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# SHOW DAILY

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WEDNESDAY, 30 MAY 2018

# Recce is watching

**General Dynamics Land Systems-Canada (GDLS-Canada, Booth 1301) is showcasing two variants of its family of Light Armoured Vehicle (LAV) 6.0 platforms at CANSEC 2018: LAV 6.0 Combat Support Vehicle (CSV) Command Post (CP), and the new LAV 6.0 Reconnaissance, or Recce.**

LAV 6.0 is the designation given by the Canadian Army to its enhanced LAV III platform, upgraded specifically to respond to requirements emerging from a decade of in-theatre experience in Afghanistan.

In November 2014, the Canadian government awarded GDLS-Canada a C$287 million contract to equip 66 LAV 6.0 platforms with a new reconnaissance and surveillance system under the LAV Reconnaissance: Surveillance System Upgrade (LRSS UP) requirement.

Currently in the design, qualification and test phase, the LAV 6.0 Recce solution delivers the same level of survivability, mobility and firepower as the baseline LAV 6.0, but also integrates a highly modular and stabilised sensor suite that includes radar, thermal/day image intensification sights, laser rangefinder and GPS, and an operator control station enabling reconnaissance and targeting missions at extended range.

"The LAV 6.0 Recce platform will also have the capability for surveillance with the mast elevated and while on the move, or for an extended silent watch, drawing on battery power reserves," said GDLS-Canada spokesperson Doug Wilson-Hodge.

The LAV 6.0 Recce includes features common to the baseline LAV 6.0 including the M242 Bushmaster 25mm/7.62mm coaxial machine gun turret, double-V hull, and the Caterpillar C9 450hp (335kW) engine.

Wilson-Hodge said deliveries of the LAV 6.0 Recce platform to Canada will commence in 2020.

In 2016, General Dynamics Land Systems-Canada furthered the modularity of the LAV 6.0 family by introducing the LAV 6.0 combat support vehicle (CSV). This combines additional mission flexibility with the commonality and protection offered by the LAV 6.0 baseline variant. Equipped with remote weapon systems for self-defence, the LAV 6.0 CSV is also available in ambulance, and maintenance and recovery vehicle variants.

The LAV 6.0 variants in Canadian Army service saw their first international operational deployment in 2017 in Latvia in support of Operation Reassurance.


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Amphibious craft can overcome all obstacles


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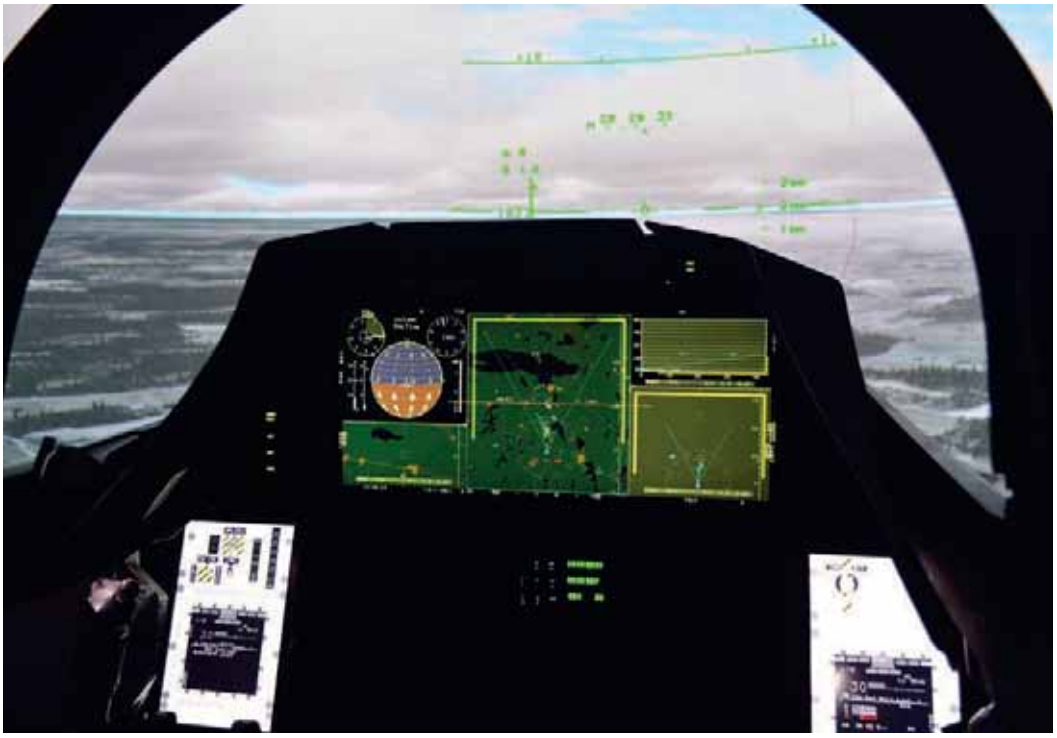


# Wide-area Gripen flight display goes on show

DAVID DONALD

**Saab has brought its Gripen E cockpit simulator to CANSEC as part of a ramped-up effort to promote the aircraft for Canada's Future Fighter Capability Project (FFCP) requirement. Following an initial outing to India's DefExpo show last month, the simulator and its wide-area display (WAD) is making only its second public appearance.**

Measuring 48x20cm (19x8in), the high-definition touchscreen WAD dominates the Gripen E's cockpit. It is the primary flight and tactical display, presenting information that can be tailored to meet the exact needs of the pilot throughout all phases of flight, as well as relevant tactical data. The avionics that drive the display imagery automatically fuse data from the aircraft's sensors, as well as information from offboard sources.

Canada announced it would launch a new fighter competition in November 2016, and officially launched FFCP last December with a requirement for 88 aircraft. Saab had declined to offer the Gripen for earlier iterations of the requirement, but the FFCP promised a more conducive procurement environment. With Boeing (Super Hornet), Dassault (Rafale), Eurofighter (Typhoon) and Lockheed Martin (F-35), Saab was named as an eligible supplier in February, and face-to-face discussions began in March.

A full RFP for the government-to-government deal is expected in spring 2019, with contract award scheduled for 2021/22. First deliveries are slated for 2025, with initial operational capability a year later. Full operational capability is scheduled for 2031.

Saab views the Gripen E/F as a perfect fit for Canada, noting several parallels with Sweden's own requirements for the aircraft, particularly in terms of prolonged Arctic operations and those from distant forward operating bases. The aircraft is being promoted with lower predicted life-cycle costs than its rivals while offering high levels of capability through its advanced systems, which include AESA radar.

A major factor being highlighted by Saab is the ability of 'Team Sweden' to provide what the company calls a "once in a lifetime industrial offset package" that includes technology transfer and the ability for Canada's aerospace and associated industries to participate fully in the development, production/assembly, flight test and lifetime support of the country's own aircraft.

To underline the levels of involvement that are possible, Saab points to Brazil, where a production and assembly facility has been established to produce the greater majority of the 36 Gripen E/Fs ordered by the Brazilian air force. Local industry is deeply involved in developing systems for the Gripen E/F, including the wide-area display, which is a product of Elbit's Brazilian subsidiary AEL Sistemas. The primary Brazilian industrial partner, Embraer, is also spearheading the development of the Gripen F two-seat version.


**The Gripen E prototype made its first flight on 15 June 2017. Sweden has 60 on order and Brazil is buying 36**

# CSC rivals await design selection

RICHARD SCOTT

**A decision is expected by the end of the summer on the surface combatant design that will form the backbone of the Royal Canadian Navy (RCN) through to the late 2040s.**

Under the Canadian Surface Combatant (CSC) project, a single class of up to 15 ships is planned to replace the Halifax-class patrol frigates and the now decommissioned Iroquois-class destroyers.

The new ships will be built by Irving Shipbuilding, previously selected as the prime contractor for both the CSC project definition and implementation phases under the National Shipbuilding Strategy. Construction activity is planned to start in the early 2020s, with the first ship delivery envisaged in the mid-2020s.

The government and Irving Shipbuilding are currently evaluating bids submitted last November from Alion Science and Technology, Lockheed Martin Canada and Navantia. The CSC programme is estimated at C$56-60 billion, including the ships themselves, integrated logistics and support, infrastructure, project office and contingency.

Alion is bidding a ship design based on the Royal Netherlands Navy's De Zeven Provinciën-class air defence and command frigate. Atlas Elektronik and Hensoldt Sensors are responsible for the combat system solution being offered by the Alion team; other key suppliers include Damen, L3 Technologies Canada, Raytheon Canada, DRS Technologies Canada and Rheinmetall Canada.

Lockheed Martin Canada,

Alion Canada's CSC proposal is based on the design of the De Zeven Provinciën frigate of the Royal Netherlands Navy

# Sea Ceptor pitched for CSC

ROBIN HUGHES

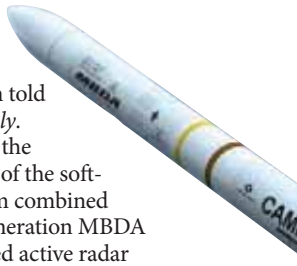
**MBDA (Stand 401) is proposing its GWS 35 Sea Ceptor local area anti-air missile in a close-in air defence system (CIADS) role for the Royal Canadian Navy's (RCN's) future Canadian Surface Combatant (CSC) platform.**

Intended as a single-class platform to replace the Halifax-class patrol frigate and the (now decommissioned) Iroquois-class destroyer in RCN service, the CSC platform will built by Irving Shipbuilding, the appointed prime contractor for the CSC programme.

The RCN is currently evaluating bids from three consortia for the CSC requirement: a design based on the Royal Netherlands Navy's De Zeven Provinciën-class air defence and command frigate submitted by Alion Science; a design variant of the Type 26 Global Combat Ship submitted by BAE Systems and Lockheed Martin Canada; and a modified design of the F-105 frigate offered by Navantia in partnership with Saab Australia and CEA Technologies. (Italy's Fincantieri and France's Naval Group submitted a joint bid based on the FREMM design, however this is understood to have been an unsolicited offer directly to the Canadian government and outside the formal RFP process.)

Developed and manufactured by MBDA in the UK under the umbrella of the company's Portfolio Management Agreement with the UK Ministry of Defence (MoD), the Sea Ceptor system is derived from MBDA's Common Anti-air Modular Missile (CAMM) effector. CAMM is a <100kg weapon equipped with a two-way (uplink/downlink) datalink, an impact/laser proximity fuze, and next-generation active radio frequency (RF) terminal homing, supported by inertial mid-course guidance updates, to deliver all-weather engagement lethality against targets at ranges in excess of 25km. A key feature of the CAMM weapon is the use of a 'soft' vertical launch system. The missile is ejected from its canister by a piston driven by an explosive gas charge incorporated within the canister; once at height, aft-mounted gas thrusters perform a turnover manoeuvre before the main motor fires. The GWS system formally entered UK Royal Navy (RN) service with the Type 23 frigate on 24 May in the local area air defence system (LAADS) role, replacing the GWS 26 Mod 1 VL Seawolf point defence missile system as part of the frigate capability sustainment programme.

"We've talked quite a lot about the enhanced capability that Sea Ceptor brings to the RN in the LAAD role: a 25km range, 360°, multiple simultaneous engagement capability which can engage crossing targets and targets at distance – it is a new range class and category of weapon system for the service," an MBDA spokesperson told the *Show Daily*.



"However, the combination of the soft-launch system combined with next-generation MBDA UK-developed active radar seeker on the effector means the Sea Ceptor is immediately cued directly on to the target, enabling it to also engage targets at very short range: less than 1km. This gives it a potent CIADS capability – and it's a step above what else is out there on the market."

The RCN intends to adopt a tiered approach for the air defence capability with its CSC platform. Canada is already a member of the Evolved Sea Sparrow Missile (ESSM) consortium and will likely acquire ESSM Block 2 as the mid-tier capability, with either SM-2 Block 3 or SM-6 for the outer/high tier. MBDA is therefore hoping to address the lower tier threat with

leading a grouping of BAE Systems, CAE, L3 Technologies, MDA and Ultra Electronics, is proposing a Type 26 Global Combat Ship variant under the banner of Canada's Combat Ship Team. This solution marries the Type 26 platform, on order for the UK Royal Navy, with a combat system based on the Lockheed Martin Canada CMS 330 combat management system (CMS) already in service on the RCN's Halifax-class frigates.

PHOTO: ROYAL NETHERLANDS NAVY

Navantia's proposition for CSC is founded on the F-105 frigate design already in Spanish service and which forms the basis for Australia's Air Warfare Destroyer programme. The Spanish shipbuilder has partnered with Saab Australia (as combat systems integrator) and CEA Technologies (radar suite).

The competitive process now underway is expected to result in the award of two contracts. The primary contract will be the CSC definition subcontract, which will be awarded by Irving Shipbuilding after Canada has awarded Irving the prime definition contract (this being the vehicle for procuring the required design licence rights and for conducting the design work).

The second contract will be the Combat Management System Software Support Contract, which will be awarded directly by Canada to the supplier. The CMS represents the core of the combat system and the Department of National Defence needs to ensure that it is in a position to properly maintain and support the system. Due to security restrictions this contract will only be awarded to a Canadian company, and almost all of the work must be done in-country.

**Lockheed Martin Canada's submission is based on the BAE Systems Type 26 Global Combat Ship**

**Navantia is offering a variant of the Spanish navy's F-105 frigate**

Public Services and Procurement Canada told the *Show Daily*: "We are currently in Stage 2 of the process [and] targeting to complete the evaluation by the end of this summer.

"We expect to award the contract later in 2018. The start of ship construction remains scheduled for the early 2020s."

# CIADS

a Sea Ceptor offering as a CIADS system, with its inherent added LAADS capability.

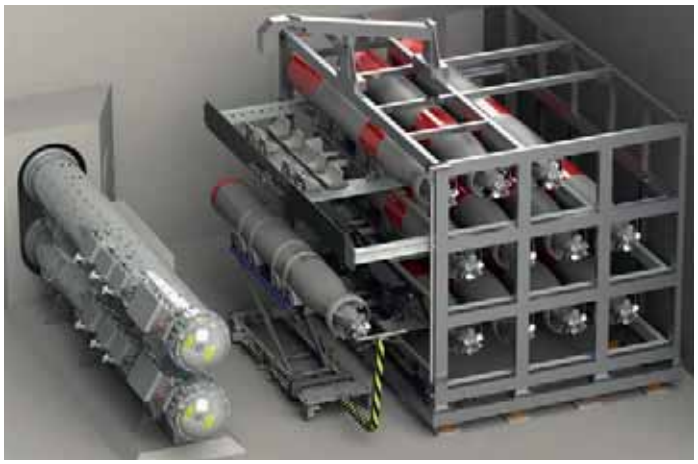
The spokesperson confirmed MBDA is currently speaking with all three consortia involved in the CSC bidding process. A decision on the CSC platform is expected later this year.

# JSK targets torpedo role

DAVID DONALD

**As part of its offering for participation in the Canadian Surface Combatant (CSC) programme, JSK Naval Support Inc is offering its Torpedo Launch System (TLS) to all three shipbuilding consortia that are bidding for the CSC contract. The TLS is being showcased at CANSEC (Booth 806) in a virtual presentation that also highlights capabilities in training and simulation.**

Headquartered in Pointe Claire, Quebec, JSK Naval Support is a joint venture between ship support specialists Kaycom Inc and SEA, a UK-based company that is part of the Cohort group and which specialises in a variety of defence and security sectors, including maritime systems. The company has ongoing programmes to supply TLS and decoy launcher systems to the navies of Malaysia, the Philippines and Thailand. SEA also works closely with the UK Ministry of Defence, having manufactured and supported the TLS and decoy systems for the Royal Navy's Type 23 frigates.



The TLS on offer for CSC is compatible with all lightweight NATO-compatible torpedoes. The electronics suite interfaces with ship's and sonar data to provide a target solution. As part of the combat management system the modular TLS allows the system to interface with both torpedoes and decoy launchers.

SEA has additionally developed a weapons handling system that mounts torpedoes, depth charges and air-launched missiles in shock-mounted racking. The system transports weapons as required to the launchers or helicopter hangar by a trolley system.

# S-92 makes grand entrance

ROBIN HUGHES

**A Cougar Helicopters-operated Sikorsky S-92 medium-lift search and rescue (SAR) helicopter made its CANSEC debut this year, flying in just ahead of the opening of the show. Delivered by Cougar chief pilot Paul Carter and SAR captain Pawel Bienkowski, accompanied by two flight engineers and a third engineer from Sikorsky, the S-92 completed a total eight-and-a-half-hour flight duration over three legs from the company's headquarters in St John's, Newfoundland, to be here.**

Cougar Helicopters Inc (Booth 4000) has operated a fleet of S-92 platforms in both offshore passenger transportation and SAR roles since 1991, primarily in support of the oil and gas industry.

Cougar's S-92 aircraft perform at an average air speed of 145 knots (166mph) and have the endurance to fly for more than four hours without refuelling. The platforms feature a night vision goggle (NVG) capable flight deck equipped with SAR-configured Automatic Flight Control System (AFCS) and high-definition forward-looking infrared (FLIR)/ thermal image camera technologies, a glass cockpit, an icing protection system, a twin hoist and a comprehensive medical suite. All platforms are configured with real-time position monitoring that is tracked through the company's 24/7 dedicated type B dispatch department, along with flight data monitoring equipment that is analysed after every flight.

Cougar Helicopters is a Transport Canada Approved Maintenance Organization (AMO) facility, and operates its SAR mission from a dedicated installation, with a proven year-round 24/7 response posture of being airborne within 20 minutes.

With more than 1.3 million fleet flight hours of service, the S-92 fleet averages 95 per cent availability. The S-92 helicopter performs a variety of missions, including offshore oil transportation, head of state and airline missions, and – perhaps the mission closest to Sikorsky's founders' vision for rotorcraft – search and rescue.

The military anti-submarine/ anti-surface warfare variant of the S-92 – designated CH-148 Cyclone – is replacing the CH-124 Sea King in Royal Canadian Navy (RCN) service, and is expected to achieve an initial operating capability later this year ahead of its deployment with the RCN's Halifax-class frigates.

To date, the RCN has accepted 16 (of 28) CH-148 Cyclone aircraft, with a 17th now in the acceptance process. Of these, 10 are currently in operation at 12 Wing Shearwater conducting training and the final phase of initial operational test and evaluation. The remaining aircraft are with Sikorsky for upgrade to the Block 2 configuration. Sikorsky will deliver the sixth Cyclone platform to the RCN in Block 2 (final production) configuration in June this year. The Block 2 variants feature airframe and mission system enhancements designed to meet a wider range of environmental and threat conditions than the Block 1 variants previously delivered. By December, Sikorsky will deliver three more Block 2 aircraft – with all 28 CH-148 platforms scheduled to be delivered to the service by late 2021.

The Cyclone has approximately 50 per cent commonality with its commercial cousin, the S-92; Sikorsky had earlier positioned the S-92 as an alternative to the Royal Canadian Air Force's (RCAF's) Cormorant Mid-Life Upgrade programme, but last week it was announced that the latter would go ahead as planned.

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# New TerraLens SDK unveiled

ROBIN HUGHES

**Ottawa-based Kongsberg Geospatial Ltd (Booth 915) has released TerraLens 9.0 – the latest version of its software development toolkit (SDK) for geospatial visualisation.**

TerraLens provides real-time 2D and 3D mapping with powerful data visualisation tools, and includes a flexible and full-featured user interface (UI) development toolset that incorporates a robust set of advanced multi-touch features. The latest SDK release – TerraLens 9.0 – leverages a new shader language implementation for improved use of the advanced capabilities of modern graphics processing units (GPUs), and provides a unified pipeline for creating desktop-, mobile- and web-based geospatial applications.

The new engine includes support for extremely high-resolution data sets, and features significant performance boosts – maintaining high frame rates when panning and zooming high-resolution maps, and faster video-draping over terrain. New platform features include Physically Based Rendering (PBR) materials for 3D models; simplified runtime use for developers, including automatic data discovery; encrypted S63 map support; and support for S102, (submarine terrain features) map formats. The TerraLens 9 solution also includes an OGC-certified map server that provides open standards support for WMTS, as well as proprietary features that include advanced terrain and vector support, and a MIL-SPEC military symbol server.

While TerraLens 9 is intended to leverage modern hardware, Kongsberg Geospatial will continue to support legacy rendering modes such as X11 and GDI in its TerraLens 8.x product line, which will be maintained in parallel with TerraLens 9.

TerraLens has been fielded in some of the most demanding applications in the world, including AEGIS, Global Hawk, THAAD, NATO AWACS, and the Joint Battle Command-Platform.

• In a parallel development, CarteNav Solutions Inc of Halifax, Nova Scotia (Booth 1327) has selected the TerraLens platform for its new generation of AIMS mission system software. AIMS is designed to enhance situational awareness and improve mission effectiveness on airborne, land-based, and maritime platforms. By processing and managing imagery and data from a variety of sensors, AIMS provides the operator with a real-time, geo-referenced local operating picture for mission planning, delivery, recording, and review.

**CarteNav's AIMS-ISR (AIR) shown in the cockpit of a police helicopter. CarteNav Solutions has selected TerraLens as the geospatial engine for the next generation of its AIMS-ISR software**



# Initiative shifts to MACH 4.0

**Solaxis Ingenious Manufacturing (Booth 124) – a Bromont-based additive manufacturing house specialising in the precise design and manufacture of functional prototypes, low-volume production, and specialised tooling using innovative technologies of industrial 3D printing – earlier this year joined Aero Montreal's MACH FAB 4.0 Initiative.**

The MACH FAB 4.0 Initiative provides small and medium enterprises (SMEs) with personalised guidance to promote the adoption of digital technologies and advanced manufacturing, while also boosting their digital maturity. The initiative is open to all Quebec manufacturing SMEs in the aerospace industry.

In 2017, Solaxis passed its MACH audit, joining the cluster of Aero Montreal companies. This performance diagnosis looked at three key drivers: leadership, operations, and workforce planning and development. Solaxis qualified as an SME 4.0 due to its established 3D manufacturing technology and systems.

In April last year, the company expanded its high-performance thermoplastic offerings in fused deposition modelling (FDM) technology with the addition of nylon 6. This material combines strength and toughness superior to other FDM thermoplastics. It is ideal for applications that require strong, customised parts, and tooling that lasts longer and withstands rigorous functional testing.

Nylon 6, popular for manufacturing, produces durable parts with a clean finish and high break resistance. The FDM material is ideal for product manufacturers and development engineers in industries such as aerospace, defence and security, and ground transportation.

In the same month, the company acquired a new Fortus 900mc (Gen II) industrial 3D printer – the most powerful FDM system available – bringing the number of FDM industrial printers in Solaxis's machine park to six and securing its reputation as a nationally recognised leader in FDM technology.


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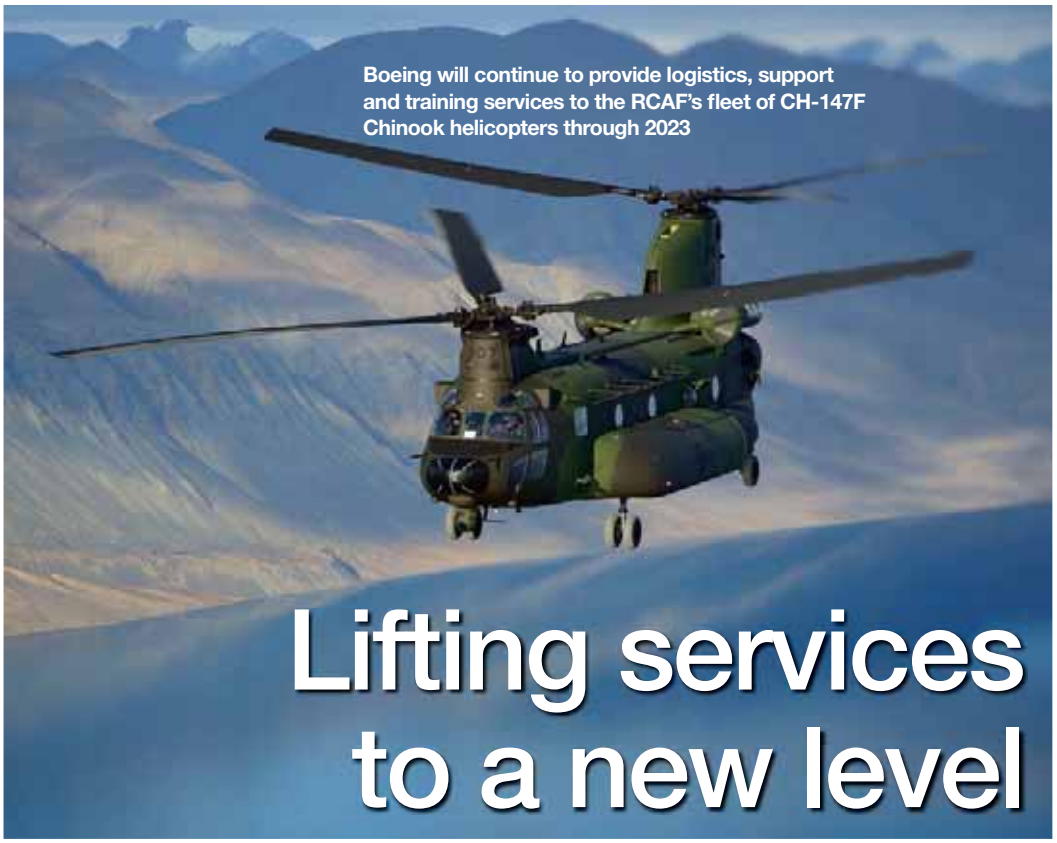
# IN BRIEF

**Support consolidated**
Qioptiq (Booth 528), an Excelitas Technologies company and a global technology leader in delivering innovative optical and photonic solutions, has announced the official opening of its £3.7m facility in North Wales.

The facility will support the £83 million UK Ministry of Defence (MoD) Surveillance and Target Acquisition Support (STAS) contract, which was awarded to Qioptiq in March 2017. The STAS award allows Qioptiq's St Asaph site to provide support for surveillance and targeting equipment to the UK Armed Forces over the next six years. Work under the STAS contract will merge 20 individual support contracts into one, saving the MoD £47 million over the duration of the contract.

**Intelligence analysis**
Esri Canada (Booth 1809), a leading provider of advanced geospatial technologies for defence and intelligence organisations, has just released its Intelligence Configuration for ArcGIS Pro (ICAP), a new workstation for intelligence analysts.

ICAP streamlines user experiences and provides specialised tools to aid analysts in examining relationships, detecting patterns and predicting likely courses of action. This new configuration of ArcGIS Pro delivers capabilities in one simple application, including foundation data management for organisational use; data integration from multiple sources in real time; activity-based intelligence through analysing patterns, examining relationships and determining probabilities; and link charts, which visualise entities, manipulate link diagrams and view their relationships in a table or a map. Conditions and alerts are based on a set of queries and an alert when conditions are met.



Boeing will continue to provide logistics, support and training services to the RCAF's fleet of CH-147F Chinook helicopters through 2023

# Lifting services to a new level

**Established in mid-2017, Global Services is Boeing's (Booth 1821) newest business unit, which was formed by merging the services sectors of Boeing Commercial Airplanes and Boeing Defence, Space & Security. The resulting competitive, nose-to-tail services business is challenging the aerospace industry with comprehensive lifecycle solutions.**

Global Services president and chief executive officer Stan Deal says the company will respond to its customers' evolving service needs quicker than ever before, with increasingly cost-competitive solutions.

"Our resources and global presence give us the ability to positively disrupt the market with unparalleled innovation, and to generate a robust pipeline of products and services regardless of platform manufacturer," said Deal.

To drive innovation and cost savings around customers' most pressing needs, Global Services is focusing investment and resources in four main capability areas: supply chain; engineering, modifications and maintenance; digital aviation and analytics; and training and professional services.

With approximately 70 per cent of platform lifecycle costs attributed to services, Boeing has set out to capture a large portion of the estimated US$2.6 trillion, 10-year commercial and defence services market, with an annual revenue target of US$50 billion within 10 years. Year-end 2017 financial results show Global Services' growth is outpacing the average market growth rate of 3.5 per cent, closing the year with $16.5 billion in orders – a year on year increase of 6 per cent.

Global Services will continue to grow by accelerating innovation, expanding current services offerings and broadening its portfolio through partnerships and acquisitions. Most recently, Boeing announced its intent to acquire KLX Inc, a global parts distribution and supply chain services company. Once finalised, the acquisition will broaden Boeing's offerings and transform the way services are bought and delivered to customers.

Another area of unlimited growth potential is the company's use of analytics. Boeing AnalytX, launched last June, brings together more than 800 analytics experts from across the company, including in its Vancouver location, to utilise data that improves efficiency, quality, safety and performance of customer fleets. During the Singapore Air Show in February, Boeing finalised an agreement with Singapore's Defence Science and Technology Agency to partner on research and development in data analytics to benefit the Republic of Singapore Air Force.

In March, Boeing and the Canadian government agreed to an amendment to an existing performance-based logistics contract to continue providing full system logistics, engineering support, supply chain, data analytics and training services to the Royal Canadian Air Force's fleet of CH-147F Chinook helicopters through 2023. Additionally, Boeing supports Canada's C-17 airlifter fleet through the Globemaster III Integrated Sustainment Program, enabling the RCAF to effectively meet military and humanitarian missions in Canada and worldwide.

In 2019, Boeing will mark 100 years since company founder William Boeing began a relationship with Canada by flying the first international airmail delivery between the USA and Canada. Today, Boeing works with nearly 560 Canadian suppliers and the company employs approximately 2,000 highly skilled workers throughout the country, contributing more than C$4 billion annually to Canada's economy.

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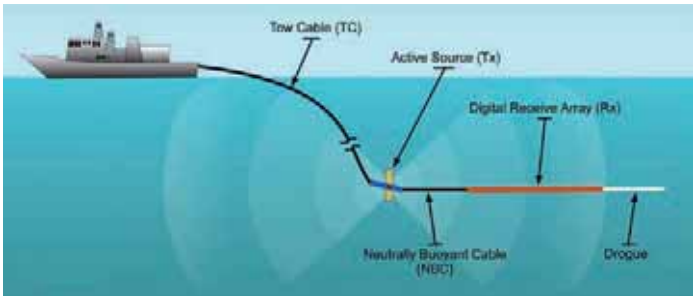



# Sound detection

**Nova Scotia-based GeoSpectrum Technologies Inc (Outside Booth 3040), a subsidiary of Elbit Systems Ltd, is a supplier of marine acoustic hardware and systems for the defence, oil and gas, surveillance, and environmental sectors. The company is known as a high-tech solutions provider in the underwater acoustics field with innovative products such as the Towed Reelable Active Passive Sonar (TRAPS) and the lightweight Portable Acoustic Target System (PATS).**

TRAPS has been developed to meet requirements for a compact, lightweight and low-cost active/passive variable depth sonar that can be accommodated on ships such as the Kingston-class coastal defence vessels and the new Harry DeWolf-class Arctic and Offshore Patrol Ships. GeoSpectrum says the system is unique because it uses a 2kHz active sound source that operates as a vertical projector array, but stows on a single winch drum with the receive array and tow cable. This configuration allows a single tow, thus negating the need for a complex launch and recovery system, and so reducing footprint, weight and cost.

GeoSpectrum is showcasing TRAPS in the outdoor area, including the innovative JackFish projector as well as the winch drum, receive array and tow cable.

Under contracts from the Department of National Defense for the All Domain Situational Awareness (ADSA) Science & Technolgy (S&T) Program, GeoSpectrum will build and field-demonstrate a very low frequency (VLF) acoustic source for long-distance underwater detection and potentially basin-scale (1,000km) communications.

A second contract provides for development and field-demonstration of a passive horizontal thin line array suitable for towing from a persistent UUV.

Both products will be suitable for year-round Arctic deployment.

# Interim support ship joins Canadian fleet

## IPMS passes test on ship control platform

Irving Shipbuilding (Booth 1801) has announced that the Integrated Platform Management System (IPMS) from the MAPPS business unit of L3 Technologies (Booth 201) has passed the First Article Acceptance Test for a control platform of the future Arctic and offshore patrol ships of the Royal Canadian Navy.

The conclusion of the IPMS test supports the company's planned launch of the HMCS *Harry DeWolf* by autumn this year, said Kevin McCoy, president of Irving Shipbuilding.

# Frigate refit marks key milestone

**Work has begun in Victoria, British Columbia, on the modernisation refit of HMNZS *Te Kaha*, the first of two Royal New Zealand Navy (RNZN) frigates to be upgraded in Canada under the ANZAC Frigate Systems Upgrade (FSU) project.**

Lockheed Martin Canada (Booth 1311) is prime systems integrator responsible for designing and supplying the upgraded combat system for the FSU. The company's scope of supply includes a new combat management system – based on Lockheed Martin's own CMS 330 product – together with replacement of the surveillance radar and electronic surveillance equipment, introduction of the Sea Ceptor anti-air missile system, improved soft-kill defences against missiles and torpedoes, and a Combat Systems Trainer.

Lockheed Martin Canada is also responsible for the platform design and implementation and has subcontracted Seaspan Victoria Shipyards Co Ltd (Booth 1231) in Victoria to install the new systems on board *Te Kaha* and sister ship HMNZS *Te Mana*.

*Te Kaha* – the first foreign warship to be modernised in Canada since the Second World War – arrived in Canada on 6 March; it then proceeded to the Royal Canadian Navy's Fleet Maintenance Facility Cape Breton for de-storing of equipment and preservation of ship systems in preparation for the handover and start of the industrial refit. On 26 April, the ship was transferred to the care of Lockheed Martin Canada and Seaspan to commence the shipyard industrial refit phase of the ANZAC FSU project.

*Te Mana* is scheduled to arrive in 2019. Under Lockheed Martin Canada supervision and direction, Seaspan will refit and install the new systems, with an expected completion date of 2020 for the entire contract.

The FSU aims to extend the frigates' operational life through to the 2030s. *Te Kaha* and *Te Mana* were commissioned into RNZN service in July 1997 and December 1999 respectively.

Lockheed Martin Canada is the Combat Systems Integrator for four major active programmes across three countries: the ANZAC FSU programme for New Zealand; the Chilean Navy's Type 23 modernisation; Canada's Arctic Offshore Patrol Ship; and Canada's Halifax Class Modernization (HCM) programme.

MV *Asterix* is a contracted civilian vessel that will provide at-sea refuelling support, as well as additional afloat support capabilities, to the Canadian Armed Forces

RICHARD SCOTT

**The Royal Canadian Navy (RCN) has begun operations with the 26,000-ton interim afloat support ship MV *Asterix* following completion of at-sea trials and testing earlier this year.**

Built as a container ship, Asterix has been converted into an Auxiliary Oiler Replenishment (AOR) vessel by Davie Shipbuilding to plug the gap left by the retirement of the AORs HMCS *Preserver* and HMCS *Protecteur* in 2014, and delays to the introduction of the new Queenston-class Joint Support Ships (JSSs).

*Asterix* is a contracted civilian vessel that will provide at-sea refuelling support, as well as additional afloat support capabilities, to the Canadian Armed Forces. The government has entered into a provision of service contract with Federal Fleet Services, Davie's sister company, for five years, with options for up to five additional one-year periods.

Built in Germany in 2010, *Asterix* was acquired by Federal Fleet Services from the Greek company Capital Ship Management for C$20 million. Initial conversion work was carried out at Aecon's facilities in Pictou, Nova Scotia, before moving to Davie's shipyards in Lévis, Quebec, in mid-2016. Based on a design by Navtech naval architects, the scope of work has included removal of the ship's container-handling equipment and aft superstructure, the installation of fuel bunkers, cargo space for other stores, four Replenishment At Sea (RAS) rigs and two cranes.

Other changes include the provision of a flight deck sized for operating the CH-147 Chinook, twin hangars each able to house a CH-148 Cyclone helicopter, a command centre, a NATO Role 2E medical facility, and facilities to accommodate up to 350 personnel.

Under the terms of the lease arrangement, *Asterix* is crewed by a hybrid crew of 36 civilian mariners and a contingent of 116 RCN personnel. The latter will be responsible for specific naval evolutions, such as RAS operations, medical services, and aviation operations and maintenance.

*Asterix* was formally accepted into Canadian Fleet Atlantic in a ceremony at CFB Dockyard Halifax on 6 March. This followed an intensive period of at-sea trials and testing including RAS exercises with the RCN (a first underway replenishment was performed with the frigate HMCS *Toronto* on 15 January) and operations with Royal Canadian Air Force CH-148 Cyclone helicopters (including vertical replenishments).

According to Davie, Project Resolve was completed on time and to budget at a sail-away cost of C$659 million and taking approximately two years. More than 900 Canadian companies participated in the conversion/build of *Asterix*, with Tier 1 subcontractors including Hepburn Engineering (RAS equipment), L3 MAPPS (Integrated Platform Management System) and OSI (Integrated Bridge System).

*Asterix* is the first new naval support ship to enter service with the RCN in more than 50 years. It is also the first large naval platform to be delivered from a Canadian shipyard in more than 20 years and the first naval ship to be delivered since the launch of the National Shipbuilding Strategy.

## Navy approves deck trainer

**The Royal Norwegian Navy has confirmed official acceptance of the latest iteration of the portable DECKsim Virtual Reality Trainer supplied by UK systems and software supplier SEA, which is a joint venture partner in Canadian company JSK Naval Support Inc (Booth 806) with Canadian defence systems specialist Kaycom Inc, *writes Lynn Newton*.**

The Royal Norwegian Navy has used the fully integrated flight deck officer (FDO) simulator for five years at its training establishment at Haakonsvern naval base in Bergen. The new man-portable version enables training on board any ship or at any land-based facility.

DECKsim replicates flight decks on ships and oil platforms, and land-based airfield environments for training aircraft handling procedures. It is easily configured for specific airframes, platforms and scenarios.

SEA business development executive Andy McGowan said the system can be tailored to simulate flight deck operations on current and future Canadian Navy platforms, utilising a wide range of aviation assets. He added: "DECKsim harnesses the latest developments in virtual reality technology embodied within a modular system, and users around the world have already benefited from considerable improvements in training effectiveness and the costs of delivering FDO training."

Users of DECKsim have reduced FDO-related live aircraft flying hours by up to 50 per cent, giving a rapid return on investment. The system also enables an environment in which an individual can train in routine and emergency operating conditions, which is impossible with the live platform.

# Partners target future

DAVID DONALD

**On 1 May, CAE and KF Aerospace announced the formation of a new joint venture. Known as SkyAlyne Canada Inc, the JV is a 50:50 partnership between the two companies that together provide all of Canada's military pilot training. The JV has been formed not only to further improve the offering to the Canadian military, but also to pitch for Canada's Future Aircrew Training requirement.**

Having been in discussion for around a year, CAE and KF Aerospace (formerly Kelowna Flightcraft) forged the JV deal this year, and the partnership is already active in developing improvements to the current contracts, which remain assigned to the individual companies.

KF Aerospace has managed the Contracted Flying Training and Support (CFTS) programme system since 2005, handling

the Royal Canadian Air Force's (RCAF's) Phase I primary course at Southport Airport (formerly CFB Portage la Prairie) with Grob G 120A trainers.

Some students remain at Southport for Phase II advanced training in the G 120A before progressing to Phase III multi-engine (King Air C90B) or rotary-wing (Bell 206 and 412CF) courses. Students intended for fast-jet assignment go for Phase II advanced training on the

# Tests aid Sniper move

**Earlier this month, the National Research Council of Canada (NRC) undertook a series of wind tunnel tests in support of a Department of National Defence (DND) programme that aims to qualify the Lockheed Martin Sniper targeting pod on the centreline hardpoint of the Royal Canadian Air Force's fleet of CF-188 Hornets.**

Currently, the pod is carried on the side of the engine trunk – also known as the 'hip' position. Moving the pod to the centreline improves its field of regard, providing an uninterrupted view beneath the aircraft without the need to bank, and improving its sector coverage for air-to-air duties. Weapons employment and battle damage assessment capability will also be improved.

However, moving the Sniper pod to its new location requires a thorough assessment of its effect, if any, on safety throughout the flight regime. In order to evaluate the new pod location prior to flight trials, NRC has constructed

**Sniper is currently carried on the side of the Hornet's intake, but will be moved to the centreline hardpoint**

a mock-up of the Hornet's lower fuselage, including a nosewheel and pylon, with the Sniper mounted. This has been tested in NRC's 2x3m tunnel at the low speeds that would be encountered during take-off and landing, capturing vital load and vibration data. Next month the high-speed effects will be assessed using NRC's 6 per cent scale CF-188 model in a 1.5m supersonic wind tunnel.

Successful trials in these two tunnel campaigns will lead to flight trials at Cold Lake, Alberta, later this year, with airworthiness certification and approval scheduled to be awarded in 2019.

# training

BAE Systems CT-155 Hawks

Beechcraft T-6A/CT-156 Harvard IIs of 2 CFFTS, part of the NATO Flying Training in Canada (NFTC) programme at Moose Jaw. Further Phase IV fighter lead-in training is accomplished at Cold Lake, where NFTC operates CT-155 Hawks.

CAE acquired NFTC in October 2015. Since then the school has performed well, and in April graduated the largest class of newly qualified pilots in its 18-year history. One of the 14 graduates was from Hungary which, along with Singapore, also sends pilots for training at NFTC. NFTC's contract was recently extended to 2023, with an option for a further year. CAE has invested in additional maintenance activities to ensure the fleet maintains its high availability, as well as introducing some upgrades to the simulation devices. The company also operates a number of training centres for front-line types such as the CC-130J Hercules and CH-147 Chinook.

In the mid-2020s, Canada is due to implement its Future Aircrew Training programme. Formerly known as the Future Pilot Training requirement, the project was renamed to reflect an expansion in scope to include all aircrew training needs consolidated into one system. Related roles such as air traffic control could also be included. With its current status and considerable heritage in training that reaches back to the Second World War, SkyAlyne is ideally placed to develop new technologies and solutions for the future training system, which is expected to feature a high degree of networking between training centres.

Fourteen NFTC students pose in front of a CT-156 Harvard II following last month's record graduation

SkyAlyne is an all-Canadian joint venture, an important facet of any potential bid for the Future Aircrew Training programme. For large contracts, the government has outlined the importance of Key Industrial Capabilities (KICs) that should be maintained and fostered in Canada. Fleet sustainment and simulation are two KICs that are associated with the training arena. CAE and KF Aerospace are both major aerospace companies with world-class expertise in these fields, and also work with a substantial network of Canadian SME suppliers.

While current activities focus mainly on the RCAF's current and future training requirements, the SkyAlyne joint venture also forms a major platform from which the companies can pursue export opportunities, offering the best of Canadian training expertise to an international marketplace.

# IN BRIEF

**Fabulous fabrics**
FELLFAB (Booth 736) has developed and manufactured a range of innovative products from technical and specialised textiles for the industrial, aerospace, military, materials handling and transportation markets for more than 40 years. Its Integrated Tactical brand includes a variety of tactical gear, sleep systems, tentage, and inclement weather clothing. FELLFAB is a major supplier to the Department of National Defence Canada and is a member of the Canadian Defence Industries Association (CDIA). The company also supplies the US Department of Defense, the Defense Logistics Agency, the United Nations and the Red Cross.

**Connections assured**
Milrail (Booth 1725) supplies the marine, military, railway and mass transit industries with a wide range of electrical interconnect products. Its technologically innovative products can operate in the harshest environments to the most stringent standards. Milrail meets customers' electronic and electrical interconnect needs in the field, at sea, underground or on tracks with conduit systems, electrical connectors, heat shrinkable and wire and cable products, as well as LED lighting, speciality grounding studs and straps.

# Cyclone team wins flight test plaudit

**A CH-148 Cyclone performs a helicopter in-flight refuelling test during sea trials with the Royal Canadian Navy Halifax-Class frigate HMCS *Montréal* in the North Atlantic**

RICHARD SCOTT

**AHS International has recognised Canada's Department of National Defence (DND) and Lockheed Martin's Sikorsky business for "conducting an extraordinary international effort" to demonstrate flight and shipboard operation of the CH-148 Cyclone maritime helicopter from a Royal Canadian Navy (RCN) Halifax-class frigate.**

Representatives from the Canadian Maritime Helicopter Project (CMHP) Combined Test Force accepted the Leonardo International Fellowship Award during AHS International's annual forum on 16 May. The award cites successful expansion of the flight envelope to Sea State 6 conditions, where waves reached a height of 6m and winds up to 55 knots.

The CMHP Combined Test Force sailed five times into the waters off Nova Scotia from 2010-2017 during late December to early March when the weather conditions produced the necessary wave heights and winds. In total, the team flew 270 hours and performed approximately 975 landings on the flight decks of the RCN frigates HMCS *Montréal* and HMCS *Halifax*.

A combined DND/Sikorsky aircrew demonstrated utility of the aircraft's full authority fly-by-wire flight controls, which can hold the aircraft in a precise hover during high wind states. Other tests included main rotor blade and tail pylon fold, hover-in-flight refuel, maintenance operations, torpedo loading, and ship-to-ship replenishment. These operations also were demonstrated at night with and without night vision goggles.

"The combined industry and government flight test team collaborated fully to demonstrate the CH-148 Cyclone helicopter's anti-submarine and anti-surface warfare missions during some of the roughest winter weather imaginable," said William Falk, Sikorsky CMHP director. "Successful demonstration of strict ship/helicopter capability is required before the Canadian government can deploy this helicopter weapon system."

The shipboard tests were part of a 10-year, 2,800-hour flight test programme that is expected to conclude in early 2019. The Royal Canadian Air Force will take delivery of the last of its 28 Sikorsky designed and built CH-148 Cyclone aircraft by 2021; the CH-148 is replacing the venerable CH-124 Sea King helicopter, which retires this year.

# Complexity simplified

**Rockwell Collins (Booth 1103) has unveiled FasTAK, a new tactical combat targeting system and secure communications gateway for today's digital battlefield, which it is showing for the first time at CANSEC.**

"FasTAK simplifies a complex set of tasks for users, helping them carry out missions more efficiently while remaining agile," said Troy Brunk, vice president and general manager, Communication, Navigation and Electronic Warfare Solutions for Rockwell Collins. "From units on the move to command and control, the system provides reliable, secure connectivity across the battlefield."

The FasTAK solution features a wearable targeting system available in Microsoft Windows and Android operating systems. Using a mobile phone or tablet, the system is populated with easy-to-use applications to arm warfighters with powerful communications data that integrates with existing lasers, radios and GPS devices. The standard system delivers with a fully integrated set of hardware that includes a laser rangefinder, a tactical computer, a video downlink receiver and the FasTAK digital targeting software. The wearable equipment boasts a low weight compared with legacy solutions, with the Windows variant weighing less than 6lb (2.8kg) and the Android variant less than 3lb.

To enable tactical interoperability and digital connectivity with the targeting system, the FasTAK Gateway combines Rockwell Collins' Link 16 terminal, TacNet Tactical Radio and an AN/PRC-162(V)1 Manpack radio into one transportable unit. Datalink processor software, running on simple laptop hardware, manages the datalinks, radio frequencies and data forwarding for the equipment in a light, transportable container.

# Click the button

**Additive Metal Manufacturing Inc (Booth 1005), an independent Canadian 3D METAL service provider that has been operating an electronic warehouse for replacement parts, is expanding its on-demand replenishment capabilities by partnering with DiManEx, a Dutch company providing a cloud-based, end-to-end service for distributed 3D manufacturing. The digital supply platform can be accessed remotely to initiate the production of parts with the click of a button.**

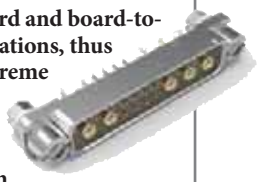
AMM's president Norman Holesh said technology is now allowing companies to free up large amounts of working capital by printing parts on demand, rather than filling warehouses with parts in anticipation of a demand that may never materialise.

A notable partnership was announced recently with the Royal Netherlands Army, which is embedding additive manufacturing (AM) systems within its land systems programmes and to support the missions of its Material Stock Logistics Command. The army has already run a successful pilot on an active combat vehicle for which it has been able to solve problems for spare/service parts, which were no longer available or had become obsolete after buying more than needed to satisfy minimum order quantities.

Colonel and head of innovation at the Royal Netherlands Army, Robert Meeuwsen, said: "This proves that 3D printing and other AM techniques are ready for regular business operations. We hope other organisations will be open to taking this new route as well."

# Joining up

**For equipment manufacturers facing space and weight constraints, French company Nicomatic (Booth 1632) has announced the EMM micro connector. It is suited to both board-to-board and board-to-wire configurations, thus providing extreme modularity with any pin selection available from 4-60 signal contacts.**



Designed to meet the requirements of MIL 83513, Nicomatic highlights its key features as reversed contacts, integrated 90° back protection and interchangeable hardware. Miniaturised and rugged, it offers enhanced electrical and environmental performance.

For companies in urgent need of the Nicomatic products, the new DLMM lightweight, robust and cost-effective connectors are available in just three weeks. These are based on the DMM Micro-D type mix connectors but with a flange and metallised composite shell. This reduces connector weight by 20 per cent and backshell weight by 40 per cent. Importantly, the series provides superior electromagnetic interference protection and performance exceeding MIL-DTL-83513G.

In future, the DMM will be delivered in high-quality black foam for improved protection in shipping and a clipped transparent cover with label for ease of identification, traceability and warehousing.

# Overcoming all obstacles

GÜNTER ENDRES

**Surrey, British Columbia-based ARKTOS Developments Ltd (Booth 1807) is a prolific designer and manufacturer of amphibious craft and barges, providing the highest level of all-round amphibious mobility, particularly while crossing the transition between ice and water.**

Their unique design provides an unsurpassed ability to climb vertical steps from deep water (multi-year ice-floes), operate in mixed ice/water conditions, and manoeuvre through ice-rubble fields, significant side slopes, steep gradients, deep mud, swamp, quicksand and shallow water in all weather, poor visibility and rough seas. They can carry heavy loads and tow equipment such as amphibious barges, disabled boats, life rafts and oil-spill booms.

US Coast Guard approved 52-person Evacuation Craft are located on offshore structures that are seasonally surrounded by ice in the Beaufort Sea in Alaska, and similar-sized Republic of Kazakhstan approved craft are located in the North Caspian Sea. A seismic survey craft is in operation for CNPC in the Bohai Delta, China, and an amphibious response craft, located in Vancouver, BC, is available for demonstration, rent/lease, disaster response and search and rescue. The Canadian Coast Guard has a 25-tonne utility craft.

The latest production craft is the 50-tonne ARKTOS MultiTask Crane Craft, designed to be an amphibious crane, but now primarily used as an ice-breaker. This 'workhorse' is suitable for applications such as oil spill response, pipeline service, ice management, river ice-jam support, ice road construction and maintenance, ice island construction, amphibious tug, cargo carrying, and windfarm services. One such craft, approved by Transport Canada, is in operation at Fort McMurray, Alberta.

Under development are a self-righting evacuation craft and smaller and faster air-transportable/air-droppable craft. These are being designed to be air-transported by the Lockheed Martin C-130J and the Boeing Chinook, by lifting each unit separately.

# Breathe easy

SAM J BASCH

**UK-based Avon Protection Systems (Booth 521) is showing its newest generation of powered air purifying respirator against chemical, biological, radiological and nuclear (CBRN) threats, the Avon CS-PAPR, alongside some of its other high-end products.**

According to global marketing director James Wilcox, the

## IN BRIEF

**Tested to the extreme**

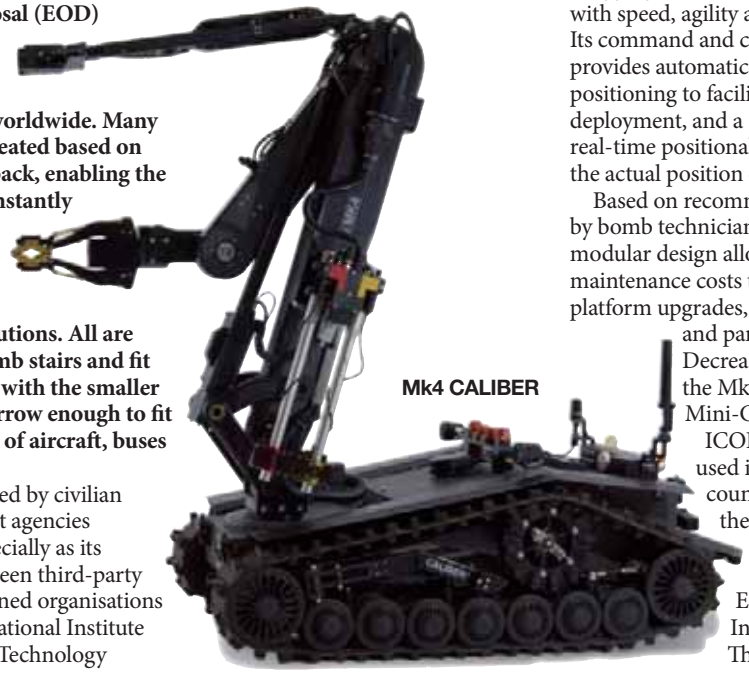
Nanowave Technologies (Booth 1531) supplies the defence market with the very latest radio frequency (RF) and electro-optical (EO) technologies for radar systems, secure communications, and command, control, communications, computers, intelligence, surveillance and reconnaissance ($C^4ISR$). Its systems are tested to the extreme in rugged military applications and, with deployments ranging from space to the deep ocean, are said to perform flawlessly in mission-critical situations, exceeding expectations for performance and reliability in harsh environments.

Nanowave also supports its defence market customers by repairing and upgrading legacy systems. It provides depot-level repairs to products that are no longer supported by the original manufacturer.

# Robots save lives

**Ottawa-based ICOR Technology Inc (Booth 532) manufactures high-quality, innovative and cost-effective robots, tools and equipment for explosive ordnance disposal (EOD) and SWAT communities and HAZMAT requirements worldwide. Many products are created based on customer feedback, enabling the company to constantly work on developing new and sometimes customised solutions. All are designed to climb stairs and fit into doorways, with the smaller models also narrow enough to fit down the aisles of aircraft, buses and trains.**

ICOR is trusted by civilian law enforcement agencies worldwide, especially as its products have been third-party tested by renowned organisations including the National Institute of Standards in Technology (NIST) and the US Department of Homeland Security (DHS). In addition, the National Tactical Officers Association (NTOA) has tested and recommended ICOR's Mini-CALIBER robot and Tactical Search Pole Camera.



Mk4 CALIBER

The largest and most powerful robot in the CALIBER family is the Mk4, with a lifting capacity of 200 lb (90kg) and said to have unprecedented towing and dragging capabilities coupled with speed, agility and dexterity. Its command and control unit provides automatic preset positioning to facilitate rapid deployment, and a 3D avatar offers real-time positional feedback on the actual position of the robot.

Based on recommendations by bomb technicians, the robot's modular design allows for reduced maintenance costs through easy platform upgrades, field repair, and parts replacement. Decreasing in size are the Mk3, T5 and Mini-CALIBER.

ICOR robots are used in more than 30 countries, including the USA, Canada, the UK, Saudi Arabia, Egypt, China, India, Japan and Thailand.

company has spent five years in close co-operation with end-users to develop the next generation of modular CBRN respiratory protection. "Our focus on providing the wearer with lighter, modular and fully integrated solutions is evident in the AvonAir range," he explained. The new systems are substantially smaller and quieter than traditional powered air units, while offering enhanced protection against toxic industrial chemicals and, important for the military, there is ease of weapon sighting and integrated communications.

The new AvonAir range is the first adaptive powered air system capable of being configured to match changing operational conditions and includes the EZAir power module, the FM54 mask, the MP-PAPR and the CS-PAPR. "The ability for the customer to configure systems depending on operational needs dramatically lowers their cost of ownership and maintenance," said Wilcox.

To meet the constantly changing nature of threats to international security, resulting from terrorism, cyber-attacks and nuclear proliferation, Avon is focused on delivering customised end-to-end security solutions, all underpinned by expert analysis, innovation and operational experience. Wilcox highlighted the greater integration with legacy equipment and the interchangeable components, which allow for multiple, rapidly assembled protection level configurations to accommodate changing threats.

# Reducing project risk

**Montreal-based Marinvent Corporation (Booth 805) provides consulting, services, training, tools and intelligence property (IP) to reduce customers' programme/product risk, cost and schedule and to help them innovate quickly. Its engineers, experience, Transport Canada DARs (Design Approval Representatives), flying avionics test bed, research simulator and IP make it a trusted partner for the planning and management of projects of all sizes and complexity.**

Marinvent's worldwide customers include aircraft OEMs, integrators, Tier 1 and Tier 2 companies and governments. Its solutions include Synthesis, a purpose-built, web-based, software tool suite developed to plan, optimise and manage the execution of complex programs; Dynamic Non Linear Display (DNLD) technology, a set of algorithms that allow the display of rapidly changing graphical information; reticle technology, which provides tactical display operators with greater situational awareness to improve their effectiveness in challenging and dynamic operational environments; sensor fusion methodology, particularly for dissimilar sensors with heterogeneous spatial and temporal characteristics; and the Airfoil Performance Monitor (APM).

APM, developed to address a main safety concern of loss of aircraft as a result of icing, was launched last November, when the company was selected to deliver the technology to the National Research Council of Canada (NRC) for evaluation. APM provides real-time data to the pilot and avionics systems to indicate the margin to stall remaining for any airfoil under all contamination conditions. This additional information allows the aircraft to be flown in the optimum configuration for minimising fuel consumption and maximising performance during all phases of flight, while providing substantially increased safety margins when operating in icing conditions.

# Flexibility to order

GÜNTER ENDRES

**Making its debut here is the new Sentry Multi-Purpose Vehicle (MPV) from Toronto-based INKAS Armored Vehicle Manufacturing (Booth 1815).**

The Sentry MPV with its 'pick-up truck' style rear bed was developed to add more flexibility and customisation options, while still maintaining the superior protection and comfort of previous versions. Using mission-tested solutions, INKAS has designed a vehicle able to adapt to any environment. Lighter than the traditional Sentry APC, combined with advanced off-road capabilities, the Sentry MPV can get on site faster, making it an ideal solution for first responders, law enforcement, SWAT, and border control agencies.

The new Sentry can accommodate four to six people including the driver, and the configurable seating arrangements allow occupants to operate the MPV while maintaining all tactical positions. Whether it is used for transport and maintenance operations, rescue and medical evacuations, personal transport or surveillance, the Sentry MPV is flexible to suit any mission. The powerpack consists of a 6.7-litre V8 diesel developing 362hp coupled to a six-speed automatic transmission. It is armoured to Level BR7 ballistic standards.

A range of tailored options is available, including a 360° turret, an acoustic hailing speaker, an electronic winch, night vision, escape hatches, a front-mounted plough or barrier system for obstacle clearance and crowd control, wire mesh reinforced windows, a siren, a public address system, emergency lights, and complete engine bay and mechanical component armouring.

Custom observation systems include data collection, high-powered observation with trunk-mounted scope, complete elimination of all running lights, and external view cameras with a 360° field of view. The capabilities of the newest Sentry model also include signal jamming, detection of firing sources with positive identification in under one second, and protection against nuclear, biological and chemical weapons.

# Defying the darkness

**Harris (Booth 901) is a world leader in mission-critical solutions, which include networked and distributed tactical communication systems, night vision systems, and associated engineering and training services, to meet the advanced needs of the Department of Defense, special operations forces and first responders around the world.**

Featured here at CANSEC are its tactical night vision devices and image intensifier technology for enhanced threat detection and mission performance, on which warfighters in the US and in 99 countries around the world rely. Harris has led the night vision industry for more than 50 years, producing more night vision devices than all its competitors combined. Its latest innovation, the F5032 Lightweight Night Vision Binocular, answers the challenges of size, weight and power (SWaP). It increases warfighters' low-light capabilities, while introducing close focus range – giving soldiers superior near eye clarity.

**F5032**

Also highlighted are the Falcon III RF-7800M-MP Multiband Networking Manpack Radio (MNBR), and the RF-7800I Tactical Networking Intercom System, which is interoperable with the Falcon tactical radios, as well as other military, government and commercial devices.

The RF-7800M-MP provides secure voice and high-speed wideband and narrowband data on the move. With reliable ground-to-air communications and interoperability with fielded airborne platforms, the MNBR also leverages the Harris Mid-Tier TDMA Networking Waveform (M-TNW) for high-speed networked data at unprecedented rates.

Legacy interoperable and future-proof with built-in software update features, the RF-7800M-MP incorporates an anti-jamming device and a GPS receiver, which enables real-time situational awareness for increased troop safety and targeting accuracy.

The RF-7800I Tactical Networking Intercom System is the smallest, lightest, most power efficient intercom system available. It is customisable and reliable for any vehicle on any mission, delivering a network backbone for integrated dismount, tactical operations centres, maritime and vehicular communications, as well as voice and data connectivity among crew members. It has seamless interoperability with military and public safety tactical radios.

The system delivers clear voice and data between crew members within the confines of military vehicles travelling in harsh conditions.


**RF-7800M-MP**

# Situational awareness covered

**German company LS telcom (Booth 230) is a global leader in spectrum system integration delivering spectrum and electronic warfare hardware, software, system integration, training, mentoring and consultancy requirements. The company has provided solutions to more than 70 government organisations and supports its clients' product portfolios with through-life support including operational, engineering and maintenance expertise.**

Its wide range of products and systems, based on ease of compatibility and interoperability with legacy national systems, includes LS OBSERVER Surveillance systems, which enable large areas to be quickly and electronically mapped. The collected data can be archived and used historically to deliver intelligence 'trends analysis'. The sensors come in various forms – fixed, transportable, mobile, portable – and can all be networked into a 'grid'. They can be fitted to land, maritime and air platforms.

LS OBSERVER: airborne monitoring

LS telcom's SPECTRA software package supports spectrum planning, allocation, technical frequency and interference analysis, licensing and billing to national and international coordination. Special applications include white space management, dynamic spectrum access, special event planning and online (e-/mobile) licensing.

SPECTRA can be accessed on-site or via a cloud-based application. SPECTRAmpt covers all areas of electromagnetic spectrum operations from spectrum management, frequency assignment/allotment, policy, host nation and international coordination and electronic warfare operational planning. Spectrum 'Situational Awareness' of the electronic environment allows any changes to the RF spectrum to be identified using Auto Violation Detection, further allowing the identification and/or cueing of other sensors and effectors.

# Detecting threats beneath the waves

**Ontario-based Deep Trekker (Booth 1633) is presenting its range of remotely operated vehicles (ROVs) developed to aid the discovery and disposal of threats often hidden in underwater locations, either as discarded evidence, contraband, or mines and explosives placed to cause destruction. Its various systems offer safe alternatives to the use of divers.**

DT640 Mag Crawler

The DTG2 and DTX2 combined with advanced sonar allow threat detection in water with little to no visibility, both from shore or by divers in the water. This enables real-time inspection of ships, ports and harbours, as well as having open water applications in explosive ordnance identification.

The DTPod surveillance camera can be used to offer constant monitoring of ports and harbours below the waterline. Designed to be permanently mounted, this robotic system offers 360° visual monitoring of critical infrastructure.

Security of ships is ensured by the DT640 Mag Crawler, using its magnetic wheels to crawl along the hull of the vessel and detect hidden contraband below the waterline using both camera and sonar technology.

All of Deep Trekker's systems are equipped with internal batteries and a handheld controller, providing a portable and easy to use robotic system designed to protect civilians and military personnel from harm.

With sales in more than 80 countries, Deep Trekker robots can be found in industries ranging from aquaculture to municipal contracting, military, search and rescue, shipping, infrastructure and more.

DTX2 4k camera

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**Soucy Defense Division (Booth 1032 and Outdoors 3030), the leading manufacturer of rubber tracks for the defence and security markets, is showcasing its Composite Rubber Track (CRT) technology on a Leopard 1 Main Battle Tank, to publicise the advancement in its research and development on vehicles in the 45-tonne+ category.**

Made of top grade 5 pure rubber, reinforced Kevlar and polymer products, and continuous robust steel cabling, rubber tracks are said to provide an array of benefits over steel tracks in the most extreme battle and environmental conditions.

Highlighted by the company are a 50 per cent reduction in weight, 70 per cent less vibration, up to 13.5dB noise reduction, up to 25 per cent less fuel consumption, reduced braking distance, mine blast and fire protection, as well as twice the durability of steel tracks through the use of nanotube technologies.

Soucy has met clients' requirements in at least 10 countries worldwide, for vehicles ranging in weight between

6 and 45 tonnes. Canada, Norway and the UK have used CRT operationally in Iraq and Afghanistan.

The company's tracks have been thoroughly tested by armies across the world and most recently by

## A billion bullets

**Cesaroni Technology Inc (CTI, Booth 724) has been providing lead-free frangible bullets to all major ammunition manufacturers since the mid-1990s. In that time, the company has provided more than one billion bullets to defence and law enforcement users around the globe, including Canada's Department of National Defence (DND) and the US Department of Defense, for both CQB training and tactical operations.**

The company is expanding its product lineup to include a number of 300AAC Blackout, 9mm and 5.56x45 variants, as well as several shotgun projectiles. The product line ranges from .22LR to .50BMG and includes all popular pistol and rifle calibres in both copper-jacketed and unjacketed styles comprising 4.6mm, 5.56x45, 9mm, .40S&W, 7.62x39 and 7.62x51 calibres. Shotgun projectiles include both spherical buckshot and slug designs for 12-gauge applications.

When combined with lead-free primers, Cesaroni's bullets provide a true 100 per cent lead-free alternative to reduced lead and encapsulated lead ammunition. They also offer a number of advantages over other lead-free designs, said to include reduced ricochet, reduced splashback, improved accuracy, improved robustness and increased lethality.

# Stealthy approach

the UK MoD's Armoured Trials and Development Unit (ATDU). ATDU, supported by BAE Systems and Soucy Defense Division, put a Warrior Infantry Fighting Vehicle (IFV) through a wide-ranging trial that covered 5,000km.

"The Composite Rubber Track's increased traction… improves mobility and reduces engine workload – this reduced fuel consumption by as much as 25 per cent," were some of the findings quoted by ATDU.

# Trained for operational readiness

**Calian Group (Booth 1213), a diverse Canadian company offering professional services in the areas of health, IT, training, engineering and manufacturing, is also one of the largest training partners of the Canadian Armed Forces (CAF). It continues to grow and strengthen its relationship with the Royal Canadian Air Force (RCAF), having supported the RCAF with highly specialised training and engineering services for approximately 15 years.**

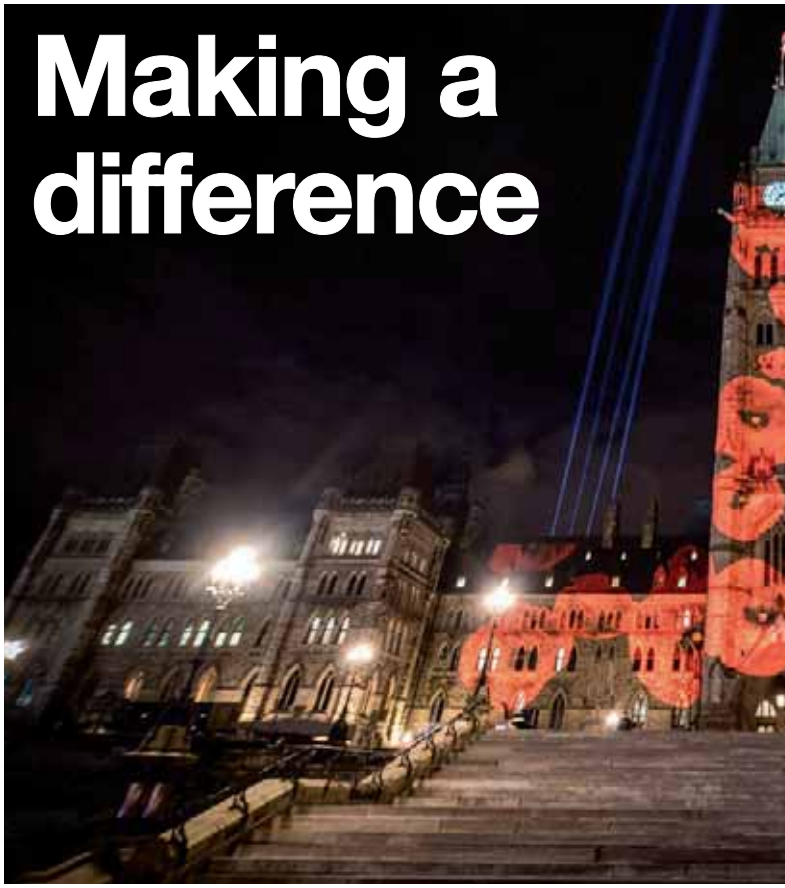
The company provides aircraft maintenance and repair training services for the Canadian Forces School of Aerospace Technology and Engineering (CFSATE) at CFB Borden, and e-learning courses for RCAF students at the Canadian Forces School of Communications and Electronics (CFSCE) at CFB Kingston.

Earlier this year, Calian renewed an engineering services contract with the RCAF in support of its Airworthiness Program, providing specialised aeronautic services in 66 different categories to help ensure Canada's military fleet flies safely and effectively. Recently, the RCAF selected Calian Training to design, develop and deliver e-learning courses for the RCAF Learning Support Centre in a wide range of subject areas from aircraft mechanics to aircraft safety.

Calian is a long-term partner to the Department of National Defence. Calian Training has provided operational readiness and other training services to the Canadian Armed Forces for more than 20 years, and for 13 years, Calian Health has supplied critical health support services to CAF members at bases across the country.

At CANSEC, Calian is releasing a groundbreaking new video that takes viewers inside the Canadian Army Simulation Centre at CFB Kingston, with footage and interviews that bring to life some of the company's mission-critical training services with the CAF.

# Making a difference



**In the 1990s, The Royal Canadian Legion was seeing a new generation of veterans coming forward with unmet needs. At the same time, with increased awareness and research coming out about modern disability practices, rehabilitation, and integration of veterans into civilian life, it was becoming clear that the existing system of taking care of ill and injured veterans was not working.**

From early 2000, the Legion was advocating a shift from a programme-based system of benefits and supports to a needs-based system that could respond and adjust to the unique requirements of ill and injured veterans and their families.

Over a four-year period, an advisory panel, which included seven veterans' organisations and was called the Veterans Affairs Canada – Canadian Forces Advisory Council, explored the challenges, needs and systems in place for Canada's ill and injured veterans. At the heart of discussions: the support provided to veterans through The Pension Act of 1919. Initially developed as a system of financial compensation and programmes awarded on a percentage basis of level of disability, it needed to be adapted to meet the changing and diverse health and wellness needs of ill and injured veterans transitioning into civilian life. It did not, for example, directly address two essential elements of supporting illness and injury: quality of life and opportunity to enjoy a meaningful role in society.

The New Veterans Charter (NVC) was introduced by the government in 2006. On cursory review by the members of the Advisory Council, the NVC offered a number of benefits that The Pension Act did not provide. These included additional financial benefits, disability benefits, rehabilitation services, health services, education assistance, and job placement assistance. The new benefits not only addressed financial support but also continuing care and quality of life.

The Legion and the other veterans' organisations initially supported the NVC but early on identified gaps and flaws and made recommendations for

# The earlier the better

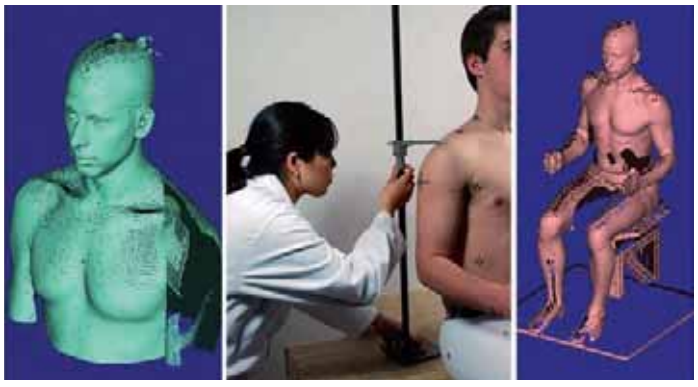
**Military service routinely demands performance under extreme conditions that puts soldiers and their clothing and equipment under high levels of stress. Successful equipment procurement, therefore, requires a full and correct understanding – at the outset – of the needs of users and the challenges under which the equipment will be used.**

Essential human factors expertise to meet these challenges is provided by HumanSystems Inc (HSI, Booth 503) throughout the buying cycle, to support evidence-based procurement decisions that mitigate risk, improve equipment effectiveness and reduce overall costs. The earlier the better, the company says.

Product expectations given to potential suppliers must reflect likely user challenges to ensure the best product is chosen in a rigorous, comprehensive and fair evaluation process. For example, if durability in wet conditions is not a stated need made to suppliers, and if testing reveals such a weakness, rejection of a product based on such a test result may not be supported. A comprehensive tender is the first step, followed by testing and evaluation to ensure the final choice will meet challenging conditions. The choices made must be supported by traceable evidence that can be called upon in the result of a dispute.

The company is undertaking a load carriage study on behalf of the Directorate of Soldier Systems Program Management (DSSPM). The primary purpose is to validate the use of an X SENSOR Pressure Mapping System in the evaluation of load carriage by comparing the pressure profile of two weighted rucksack designs during a walking task. Participants will be asked to complete a total of eight five-minute walks (5.6km/h) on a treadmill while wearing a pressure mapping sensor system and one of two rucksacks weighted with a 20kg load.

The results will be used to validate the use of the pressure mapping sensor system in evaluations of load carriage, body armour, and other equipment worn over the torso by Canadian Armed Forces soldiers.



change. In fact, since 2006, the Legion has passed 18 resolutions advocating to government specific improvements to the NVC. But progress has been excruciatingly slow since, and it has become clear that there are massive deficiencies in the Charter as Canada's veterans return from conflicts in dire need of support.

The Legion continues to lobby the government for care, support and lifelong financial security for ill and injured veterans and their families. Its positions are based on the knowledge it has gained through direct and extensive one-on-one support of thousands of veterans every year, research and work with organisations that specialise in veteran health and care issues, consultation with veterans' groups and senior military officials, and input from tens of thousands of member veterans through the Legion's resolution process.

The Royal Canadian Legion is committed to doing the work needed to ensure the care and benefits provided to Canada's veterans are the best they can be and that all governments honour their obligations to the men and women who serve in the Canadian Armed Forces.

From supporting the Invictus Games to advocating research into a controversial drug prescribed to soldiers, 2017 at The Royal Canadian Legion Dominion Command was full of activity. As the country's largest veterans' support organisation, the Legion promoted remembrance, provided programmes to help veterans receive needed support, and performed good works in communities across Canada.

More than 35,000 people attended the national Remembrance Day ceremony at Ottawa's national war memorial. For the second year in a row, the Legion held a nightly virtual poppy drop, projecting images of falling poppies on the centre block on Parliament Hill (*pictured*) during the remembrance period.

As part of the Legion's yearly commitment to remembering Canadians on active duty, almost 5,000 care packages were sent overseas for Canada Day and as part of the Canadian Armed Forces' Operation Santa Claus.

# A shelter for all situations

Command and control centre

Comfort in the harsh winter months

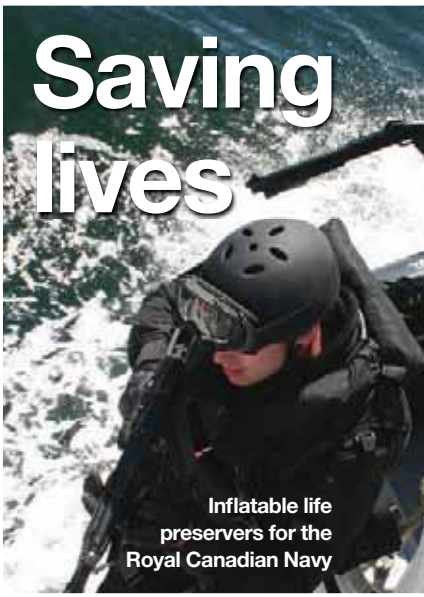
**Weatherhaven (Booth 1206) manufactures and installs redeployable shelter systems for use in remote sites in more than 50 countries around the world. Its portable shelters and camp systems facilitate comfort and operational effectiveness for military organisations, from the Canadian Armed Forces to Special Forces and international military customers.**

Weatherhaven's line of expandable containers provide an ideal space for a command and control centre and they can be set up quickly in rugged field conditions and on uneven terrain. They protect sensitive electronic equipment from the elements, as equipment is stored in the centre core of the expandable container and does not need to be removed from the unit during set-up or tear-down. They have also been used to create workshops, support systems and military camps. For example, the Canadian Forces deployed a 2,000-person Weatherhaven camp in Afghanistan, which was transported to site via air and sea, and designed to provide comfort in Kabul's harsh summer and winter months.

The containers and shelters can be outfitted with customised electrical packages, including outlets and data ports for radios, computers and other equipment. They also allow for over-pressurisation of the unit to protect against dust and other contaminants such as chemical, biological, radiological and nuclear (CBRN) agents.

In addition to serving the military, Weatherhaven's product line provides field hospitals, mobile clinics, and emergency response shelters, and is also involved in the commercial market.

**Tulmar Safety Systems Inc (Booth 1724) is a designer and manufacturer of protective equipment and survivability solutions for the aerospace and defence markets worldwide. The company's products range from highly specialised protection equipment for military vehicles, to inflatable life support and**



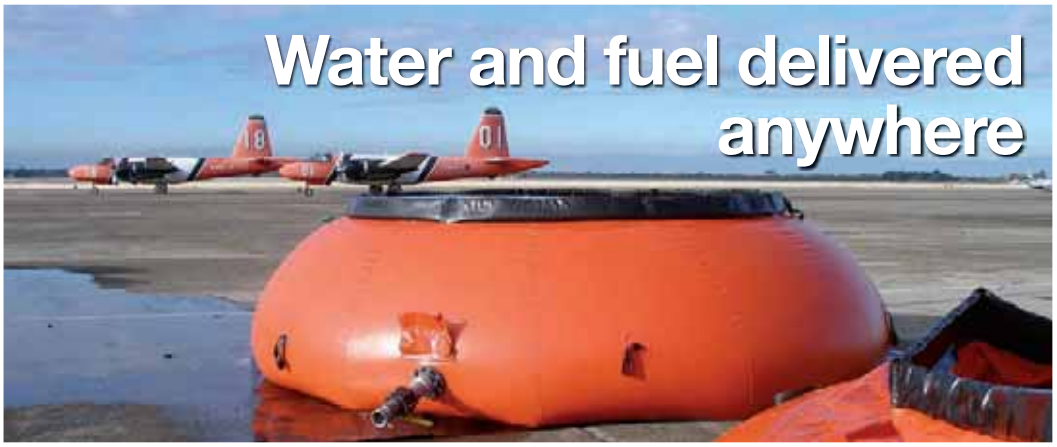

Inflatable life preservers for the Royal Canadian Navy

## IN BRIEF

**Trusted supplier**

Simex Defence (Booth 910) is a provider of defence-related procurement and distribution services in aerospace, land, and marine applications. Since its launch in 1994, the company has grown to become a major distributor of military parts and has become a trusted provider of procurement and distribution services to the defence industry.

At the end of March, Simex Defence was awarded a major contract to supply antennas, waveguides and related equipment in support of the Medium Support Vehicle System (MSVS) project to field Standard Military Pattern (SMP) vehicles. Among other items, Simex Defence will supply antennas for the Defense Advanced GPS Receiver (DAGR) units and headset microphones for the vehicle IRIS communication suites.




**SEI Industries Ltd (Booth 729) is best known for its invention of the world-famous Bambi Bucket that has been used by helicopter operators to drop water on forest fires since 1982. Today, operating from its manufacturing facility at Delta, British Columbia, SEI provides 45 high-quality, task-specific products to customers that include government agencies, the military, the United Nations, humanitarian peacekeeping and relief agencies, and a diversity of commercial enterprises in 110 countries around the world.**

Since January 1983, the company has specialised in the design, manufacture, marketing and commissioning of structural engineered fabric products and related systems to the aviation, remote site logistics supply, environmental, and firefighting industries. Other SEI capabilities include pumping/filtration design and manufacturing, and technical problem-solving involving new-generation, high-strength, lightweight fabrics, and state-of-the-art power generation and liquid transfer systems.

Among its products, apart from the unique Bambi Bucket, are the collapsible Bulk Aviation Transport Tank (BATT), available in 20 different sizes and used in aircraft from the small Twin Otter to the much larger Boeing 737 to deliver bulk fuel to remote locations with little infrastructure, such as Canada's north; Premo and Dragon fire ignition, fuel handling and storage; and Fireflex ground firefighting water containment tanks that have been providing wildland and rural firefighting organisations with water, where access to natural sources, such as lakes, is limited.

**flotation products for defence and aerospace applications and specialised training equipment sold to airlines around the world.**

Protective covers and stowage equipment designed and built by Tulmar are in service on Canada's fleet of LAV and Bison armoured vehicles and other military vehicles in North America and abroad. High-performance fabrics produced to military specifications and the latest in bonding technology are used to enhance water resistance and extend product life. Tulmar also produced tarpaulins for the MSVS MILCOTS truck sustainment programme, under contract to Navistar Defence. Tulmar developed replacement tarpaulins that incorporate product improvements – better fit, more secure attachments and increased abrasion resistance.

Tulmar's inflatable shelters include features that make them ideal for use as standalone command posts or to control access to command post vehicles. Translucent roof panels act as skylights, providing natural light for daytime operations without the need for windows, which could compromise privacy. Interconnecting panels can be used to join shelters of the same size end to end. These interconnecting panels incorporate a watertight zipper system, allowing the shelter system to be used in any configuration, regardless of weather.

# Setting the standard

**Having finalised the acquisition of Vector Aerospace from Airbus last November, StandardAero (Booth 1921) now has more than 6,000 employees in 42 locations across five continents, with annual revenues of around US$3 billion.**

When announcing the acquisition, StandardAero chief executive Russell Ford said: "We are excited to join forces with the Vector team in becoming one of the largest MRO [maintenance, repair and overhaul] companies in the world. Our combined organisations are better positioned to provide the industry with more global services, expanded MRO capabilities and operational benefits to deliver faster, higher quality solutions to our combined customers worldwide. We look forward to joining together with the Vector leadership and employees as we begin to integrate our two organisations."

Last month, StandardAero Component Services (SACS) announced that it has unified its Jet Aviation Specialists (JAS) and PAS Technologies brands under the SACS name. StandardAero acquired JAS, a Miami-based component repair shop, in February 2017 and in May last year the company acquired PAS Technologies, a high-technology components provider with three US sites and locations in Romania and Singapore.

Now owned by Veritas Capital Fund Management LLC, the StandardAero Group offers extensive MRO services and custom solutions for business aviation, commercial aviation, military and industrial power customers. Services include MRO for aircraft and rotorcraft engines, auxiliary power units and components; airframe services including major alterations; FAA authorised avionics capabilities; comprehensive engineering services; and custom exterior and interior design, completion and paint. It provides these capabilities through its network of specialised facilities and mobile service teams.

# Catching malicious cyber traffic

**Last month, intelligence-led security company FireEye (Booth 126) introduced SmartVision Edition, a threat detection product that is designed to detect malicious traffic moving laterally within an enterprise network. Unlike perimeter defences, such as next-generation firewalls and secure web gateways, Smart-Vision Edition uses advanced network traffic analysis to catch threats moving east-west within the network.**

Every day, FireEye is in the front line against cyber attacks, conducting investigations, gathering intelligence and tracking adversaries. Its product teams build solutions based on this knowledge, and frontline experts refine these solutions in real-world situations.

SmartVision Edition is designed to counter techniques used in real-world attacks and reduces the risk of data theft, including stolen passwords, intellectual property and corporate data. It exposes attackers and their techniques by providing visibility into suspicious lateral traffic and detecting malware designed to steal data.

The system combines four primary components that work in concert to detect malicious lateral movements: an advanced analytics and correlation engine; 120+ post-breach detection rules based on Mandiant insights into successful attacks; detonation capabilities for suspicious files and objects that move laterally over Windows SMB networking traffic; and a machine-learning data exfiltration module.

"Having the ability to detect suspicious lateral network traffic is a critical component to a complete defence-in-depth security posture," said Jason Martin, executive vice president of global engineering and security products at FireEye. "Today's attackers can bypass firewalls at ease, and once inside the network, they are extremely adept at maintaining a persistent presence within a network. FireEye SmartVision gives our customers newfound visibility into attacks, which decreases time to detection, thereby enabling earlier remediation to reduce the impact of a breach."

# Concept to combat

**For 40 years, DEW Engineering and Development (Booth 1111), a trusted Canadian defence partner, has engineered and manufactured essential equipment for army, air force, navy and police services. In what it calls from 'concept to combat', it transforms ideas into field-proven products.**

The company's products are wide-ranging, from military protection that can be found on many vehicles; to ballistic door panels on police cars; military-grade integrated shelters to meet roles such as command posts, field kitchens, medical and dental offices and vehicle maintenance workshops; a multitude of military trailers; air and water heaters; and the D900 multifuel military-grade snowmobile (*pictured*), the only snowmobile of its kind.

Services provided by DEW Engineering and Development include bid management; complex project management; design, development, testing, modifications and certification of engineering solutions for civil and defence markets; metal and composites manufacturing; in-service support; and vehicle systems engineering, modification and integration of wheeled and tracked vehicles.

# Digging for gold

**Doosan company Bobcat (Booth 1930 and Outside 3042) is presenting a wide range of products, headed by the new R-Series compact earthmoving excavators from 2-4 tonnes for markets in Europe, the Middle East and Africa.**

The compact excavators present the latest stage in the diversification of the Bobcat portfolio. The range of five models – the E26, E27z, E27, E34 and E35z – offers a best-in-class combination of high digging forces, stability and smooth controllability of working functions, complemented by low weights for easy transportation.

The R-Series utilises newly developed flexible machine platforms that allow different configurations of models and specifications to suit a wide range of applications and customer needs, and offering greatly enhanced operator comfort and functionality and the best fit for key applications.

Numerous innovations include an all-around visibility cab and minimal effort joysticks, which offer further enhanced controllability and smoothness of working functions.

The operator also benefits from up to five independent auxiliary hydraulic circuits and a new industry-unique Selectable Auxiliary Control system for customisable joystick controls. The E26 model also includes a cylinder-inside-boom design concept for maximum hydraulic cylinder protection.

The company is also celebrating the 60th anniversary of the world-famous Bobcat loader. Over the past 60 years, Bobcat's commitment to outstanding quality, workmanship and innovation has helped it to maintain its market leadership. According to the company, every other skid-steer loader sold today is a Bobcat machine.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# Staying safely within reach

**Earlier this month, Garmin (Booth 235) introduced its inReach Mini, a small but powerful two-way satellite communicator.**

This new product is a smaller and more compact satellite communicator with available two-way messaging and a 24/7 SOS function, when it is combined with an inReach subscription to access the Iridium satellite network.

Measuring just under 4in tall by 2in wide, and weighing only 3.5oz, the inReach Mini can be easily carried in a backpack, boat, aircraft or glove box. In addition, customers do not need to worry about poor reception or being within range of a cell tower – the inReach Mini works anywhere when using the Iridium satellite network.

As with all inReach devices, in an emergency, the user can press the SOS button, which transmits a distress signal to GEOS, a 24/7 International Emergency Response Coordination Center. GEOS will track the device that triggered the SOS, notify the proper contacts and send the necessary emergency responders to the exact location. GEOS will deliver a confirmation that help is on the way and continually update the user on the status of the response team. GEOS will advise the user's emergency contact of the situation.

## Connecting with eyes shut

**Fischer Connectors (Booth 525), a global connectivity solutions provider for high-performance circular connectors and cable assemblies, is displaying new technologies and new solutions to issues with wearable tech in the military.**

One of the products on show is Fischer Connectors' Freedom Series product.

Officially launching in June, the completely new technology offers a much-needed improvement in functionality and durability for connections on a wearable system application. The Freedom Series of connectors uses an all-new patented connection architecture that allows an easy blind mating, even with gloves, with no need to focus on proper 'keying' to make the connection. The new LP360 connector is designed to speed up installation and deployment of systems, while still providing a durable sealed connection to protect sensitive electronic components.

Fischer Connectors is a proven partner in building connectors and cable assemblies that are tested and approved for sustained use in harsh military environments of every kind.

## Buying power

**Following its recent purchase of Extravision Video Technologies of Quebec, ADGA Group (Booth 906) has bought Ottawa-based Presidia Security Consulting, a specialist in executive protection, risk mitigation, emergency preparedness, training and security programme management.**

ADGA employs more than 800 staff, who apply their knowledge and expertise to service delivery of advanced technology solutions in Canada's defence, security and enterprise computing markets.

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