

REGIONAL REPORT





ALBERTA

As Alberta's economy continues to reel from COVID-19 lockdowns, economic dislocation, and cancellation of the Keystone XL pipeline, increased investment in defence & aerospace could help boost the province's economy.

BY PETER DIEKMAYER

In Alberta, when it rains, it pours. The province, which has been hit hard by COVID-19 lockdowns and resulting economic dislocation, recently learned that newly-elected U.S. President Joe Biden's Administration was cancelling the proposed Keystone XL pipeline. The news could not have come at a worse time.

"These developments signal the continuing and growing need for Alberta to diversify and rebuild its economy," says Kimberley Van Vliet, founder and CEO of WaVv and an organizer of ConvergX. The ConvergX conference enables aerospace & defence players to create synergies with stakeholders in the energy, technology, and other sectors. "One good way to accomplish that would be for governments to prioritize new investment."

Van Vliet should know. Working on the ConvergX conference, which will be held virtually for the first time in early April, provides her with front line access to policy-makers from organizations ranging from the Royal Canadian Navy to the Royal Canadian Air Force, Joint Task Force 2, as well prestigious speakers - such as L3 Harris robotics team.

THE KENNEY GOVERNMENT

Premier Jason Kenney and the Alberta government are leading the way. Late last year public sector officials asked Van Vliet to act as director of aviation, aerospace and logistics at Invest Alberta, a newly formed organization designed to help attract investment to the province. The move came shortly after the release of a strategy document which identified strong potential in aerospace and defence. This knowledge-based, high-tech, value-added sector contributes \$1.3 billion in revenue to the province's economy, 5,000 jobs (excluding airlines and airports) and exports 40% of its products and services. Niche opportunities that were identified ranged from robotics to defence electronics, space science, manufacturing, maintenance, repair and overhaul (MMRO), and logistic support.

Invest Alberta appears to be taking a business-like approach to its mandate. "They are hiring contractors instead of public sector employees, in order to be able to better draw on targeted knowledge," says Van Vliet. "They are also moving fast, opening offices to foster an international presence." Cynics would say that the province's considerable



strengths will make Van Vliet’s “sales job” easy. Alberta houses four major military bases, innovative universities, labour force availability and a corporate tax rate that approaches 8% in many cases.

A GROWING UAV INDUSTRY

The Alberta government is also forming a new advisory council to foster developments in the aerospace industry. The idea is to build on one of the province’s most important geographical advantages: its vast open skies, which are increasingly being leveraged to train domestic and international air assets at sites such as CFB Cold Lake, one of two Canadian bases that hosts the lion’s share of its CF-18 fleet.

The Foremost Unmanned Air Systems Range located in Southeast Alberta has become a hot spot for companies that wish to conduct beyond visual line-of-sight (BVLOS) test flights on UAVs, a \$40 billion global market which provincial officials are eyeing closely. Van Vliet notes that Alberta, which accounts for between 75-80% of UAV use in Canada and houses more than 70 companies, military agencies and educational institutions engaged in various forms of activity, is on par with the Americans in many key areas.

Alberta UAV stakeholders point to exploding global use by “nefarious” actors in places ranging for Azerbaijan, to Syria and the Middle East which are using cheap commercial drones and weaponizing them.

NATO defence forces, including Canada, are building up UAV capabilities, which could spark a significant increase in training in Alberta which would in turn create additional work for its local supply chains.

PERATON WORKING WITH THE CAF

Peraton has been providing complete avionics management and support for Canada’s fleet of CF-18 fighter jets for more than three decades and is a perfect example of a major Alberta company looking forward to benefiting from increased federal and

provincial government prioritization of the defence sector. Last year, both Saab AB and Boeing announced that Peraton would be a key partner in their Future Fighter Capability Project (FFCP) bid, which would create thousands of long-term jobs, including many in Alberta.

Peraton’s experience in managing the CF-18 supply chain, includes oversight of 94,000 SKUs of largely government-owned parts and materiel stocked at Peraton’s warehouses across the country. This core capability — amongst Peraton’s others of MRO and engineering solutions — will come in handy in any Future Fighter in-service support effort. According to Greg Nelson, Director of Canadian operations at Peraton, the company has considerable experience in another key area: supporting the Department of National Defence with its increasingly tough non-core mandates, during a time of strained resources.

For example, Peraton is contributing to an RCAF Fighter Force Maintenance Capability renewal plan which is working to streamline maintenance operations. First line squadron maintenance processes will continue to be done by people in uniform. However, second line avionics and shop repair work currently performed at CFB Cold Lake and CFB Bagotville, is being transitioned to Peraton’s 76,000 square foot Calgary facility. This considerable effort is being undertaken during a year which has seen many challenges from which Peraton



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Airspace Awareness

Unmanned Traffic Management (UTM)

Airspace Awareness

Camera Module

Digital Aeronautical Information

VCSi is a next-generation software-based command and control system for unmanned vehicles

continues to steadfastly meet its contract obligations. “We have managed to keep all of our staff employed, despite the pandemic related challenges,” said Nelson. “Many of our people are teleworking (30%), while the rest are working on-site or at customer facilities to ensure seamless support to the RCAF mission.”

Nelson, who joined Peraton following a successful 35-year career in the RCAF, is in many ways the perfect choice to help foster Peraton’s continued success in supporting Canadian fighter operations. Benefiting from experience which saw a series of tough RCAF mandates from time as Squadron Aircraft Maintenance Engineering Officer to Canadian Liaison Officer for the CF-18 fleet, provides Nelson with intimate knowledge of the RCAF’s Concept of Operations. That knowledge will also come in handy following Peraton’s U.S. parent’s recent announcements of acquisitions totaling more than US\$10B which include the IT and mission support services division of Northrop Grumman and Perspecta, a major government IT services firm. Many of the resulting, added capabilities can be successfully marketed in Canada.

SKYSENSUS WINS

Peraton received further good news late last year when Transport Canada, in collaboration with NAV Canada, put out a

call for proposals for innovators to set the requirements for, and the deployment of, an air traffic management ecosystem within Canada. As a result, Project SkySensus, a Peraton-funded and led R&D initiative designed to fulfill its Industrial and Technical Benefits obligations, was selected to conduct service trials for the “Remotely Piloted Aircraft Systems (RPAS) Traffic Management (RTM) system. The selection was a natural one for SkySensus, an alliance of Alberta companies which includes Canadian UAVs, AERIUM Analytics, and UxS Consulting, whose key mission is to research, develop and commercialize Beyond Visual Line of Sight (BVLOS) capabilities centered at the living lab of Foremost Unmanned Aerial Systems test range in southern Alberta.

RTM Services Trials is an air traffic management ecosystem of services within Canada. The systems manage RPAS tracking, remote identification and conflict resolution within Canadian airspace. To achieve these trials, SkySensus will align with Unify to provide and demonstrate the majority of RPAS ecosystem aspects features. These trials will derive value from the deployment of Unify’s Broadcast Location and Identification Platform (BLIP – a form of Remote ID) as well as the collection of rich data sets to inform the performance levels with each of their objectives. SkySensus’ involvement with the RTM trials, which has been a big success for

Alberta adding 45 high value jobs to the local economy, could provide a template for similar R&D projects in the future.

CANADIAN UAVS WORKING WITH TRANSPORT CANADA

Many Canadian defence companies leverage technologies that spur both civilian and defence applications. This makes such investments highly practical during tough economic times. Canadian UAVs, which in addition to its military offerings also provides surveillance, monitoring and training for a range of commodity-based businesses, utilities and government agency applications, does just that.

The company is best known in defence circles for its participation with Peraton in the SkySensus initiative, which was spawned under the Innovation, Science and Economic Development (ISED) Canada’s Industrial and Technological Benefits policy to advance BVLOS missions in unmanned aerial systems for both civilian and military operations. Their ground-based radar that provides Detect and Avoid capability will enable the development of advancements in unmanned systems operations, airworthiness standards and training.

Canadian UAVs’ military role provides excellent synergies with the oil sands sector, where it provides clients with facility monitoring in real time enabling them to



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reduce costs, increase environmental integrity, enhance the safety of operations, and improve asset monitoring. The company uses a Lockheed Martin Indago 3 drone for the oil sands mandate which is loaded with a remote inspection/ surveillance, data acquisition system that includes significant innovations says Sean Greenwood, Canadian UAVs' CEO. These include state of the art marine-grade radar, computer vision, analytics, and situational awareness structures that enable it to function in civilian airspace.

"We are the only Canadian company that addresses all the key requirements of a modern, forward-looking unmanned systems capability," says Greenwood "These include airspace integration, operational airworthiness, and data analytics." Canadian UAVs' win, in October 2020, of the first successfully executed unmanned aerial system operation in commercial airspace led to Transport Canada's approval for a BVLOS operation, which will provide increased opportunities in the mining sector, which is expanding its use of fully autonomous trucks.

Indeed vehicle automation is driving a corresponding increase in the use of UAVs, which reduce the per meter cost of regularly monitoring roads, terrain, water resources, security and other factors that is required as part of the permitting process. "It's really exciting," said Greenwood. "We already have commitments for next year to do even bigger programs with even bigger aerial vehicles."

The industrial mandates are providing Canadian UAVs a priceless ability to build operational experience in conducting BVLOS operations, which in the past could only be accumulated in restricted areas. This in

turn facilitates faster iterations in Canadian UAVs' ongoing regulatory cooperation with Transport Canada. "There are a lot of opportunities for us and the province," says Greenwood. "So, we are glad that governments are helping us take the lead." In all, Canadian UAVs now employs 28 high value added workers and interns, and the company is projected to conduct another hiring spree during the coming months.

NEW TECHNOLOGY FROM CDL SYSTEMS

A key focus for Lockheed Martin CDL Systems during the coming year relates to its goal to "equip the 21st century war fighter" for "Joint All-Domain Operations (JADO)" which mesh air land, maritime, cyberspace, and space domains. "We are evolving to address near peer threats by synchronizing weapon systems," says Steve Fortson, Lockheed Martin CDL Systems' senior program manager & general manager, a long-time U.S. Army Reservist who has been with the Lockheed Martin since 1998. "We have new technology coming into play in the future related to alternative navigation technologies and 3D mapping."

Lockheed Martin CDL Systems' Calgary offices' contribution to the Lockheed Martin group's vision has been the development of an open, standards-based, widely-used and commercial off-the-shelf platform known as VCSi (Vehicle Control Software), a next generation system that was tested on flights at Canadian UAVs' oil sands mandate last year. The ITAR free (the source of "i" in VCSi) ground control station platform, which can



According to Terry Manion the recent merger will enable the group to deliver the world's most advanced capabilities in aerospace and defence



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be installed on a laptop or small tablet, has been in development for several years and is being marketed in Canada and exported internationally.

According to Fortson, Lockheed Martin CDL Systems' products are designed on low-cost, interoperable, open architecture systems that can support civilian and military applications around the world. The company recently agreed to contribute to Team Artemis, a consortium that is bidding on the Canadian Department of National Defence's (DND) upcoming Remotely Piloted Aircraft System (RPAS) project, which will include associated equipment, weapons, infrastructure, and in-service sustainment capability.

A MAJOR MERGER FOR RAYTHEON

Officials at Raytheon Canada, whose parent company merged with United Technologies last year, have been particularly on their toes. According to Terry Manion, the Canadian unit's vice-president and general manager, the teaming will enable the group's 60,000 engineers to deliver the world's most advanced capabilities in aerospace and defence faster and more efficiently than ever before.

Raytheon Technologies' Canadian operations alone now combine approximately 8,500 employees in associated companies. These include Collins Aerospace Canada and Pratt & Whitney Canada and Raytheon Canada itself, the three of which can now provide a broader portfolio of aerospace, defence and security offerings which will help address a key challenge facing DND: the need to foster greater interoperability with joint force assignments with allied coalitions."

Raytheon Canada's office in Calgary is already identifying new synergies and sharing technologies across the corporation, the benefits of which are expected to flow directly to its customer base. "The challenges confronting sector stakeholders are as complex as ever before," says Manion. "We are (thus) accelerating development of a number of break-through technologies including hypersonics, directed energy, avionics and cybersecurity for commercial aerospace and defence."

Overall, the main takeaway heading into 2021 appears to be the sense of determination, "sang-froid," and flexibility with which Alberta aerospace and defence stakeholders are confronting the latest challenges. Most businesses continues to operate despite the lingering pandemic restrictions. The University of Calgary, which conducts specialized defence research at its vision and robotics labs and space program, did cut live classes until fall but this has not affected work in defence sector areas, which is in large part handled by PhD. students. Other researchers continue to plug along, as is DND. Lieutenant-Colonel Douglas (Doug) MacNair, a spokesperson, notes that the Canadian Armed Forces intend to conduct a modified version of the highly popular Maple Resolve exercise this year. However officials are constantly monitoring the situation and will adjust accordingly. ■

Peter Diekmeyer is CDR's Quebec Bureau Chief



Canadian UAVs uses a Lockheed Martin Indago 3 drone for its oil sands mandates

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BVLOS Training for NATO Class I, II, and III RPAS

BVLOS/ Detect and Avoid

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Led by Peraton Canada for SkySensus Project to advance unmanned aviation

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