Long-range ground surveillance

FLIR Systems (Booth 435) has announced the release of two high-performance ground surveillance tools for border security and force protection: the LTV-X light tactical vehicle and the FLIR Ranger R6SS portable radar.

The LTV-X (pictured) is a rugged, tactical reconnaissance vehicle that can be transported inside a Bell Boeing V-22 Osprey for rapid deployment in support of urgent operational requirements. Featuring multiple integrated sensors, such as the TacFLIR 280-HD multispectral ISR turret and the Ranger R6SS ground surveillance radar, the LTV-X also includes an onboard command and control system that enables full control, exploitation and dissemination of real-time imagery and target tracking between deployed mobile and fixed assets. The LTV-X also offers near-silent operation when stationary.

The Ranger R6SS ground

surveillance radar detects and tracks personnel and vehicles within a 15km range, with a low false alarm rate, and is designed to perform in the most demanding environments, including X-band operation for superior rain penetration.



Featuring advanced digital beam-forming and a high-speed refresh rate, the FLIR Ranger R6SS offers superior target detection, acquisition and classification as well as clutter rejection. With built-in North-finding and GPS capabilities, it can be mounted on a vehicle or dismounted and carried for artillery and mortar fire correction.

Depending on mission objectives, operators can network multiple vehicles, sensors and even unmanned aerial system assets with a central command centre to give unprecedented situational awareness and responsiveness.

The LTV-X also offers a wireless system that provides target bearing and geo-referenced co-ordinates to other personnel, vehicles and command and control systems for precise target location. Other features include a laser rangefinder, laser pointer, illuminator and battery-operated quiet mode.

"The Ranger R6SS and LTV-X are FLIR's latest innovations in support of mission-critical ground surveillance, force protection and border security that leverage our commercially developed, military qualified model," said Kevin Tucker, vice president and general manager of FLIR Surveillance. Both new products are available for orders.

Last month, FLIR introduced a range of thermal imaging solutions for firefighters, including the K33 and K53 handheld, 4in screen cameras, the KF6 camera for fire engines and two aerial first responder kits featuring the DJI Zenmuse XT powered by FLIR. Positioned near the middle of FLIR's firefighting camera line-up, the K33 and K53 will provide more firefighters with thermal imaging capabilities, so they can see through smoke, identify hot spots, navigate safely and locate and rescue victims more easily.

DAVID DONALD

Cascade Aerospace is in the process of delivering Lockheed Martin CC-130J Hercules to the Royal Canadian Air Force (RCAF) following upgrade to the latest Block 7.0 configuration. All 17 of the RCAF's fleet are undergoing the modification. The first was completed by Cascade in February to become the first Block 7.0 modification to be completed outside of an OEM or government facility. The final upgraded aircraft should be back in service by October, at which time Canada will have become the first nation to fully upgrade its fleet.

Block 7.0 adds 29 distinct capabilities to the C-130J, including a Link 16 tactical datalink that enhances situational awareness by allowing data to be shared between allied aircraft. A new flight management system is installed that is compliant with new CNS/ATM air traffic mandates, and also includes vertical navigation

More capable Hercules reaches RCAF fleet



capability and coupled auto-throttle. A special mission display processor, civilian GPS and ground power modules are also part of the

upgrade, which was defined by a multinational C-130J user group.

Cascade Aerospace is an operating unit of IMP Aerospace

& Defence (Booth 813) that was acquired in December 2012. The unit specialises in C-130 work, and is one of only two authorised heavy maintenance centres for the C-130J in the world, as well as being an authorised centre for older C-130s. In April last year, it completed its 100th C-130 scheduled maintenance.

Parent company IMP Aerospace & Defence has become a stalwart element in the support of Canadian Armed Forces aviation assets. Headquartered in Halifax, Nova Scotia, IMP Aerospace itself conducts activities in support of the CP-140 Aurora, including the recent upgrade of three aircraft to CP-140M standard with satellite communications to extend the Aurora's ISR capabilities. It also supports the CH-124, CH-146, CH-149 and CT-114 fleets.

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LAVs on patrol



Command post (left) and engineer (right) variants of the LAV 6.0 are on show outside

DAVID DONALD

Complementing the LAV 6.0 platform on show in the main hall, General Dynamics Land Systems-Canada has brought two further vehicles to CANSEC for outside display, showing off two of the mission capabilities of the baseline vehicle.

One of the vehicles is in command post configuration. This version features maximum

commonality with the infantry section carrier (ISC) variant, and can be easily converted so that it can be used for infantry transport itself.

At the heart of the command post is an array of additional communications equipment. There is an updated mapboard with an adjustable work surface that can mount a communications laptop data terminal. The command post variant also has

three captain chairs for system operators.

Also featuring commonality with the ISC, including a 28.6-tonne (63,000 lb) gross weight, the second LAV 6.0 on outside display is an engineer vehicle with dozer blade fitted. The engineer is fitted with a 15m hydraulic hose that provides power for hydraulic tools away from the vehicle. This version can also mount a remote weapon station.

The future

The Patriot 5510 Hybrid Life Support System from Scott Safety (Booth 1627) provides a single platform for a wide range of respiratory protective scenarios and much more. The responder can approach the incident scene on either a negative pressure filter or purified powered air. Should air contamination levels



Reaching the parts that others can't

GÜNTER ENDRES

Victoria, British Columbia-based Viking Air (Booth 330) is a Canadian success story. Having acquired the type certificate of the de Havilland DHC-6 Twin Otter from Bombardier in 2006, Viking has considerably upgraded this sought-after utility twin, which is evident from having sold close to 100, designated the Twin Otter 400, to some 26 countries since the start of production in 2010.

The most recent example of product development is the Phase II Avionics upgrade to the Twin Otter's Honeywell Primus Apex fully integrated digital avionics suite. The upgrade package will provide increased functionality of the Primus Apex system, including: three-axis autopilot, traffic collision avoidance system II, FAA-compatible engine instrument display, wide area augmentation system, coupled vertical navigation, localiser



performance with vertical guidance, automatic dependent surveillance – broadcast out, SmartView synthetic vision system, and a 512-word flight data recorder.

Earlier this year, the company announced its intention to move into the relatively untapped seaplane market by introducing the world's first dedicated seaplane in the 15- to 19-passenger category, the Twin Otter 400S Seaplane. The Viking 400S is specifically designed as an economical seaplane for commercial operation on short to medium flight segments, and will be offered at a list price of less than US\$6 million.

Adapted for a quick turnaround between cycles, the 400S is said to have a breakeven load factor of about eight passengers under typical operating conditions.

The Viking 400S Seaplane features the Honeywell Super-Lite integrated digital avionics suite adapted for VFR operations, and comes equipped with 17-passenger seating configuration, new-generation composite floats, and Pratt & Whitney PT6A-27 engines incorporating platinum-coated CT blades. Upgrades for IFR operation, 19-passenger seating, or a 15-passenger/cargo combi configuration, are available options.

Viking Air expects customer deliveries for the 400S to commence in first quarter of 2017.

While the Twin Otter's reputation in commercial operations is unchallenged, Viking Air has also achieved considerable success with the Guardian 400 Special Missions variant, whose impressive multirole capability extends to surveillance, search and rescue, critical infrastructure, air ambulance, parachuting, cloud seeding, and a range of other government and military missions, capable of landing on wheels, floats and skis.

The 400 Guardian is equipped with an electro-optical and infrared imaging turret, 360° digital colour radar system, extended-range fuel tanks, crew observation station and lavatory.

The aircraft is operated in 12 countries in the Americas, Europe, Africa and Asia, and with the British Antarctic Survey, supporting 15 field projects in the Antarctic every season.

re is hybrid

change, such as a decrease in oxygen levels or build-up of carbon monoxide, the operator can immediately switch to self-contained breathing apparatus.

Secure telemetry provides crucial benefits, for example, GPS, detection instruments, command and team situational awareness and operator safety features. The



responder's location, position (moving, static or prone), body temperature, pulse, breathing rate can all be monitored, as well as battery life and cylinder levels. Exothermic cutting equipment gives a breaching or exit capability and in other scenarios, one cylinder can be configured to rescue a 'man down' or for VIP extraction.

The modular design of the equipment enables it to be customised to the user's particular requirements and avoids the need to invest in an array of individual respiratory options. In addition, it takes up less space in emergency vehicles, presents a lower training burden and involves less documentation.

Scott Safety's Brian Clesham described the system as delivering critical benefits during complex and life-threatening operations; not least, multifunctionality, situational awareness and enhanced responder safety.

Scott Safety is also highlighting



its Light Decontamination System (LDS), which can deliver any chemistry, powder, polymer or liquid as atomised micro-droplets. LDS offers a hybrid solution capable of decontamination, disinfection, knockdown and tiedown of radiological particulate and spores, odour abatement and the extinguishing of Class A and B fires. At 17 trillion micro-droplets per second, the manpack LDS delivers a turbulent and penetrative plume of chemistry out to 25-30m. This ensures rapid fill of interiors; the superfine mist's gas-like behaviour reaches all non-line-of-sight surfaces without atmospheric preparation or disruption to electronic equipment and lighting.

Metals deal

Magellan Aerospace (Booth 1906) earlier this month announced a contract extension between Magellan Aerospace UK and Airbus for the supply of aluminium and titanium structural wing components. The contract, valued at about C\$700 million, includes precision machined details and assemblies for use in the Airbus A320 and A330 families, and the A380 programme.

Magellan was also awarded an approximately C\$20 million contract to supply certain wing ribs for the A380. This was followed by a deal with GKN Aerospace for a contract extension to deliver aluminium and titanium components and assemblies to GKN Aerospace's Filton, UK, facility where wing structures are manufactured and assembled for the A320, A330 and A380 aircraft programmes. This contract, and another to supply A350 outboard flap precision machine details and assemblies, is projected to generate revenues in excess of C\$166 million through to December 2020.

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Ottawa-based Kongsberg Geospatial (Booth 913) will be using this year's CANSEC show to announce the launch of a new geospatial technology platform, and to showcase innovations in beyond line-of-sight technology for commercial drones.

This has been a transformative year for the company, which earlier this year announced it was changing its name from Kongsberg Gallium to Kongsberg Geospatial. The company has also rebranded and reorganised its primary product lines, and is introducing a new version of its flagship geospatial visualisation platform, formerly known as InterMAPhics, under the name TerraLens.

This year also marks a milestone for Kongsberg Geospatial's work with the US Navy providing the geospatial and display components for the AEGIS programme, the world's most capable naval air defence command and control system. The US Navy has also deployed a new Air Traffic Control (ATC) simulation platform developed by the company on the USS *Carl Vinson*, VCN-70. The simulation software allows air

Spatial awareness



traffic controllers to train on real carrier air traffic control centre flight operations scenarios without the necessity of actual flight operations, and without having to leave the ship to attend shore-based training schools. The navy will be deploying the embedded trainer to the rest of the fleet over the next few years.

The company recently completed successful field trials of three innovative platforms, including an augmented reality

application with the Director Land Command Systems Program Management of the Canadian Army. The application overlays a digital model of the world over a live video feed to 'augment' reality with a composite view providing additional information that is not visible in the original image. Kongsberg Geospatial also conducted trials of a new platform to allow the remote operation of air traffic control towers. An agreement has been signed with

Avinor Air Navigation Services to produce the technology.

Having provided display technology for military UAV platforms for more than a decade, the company is now actively working with industry and regulatory groups in the US and Canada to develop a simple, portable, unified display for civilian UAV operators that provides them with the necessary spatial awareness to operate UAVs safely beyond line-of-sight. The company conducted a series of trials with civilian drone manufacturer Precision Hawk, and with the County of Renfrew Paramedic Service over a period of several weeks.

Kongsberg Geospatial will also be showcasing the IRIS UAS, together with a demonstration of the 3D terrain capabilities of the new TerraLens platform, and ISR Viewer – a solution for visualising big data from various sources in a geospatial context.



Seeker M

Seek and find

Canadian firm Newcon Optik (Booth 1024) has introduced its Seeker series of mountable rangefinders. Comprising the Seeker S and Seeker M, this series of versatile and lightweight rangefinder modules can be bore-sighted to practically any optical system. This includes binoculars, spotting scopes and thermal imagers, as well being mounted onto rifles or integrated into fire control systems. They have NATO target measurement ranges of 3,000m and 2,000m respectively.

A brand-new product is the LRM 3550M, a pocket-sized laser rangefinder monocular designed

to outperform other devices of its class. Its rugged, waterproof and shockproof design makes it ideal for military, navy and law enforcement operations in the most challenging conditions. With an eye-safe 1,550nm laser, and able to measure up to 3,500m, it has a built-in compass, inclinometer and GPS receiver.

The NVS 27M, an exceptionally lightweight and versatile Gen 3 night vision clip-on, was introduced by Newcon Optik this year. Rugged, compact and durable, this high-resolution unit provides flawless night vision imaging for virtually any daytime

riflescope – it is compatible with sight magnifications between 1x and 20x, enabling operators to use most, if not all, of a given day sight's magnification capability.

The company has also introduced the Spotter LRF Series, said to be the first to combine spotting scope and long-distance laser rangefinder. Both allow rapid and accurate target acquisition with 15-45x variable magnification and have etched mil-dot reticles and OLED displays. The Spotter LRF utilises a 905nm laser that can range a NATO target to 2,000m, while the Spotter LRF Pro features a 1,550nm laser capable of ranging 3,000m. Both have numerous mounting options and can communicate and integrate with external systems including military GPS units, PCs and Android devices.



Spotter LRF

Get to know the Canadian Arctic

Arctic Security Consultants (ASC) has recently joined the Canadian Association of Defence and Security Industries (CADSI).

ASC is an Ottawa-based consulting company that provides independent advice on security and sovereignty matters focused on the Canadian Arctic. ASC has a network of political, business and aboriginal leadership contacts across the territories and has assisted a number of companies to better understand the Arctic environment.

ASC has been an advocate for increased security and surveillance of the Canadian Arctic since 2003, and has helped Raytheon to bid successfully for the contract for the operation and maintenance of the North Warning System, the line of air defence radar stations that stretches from the Alaska-Yukon border to Labrador.

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IN BRIEF

Research ramped up

INKAS Group of Companies (Booth 1815), has signed a multimillion-dollar agreement with ISP LLC for research and development and the production of special-purpose vehicles, safes and other integrated security products and services.

The project will be jointly executed by Mayotex-Philcar, which was recently acquired by INKAS, and INKAS Armored Vehicle Manufacturing.

The agreement has been signed as part of the Ontario Business Mission to Israel led by Kathleen Wynne, the Premier of Ontario. The mission's goal was to further establish Ontario as a top innovation and knowledge economy partner and develop the strong economic and cultural ties between Ontario and Israel by creating new commercial partnerships leading to economic growth and job creation.

Ontario and Israel have had a memorandum of understanding in place for more than a decade to promote industrial research and development collaborations. The agreements signed during the mission are expected to create approximately 200 jobs within Ontario.

Testing competence

Anritsu Electronics (Booth 610) is showcasing its expertise and experience in the development, design and manufacture of test and measurement equipment and precision microwave components.

The company's core business is the provision of handheld and benchtop test and measurement equipment, wireless/VoIP network monitoring software and related services that support the design, manufacturing and maintenance of current and next-generation optical, digital and IP networks.

DAVID DONALD

In April 2014, the French naval defence company DCNS established a wholly owned subsidiary with its headquarters in Ottawa. DCNS Technologies Canada Inc was created to develop naval engineering and industrial partnerships in Canada.

DCNS Technologies Canada (Booth 1426) is leading the adaptation of the FREMM (*Frégate européenne multi-mission*) frigate design to meet the requirements of the Canadian Surface Combatant (CSC) programme. DCNS was shortlisted in November last year as a possible warship design and combat system integration partner for the Royal Canadian Navy's new "made in Canada" vessel. The company is proposing its SETIS combat management system as part of the bid.

FREMM is a versatile design that can undertake a variety of tasks, including anti-air, anti-submarine and anti-surface warfare. It can be employed for land attack missions and can



FREMM targets CSC



function as a command ship. The French navy has ordered eight to be delivered by 2022, of which three have been delivered. The most recent, FNS *Languedoc*, was handed over in March this year. An option is held for nine further ships. Single FREMM vessels have been delivered by DCNS to Morocco (2014) and Egypt (2015). The frigate is also under

consideration for an Australian order.

While CSC dominates DCNS's activities in Canada, the company is also positioned to participate in the RCN's AJISS (Arctic Offshore Patrol Ship and Joint Support Ship In Service Support) programme, for which contracts are expected to be awarded next year.

Away from the defence arena, DCNS has partnered – through its OpenHydro subsidiary – with Emera to install the world's first grid-connected tidal array. The joint venture, known as Cape Sharp Tidal, aims to develop a commercial tidal industry in Nova Scotia. This summer, two 16m OpenHydro tidal turbines will be installed in the Bay of Fundy to generate 4MW and potentially provide energy to more than 1,000 customers.

Constant communications

General Dynamics Mission Systems – Canada (Booth 1601) and ViaSat (Booth 826) have announced that the ViaSat Small Tactical Terminal – KOR-24A (STT) has been selected for use on the CP-140 Aurora aircraft (a Lockheed P3 variant), used by the Royal Canadian Air Force.

ViaSat brings real-time combat communications with its two-channel, software-defined STT. The low-SWaP (size, weight and power) STT enables the CP-140 Aurora aircraft to maintain constant presence on the Link 16 network while simultaneously operating voice and data

connections on a second channel. The terminal offers an affordable, ruggedised, compact form factor that highlights both innovative design and usability.

"This is a monumental award for ViaSat because it represents our first STT award to be used by the Department of National Defence, as well as marks the CP-140 Aurora as a new airborne platform for our STT," said Ken Peterman, senior vice president, Government Systems Division, ViaSat.

"In working with General Dynamics Mission Systems – Canada, we are enabling a key coalition partner, the Department



of National Defence, to meet the ongoing needs of their missions in a timely manner. By embedding our proven Link 16 STT into the CP-140 Aurora fleet, these aircraft will now find themselves in the 'heart of the action' during critical coalition missions."

Stealth and SA on show

IN BRIEF

DAVID DONALD

Lockheed Martin has brought a cockpit simulator for the F-35 Joint Strike Fighter to allow CANSEC visitors to experience some of the benefits that the aircraft offers. Although the simulator is an unclassified version of the real cockpit, it nevertheless allows the demonstration of the F-35's stealthy characteristics and its high levels of situational awareness.

"It's a new generation of fighter," explained Billie Flynn, Lockheed Martin senior experimental test pilot. "I can come and go in the entire battlespace with impunity."

While stealth is perhaps the most obvious advantage of the F-35, it also introduces situational awareness levels unmatched by other aircraft. A single large screen dominates the cockpit, divided into two principal displays that provide a wealth of information. The helmet worn by the F-35



pilot can display imagery from the distributed aperture system of infrared sensors placed strategically around the airframe – in effect, allowing the pilot to look through the aircraft's skin.

Flynn, a Canadian with long experience in the CF-188, F-16 and Typhoon, added: "Before I could see 60 miles in front of me. Now I can see everything around me, on the ground and in the air."

Team work

PAL Aerospace (Booth 1321) and Ultra Electronics Sonar Systems have concluded a teaming agreement to establish an Airborne ASW Hub in the UAE. The hub will facilitate the marketing, sales, storage, distribution, maintenance and training of sonobuoys as well as other acoustic products in the Gulf Cooperation Council (GCC) countries.

"PAL Aerospace brings 10 years of experience in the GCC and a track record of success," said Ross Parsell, managing director, Ultra Electronics Sonar Systems. "This success was affirmed by the recent award of a five-year in-service support contract with a GCC client. We are extremely proud to work with a company that has demonstrated its commitment and subsequent success to this region."

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Canadian forces ready for Argus

Following its selection as the preferred solution for the Canadian Forces Integrated Soldier System (ISS) project last year, Rheinmetall Canada (Booth 1121) is conducting full qualification of its Argus Soldier System ahead of production and initial deliveries to the Canadian Armed Forces at the end of 2016.

The ISS is a suite of military equipment developed to enhance the effectiveness and protection of frontline Canadian infantrymen on the modern battlefield.

Two sets of trials of the system were conducted with Argus during the ISS project bid evaluation process – an initial small technical evaluation, and a longer six-week user appreciation performance evaluation with the Royal Canadian Regiment.

The Argus Soldier System comprises a hand-held tactical user interface with battle management software (BMS) supplied by Saab, a Harris 7800S tactical soldier radio, a Saab connection hub, a control unit, a headset with active noise



reduction earphones supplied by Invisio of Denmark, and high-capacity batteries.

The Harris 7800S tactical radio provides simultaneous voice and data communication and has an integrated global positioning system (GPS) capability. The BMS performs all required battle management functions through easily navigable and intuitive menus.

The connection hub provides

a high level of connectivity between multiple battery packs and provides data and power interface ports for connecting the system components and external devices. The bone conduction microphone of the headset provides outstanding capability to communicate efficiently, even in the noisiest environments. High-capacity batteries fit in standard pouches and can provide autonomy for more than 36 hours of operation. The whole system is incorporated in a lightweight integrated cable management vest.

The Canadian Department of Defense (DoD) has signed for an initial quantity of 1,632 units, with deliveries to the customer in batches of 600 scheduled to run through to mid-2017. Under this initial contract, the DoD has an option to acquire an additional 2,512 units, along with a potential contract award for product support, which could provide for a total contract value of C\$250 million.

Proven



DAVID DONALD

Airbus Defence and Space (Booth 401) is one of three bidders awaiting the outcome of Canada's Fixed-Wing Search And Rescue (FWSAR) requirements. Proposals are in and a thorough evaluation is currently under way.

Airbus believes that its offering, based on the C295W medium tactical transport airframe,

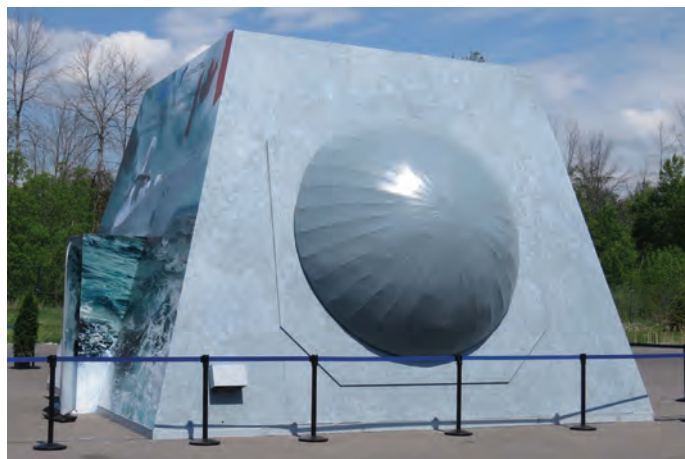
MF-STAR offered for CSC

ROBIN HUGHES

Rheinmetall Canada (Booth 1121) has teamed with Elta Systems, a subsidiary of Israel Aerospace Industries (IAI/Elta), to offer the naval variant of its operationally proven ELM-2248 Multi-Function Surveillance, Track And Guidance Radar (MF-STAR) medium-range radar (MRR) for the Canadian Surface Combatant (CSC) programme.

MF-STAR is a fully digital, multifunctional active electronically scanned array (AESA) naval radar for long-range air and surface surveillance and tracking. A derivative of the system is used with Israel's Iron Dome mobile all-weather air defence system developed by Rafael Advanced Defense Systems and IAI.

The teaming agreement for the CSC programme follows the successful award to Rheinmetall Canada in July 2015 of a potential C\$243.3 million contract to supply



10 ground-based ELM-2248 MF-STAR MRR variants and related in-service support to sustain the Canadian Army's C-RAM/air defence capabilities. Rheinmetall Canada, as prime, will build those MRRs at its facilities at Saint-Jean-sur-Richelieu, Quebec, under a transfer of technology agreement with IAI/Elta. Deliveries to the Army are expected to begin in 2017.

The MF-STAR antenna includes four fixed faces of active arrays in S-band frequency, delivering a high-quality air and surface situation picture and weapon support – particularly in severely cluttered target, electronic, topographical and environmental conditions.

With advanced technology and robust system architecture, the MF-STAR employs multi-beam

and pulse Doppler techniques to extract low radar cross-section targets from complex clutter and jamming environments. Rheinmetall says MF-STAR can be easily scaled to fit different requirements and different ship designs, and is already in service with Israel and another undisclosed naval customer with similar mission requirements to those proposed for the CSC.

CSC is part of the 2010 National Shipbuilding Procurement Strategy, under which Canada will replace the current surface fleets of the Royal Canadian Navy (RCN) and the Canadian Coast Guard. For the combat element of the CSC for the RCN, initial development will focus on Arctic/Offshore Patrol Ships (AOPs), followed by the CSC. The Joint Support Ships (JSSs) will be built for the RCN under a non-combat work package.

In RCN service, the CSC project will renew Canada's surface combat fleet by replacing the capabilities currently delivered by the Navy's Iroquois class destroyers and Halifax class multi-role patrol frigates.

reliability



represents a highly reliable and proven solution. The company is the market leader in the light/medium transport segment, having sold 165 aircraft to 23 operators. Furthermore, it has produced five different missionised versions for various maritime and patrol duties, having sold such aircraft to Brazil, Chile, Oman, Portugal, and the Saudi interior ministry.

The smaller yet similar CN235 is also in service with the US

Coast Guard as the HC-144 Ocean Sentry. Search and rescue is one of the tasks already undertaken by many of these aircraft.

These aircraft all use the FITS mission system developed by Airbus DS, which is also integrated by the airframe OEM. The proposal for the FWSAR contract is based on that same mission system, which has been integrated with a variety of sensors on other C295 special-mission platforms.

For the FWSAR proposal, Airbus is using the L-3 Wescam MX-15 electro-optic/infrared sensor turret, and an Elta radar. Other equipment includes satellite communications and an automatic identification system (AIS), the latter being a maritime equivalent of identification friend or foe.

With virtually every programme there is a measure of customisation to meet specific customer requirements, but the main elements of the FWSAR proposal have already been integrated in other versions, and have seen extensive operational use.

Airbus is also highlighting the local content in its bid, claiming to be the "most Canadian" proposal.

The company has teamed with Provincial Aerospace as the lead support provider, and the two companies have formed a joint venture, AirPro, to conduct full set-up, transition and steady-state support for the FWSAR aircraft for the life of the fleet if the C295W is selected.

CAE has been selected as the training partner for the bid, subcontracted to Airbus DS and managed by AirPro. CAE would establish and provide a training centre, drawing on both its partnership with Airbus DS and the Royal Canadian Air Force. There are already four C295 simulators in operation: one at the Airbus DS training centre at the Seville, Spain, factory, and others with air force customers in Brazil, Oman and Poland.

Other major Canadian companies involved in the programme are L-3 Wescam, which has provided EO/IR sensor turrets for a number of Airbus DS programmes, and Pratt & Whitney Canada, which is the OEM for the PW127G turboprops that power the C295W and would provide MRO support to the fleet.

IN BRIEF

Roadmap guides armour

Preliminary details of a roadmap to foster development of innovative materials and armour products are being shared at CANSEC this week. The Security Material Technology Roadmap will facilitate a dialogue among Canadian and international industry, research and development organisations, and defence and security focused government agencies.

The roadmap was developed at the end of last year following a workshop attended by more than 130 participants from a wide range of security materials stakeholders. It started with reviews of the current challenges and future needs of key equipment users such as the Canadian Armed Forces and the Royal Canadian Mounted Police.

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IN BRIEF

Embedded computing

Connect Tech (Booth 1034) is a hardware design company that specialises in rugged, small form factor solutions. It designs and manufactures a wide range of embedded computing products, including carrier board solutions supporting computer-on-module standards, as well as peripherals including Gigabit Ethernet switches, NVIDIA and AMD GPU solutions, digital and analogue I/O, FPGA, CAN controllers, multiport serial boards and power supplies. The company also offers rugged tablets and 3U VPX solutions, with an engineering team ready to engage in custom design when "off-the-shelf" is not an option.

Winning ways

Simex Defence (Booth 910) has won several contracts from the Canadian military and government institutions, totalling some C\$8.2 million. These include the supply of loudspeakers and Racal RA120 Slimgard headsets and spares to the Canadian Armed Forces, engine parts to Transport Canada for the Bell 412EPI helicopter, and propeller hubs for the controllable pitch propellers and propeller shafting to the RCN for the Halifax-class ships. On the latter contract, Simex is partnered with Andritz Hydro Canada.

DAVID DONALD

Canada's CAE (Booth 1611) has a global footprint and has become a world-renowned name for training and simulation excellence. As the military looks more to integrated training systems, CAE has expanded its capabilities to meet the needs for increasingly cost-efficient training.

Nowhere is this more apparent than in the 'home' market in Canada. The Royal Canadian Air Force, in particular, is working towards a 2025 vision for a fully integrated simulator-based system with distributed, networked training centres. This would allow fleet-wide multiplatform exercises to be performed. CAE is expecting a similar approach to be adopted by the navy.

CAE has continued to expand its activities in Canada. Last October the company completed its takeover of the NATO Flying Training in Canada (NFTC) operation, which recently passed 350,000 flight hours in the CT-155 Hawk (110,000 hours) and CT-156 Harvard II (240,000 hours) trainers.

The company also manages the training centres for the CC-130J Hercules and CH-147 Chinook fleets at Trenton and Petawawa, respectively. The Chinook facility includes a deployable simulator that can be used for exercise support and for overseas deployment. It has been particularly useful for mission rehearsal in theatre.

Recently CAE installed a new rear crew trainer for the CP-140 Aurora at Comox in British Columbia, and will shortly add

another system at the rear crew training school in Winnipeg.

In terms of future opportunities, CAE is monitoring closely the desire to bring operational weapon system trainer simulator training into Canada for the CH-149 Cormorant, CC-150 Polaris and CC-177 fleets. Training for these aircraft is currently conducted overseas.

Two other programmes are also being followed closely: Fixed-Wing Search and Rescue (FWSAR) and the Future Fighter. CAE is teamed with Airbus as the training partner for its C295W offer for the FWSAR requirement, and has non-training roles with the other bidders. Regarding the Future Fighter, CAE sees opportunities in providing not only type training, but also to host range facilities. The unmanned sector represents another opportunity, CAE



having teamed with General Atomics in its proposal for the Reaper to answer Canada's Joint Uninhabited Surveillance and Target Acquisition System UAV requirement.

In the live training arena, CAE has made a bid with Draken

International for the 10-year CATS adversary training contract that will run from 2017, and is also studying the Future Aircrew Training system that is expected to be fully implemented from 2027. This programme was recently renamed from Future



Last month, Textron Systems (Booth 611 and Outside 3036) successfully demonstrated the fixed-wing Aerosonde sUAS enabled with Hybrid Quadrotor technology, allowing the system to take off and land vertically and thereby significantly increasing mission flexibility.

With assistance from Latitude Engineering and Cloud Cap Technology, Textron Systems' proof-of-concept work combines the vertical take-off and landing (VTOL) capabilities of a multirole rotor platform with the efficiency, speed and endurance of the Aerosonde fixed-wing sUAS. With

the addition of VTOL capabilities, the system retains service-proven capability within a smaller, more portable footprint.

"With its size, endurance and power, as well as experience in harsh environments, the Aerosonde sUAS has already proven its multimission capabilities," said David Phillips, vice president, small/medium endurance unmanned aircraft systems. "With the potential to add VTOL capabilities, the mission possibilities are almost endless. The system could be launched from the smallest operational areas – adding an array of applications on land and at sea."

Training expertise for Canada



Pilot Training, and integrates the training of all aircrew into a single system.

Away from the defence world, CAE has landed an important contract that is being implemented here in Ottawa. In 2018, the company is delivering a 3000 Series simulator to Transport Canada's training centre to support the Coast Guard's helicopter fleet. While the full motion and visualisation functions are the same, the simulator has a roll-on/roll-off cockpit capability, allowing the simulator to be configured for Bell 412 or Bell 429 training.



High-tech protection

Morgan Advanced Materials (Booth 927) has extended its bomb disposal suit range with the Silverback 3020 Elite, which incorporates new technology and leading garment engineering.

The suit has been designed for extended wear, offering protection while maintaining flexibility, making it ideal for use in search and bomb disposal missions in a high-threat environment. It provides high levels of protection from blast, low-speed impact, fragment penetration and flame

immersion, and has an integrated spine protector to mitigate the effects of blunt trauma.

Improved operational flexibility is delivered through the integration of armour pouches and ancillary attachments, enabling greater integration with multidisciplinary teams.

Scalable armour, through the utilisation of Morgan's ultra-lightweight LWB III+ or LWA IV+ plates, can be attached to the front and back of the Silverback 3020 Elite, allowing the user to work in breaching and protection roles.

Left: CT-156 Harvard II simulator at the NFTC school; below: CC-130J simulators at CFB Trenton; below left: deployable flight training device for the CH-147 Chinook

Another major initiative for the country is the launch of an integrated wildfire training and simulation centre at Abbotsford, British Columbia. With Conair as the launch customer, the centre allows the integration of the varied elements of a firefighting scenario into one system.

The simulator is initially applicable to Conair's fleet of Avro RJ85 tankers, but can integrate air attack training and the simulation of ground-based command centres.

Recent experience with the Fort McMurray fires demonstrated that such scenarios can be highly complex, and ultimately the system should allow integrated team training and even large-force mission rehearsals. CAE expects the centre to be established in around two years.

IN BRIEF

EW for UAVs

Ultra Electronics (Booth 601 and Outside 3026) has announced that its Ultra TCS business, based in Montreal, has secured a \$18.4 million contract from a customer in a NATO country, to provide electronic warfare equipment and engineering support for the delivery of UAV platforms that will be used in surveillance missions. Ultra TCS will supply a variant of its ALR-510 ELINT system, systems engineering, installation and test support. The ELINT system on board the UAV will be controlled from a ground support centre using the company's TALON software. Ultra EWST will provide a radar threat simulator for the ground support centre, and a flight line go/no tester.

Rock solid

Vital Alert Communication (Booth 1732) is highlighting its communication products, including CanaryTalk, which helps military teams to communicate through solid rock, soil and concrete, and in other shielded environments where traditional communications are ineffective. Set up in minutes, CanaryTalk can integrate with existing handheld radios or function independently. It enables secure, emergency and day-to-day text, voice and data communications in difficult environments such as tunnels, sewers, subways, buildings, mines and military operations.

Clear vision

Metamaterial Technologies (Booth 1829) is showcasing two of its new metamaterial nanotechnologies, metaAIR and NanoWeb. MetaAIR is a metamaterial optical filter that can provide vision protection against laser strikes. NanoWeb is an invisible metal mesh that prevents ice and fog build-up on clear surfaces. It can be printed on any size or shape of glass or plastic, and has award-winning performance on conductivity and transparency.

The Silverback 3020 Elite suit is designed to maximise flexibility, manoeuvrability and comfort. Wearers can climb, crawl and crouch with ease, without compromising protection levels.

Duncan Eldridge, president of Morgan's Composites and Defence Systems business, said: "The development of the Silverback 3020 Elite search suit represents a step change in bomb disposal suit technology; the addition of scalable, interchangeable armour systems offers significant benefit to the user because the suit can now be adapted to the threat level."

Growing innovation and sustainability



In a speech last week before the House of Commons Standing Committee on Industry, Science and Technology, CADSI president, Christyn Cianfarani, made a strong case for more government action in facilitating the growth of an innovative and sustainable Canadian defence manufacturing base. To translate this vision into reality, Cianfarani called for government and industry to work in partnership to develop a Made in Canada Defence Industrial Policy, tailored to Canada's unique national security requirements and domestic industrial capabilities.

"The basic message I want to leave you with," Cianfarani said, "is that the Canadian defence industry is a vital, innovative part of Canadian manufacturing that the federal government should be paying more attention to, especially at this point in time. In the context of a Canadian manufacturing sector that has lost at least 400,000 jobs in the past decade due to fierce offshore competition, the size of Canada's defence industry has remained relatively stable."

"By this, I mean the growth potential for defence

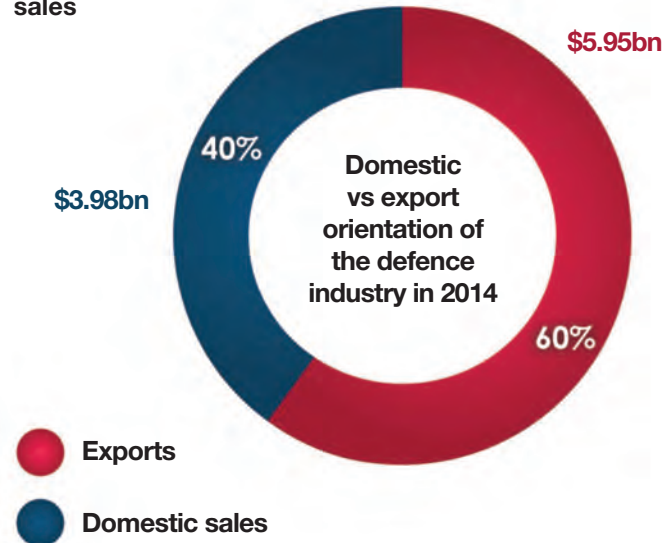
"Canada needs alignment at the political level to drive strategic thinking into defence procurement projects"

Christyn Cianfarani, president, CADSI

manufacturing is highly sensitive to federal government actions... or inaction. Federal government policies, programmes, but especially procurement decisions, influence heavily, if not determine outright, our sector's growth path. I don't think you can say that about any other part of Canadian manufacturing."

A new report of the Canadian defence sector completed by the Department of Innovation, Science and Economic Development (ISED) and Statistics Canada (StatsCan), in collaboration with CADSI and members and

The Canadian defence industry was export driven, with close to 60 per cent of sales (\$6bn) attributed to export sales



Source: Statistics Canada "Canadian Defence, Aerospace and Commercial and Civil Marine Sectors Survey 2014" (released 2016)

released yesterday at CANSEC, found that the defence sector accounts for about 63,000 direct, indirect and induced jobs, 60 per cent manufacturing focused, and generates \$6.7 billion in gross domestic product annually. The report also highlighted the fact

that the sector is largely export intensive, with 60 per cent of revenues from foreign sales.

"I hasten to add," Cianfarani continued, "that this strong export performance takes place in the context of a highly protected and regulated international marketplace for defence goods and services. Almost all countries protect, promote, develop, subsidise and favour their domestic defence industries for a combination of national security, sovereignty and economic reasons. That is just a reality we all have to understand.

"As a result, when Canadian defence firms compete abroad, we are up against some formidable and often unpredictable forces. And yet those export numbers tell us our companies do very well. I would suggest to you that our export success is a measure of our industry's innovative nature, the value for money it provides, and a barometer of the high-quality goods that Canadian defence firms sell into global markets."

The ISED-StatsCan report found that the Canadian defence sector comprises about 650 small, medium and large firms. These firms are a mix of Canadian-owned and Canada-based foreign affiliates, largely from the US and Europe. The data shows how the sector is a pan-Canadian industry with pockets of industrial strength in every region of Canada. It is also quantifying that two-thirds of Canadian defence firms have significant commercial, non-defence business operations.

Today the opportunity of a generation stares our industry and the Government of Canada in the face. Over the next 20 years the Canadian defence manufacturing

base has the potential to grow significantly due to the planned recapitalisation of the Canadian Armed Forces. Shipbuilding and the fighter jet replacement programme are the two largest pieces of this puzzle financially speaking, accounting for at least \$35 billion in capital equipment.

To execute on this opportunity, Cianfarani suggested there are two key ingredients needed to grow defence manufacturing in this country.

"First, we need to recognise that Canadian prime contractors, of which there are not that many, must be considered more strategically by the government in procurement strategies for these major capital projects," said Cianfarani. "Second, we need to find ways to incentivise intellectual property transfer from foreign primes into Canadian firms, so that those Canadian companies will also be able to engage in the kind of innovative manufacturing that comes with owning and exploiting intellectual property. Procurement strategies need to do more than just drive Canadian firms into supply chains," the president added.

"What we really need is to develop a Made in Canada Defence Industrial Policy, tailored to our unique national security requirements and domestic industrial capabilities. Canada needs alignment at the political level to drive strategic thinking into defence procurement projects using the tools we have to achieve the outcomes we want," Cianfarani said.

"The moment to fix this policy gap and grow defence manufacturing is now with the government simultaneously launching both a Defence Review and an Innovation Agenda. These two major policy reviews need to be joined up to develop a Canadian defence industrial policy to build a stronger, larger and even more innovative Canadian defence manufacturing base."

■ The full ISED-StatsCan report, entitled *State of Canada's Defence Industry, 2014*, can be found at: www.defenceandsecurity.ca.



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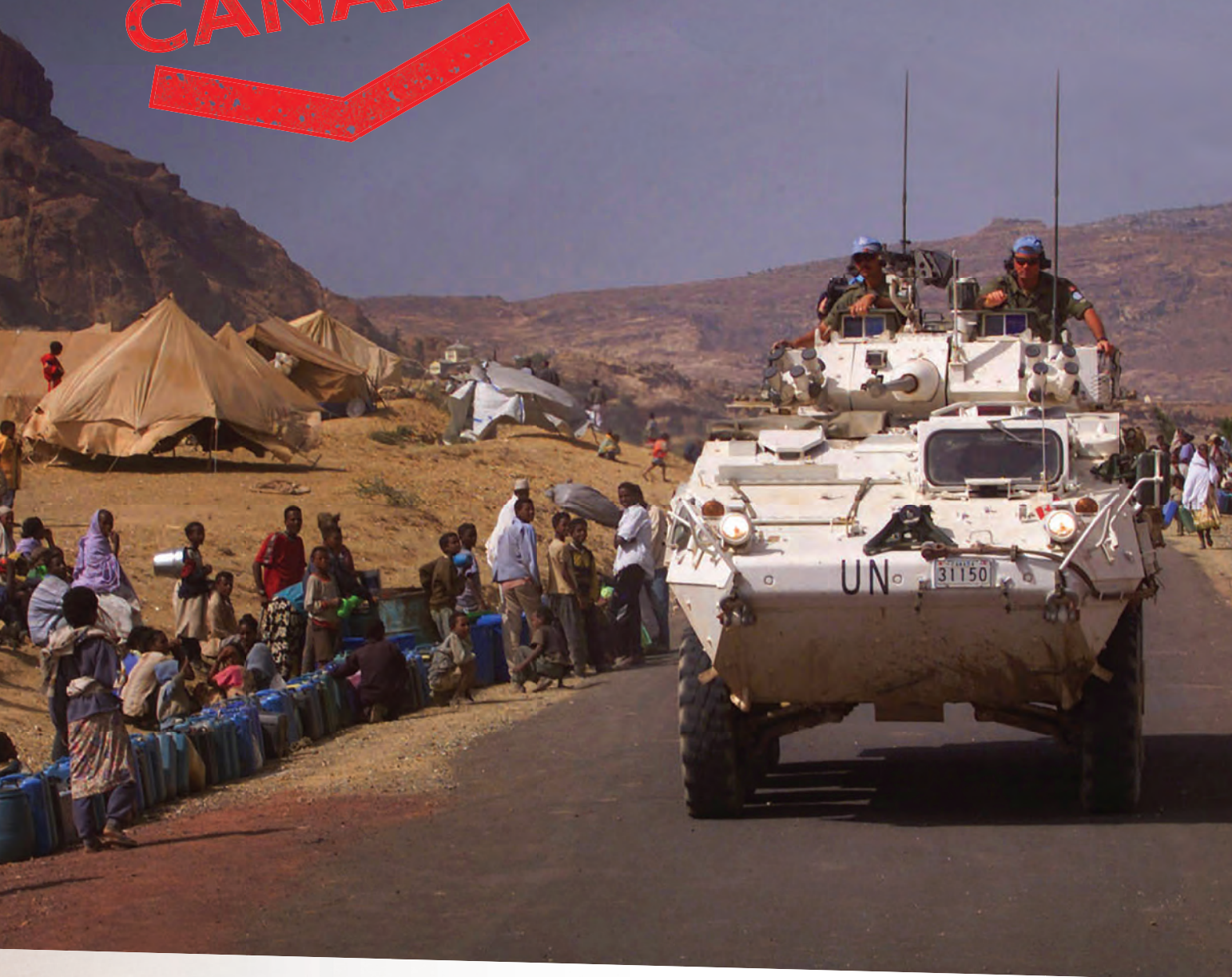
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