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Beginning this spring, the A220's range will allow Air Canada to add two new non-stop routes: Montreal-Seattle, Wash., and Toronto-San Jose, Calif. **Tom Podolec Photo**

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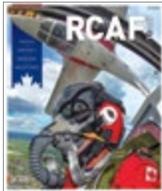
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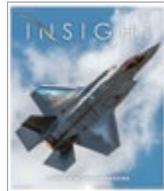
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Social Snap

The Airbus CC-295 fixed-wing search and rescue aircraft maintenance trainer (AMT) arrives at CFB Greenwood, N.S., on Jan. 30. **Leading Seaman Louis-Philippe Dubé Photo**

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Living in uncertain times



LISA GORDON

Lisa Gordon is editor-in-chief of *Skies* magazine, Canada's largest and most-read aviation industry publication. Contact her at lisa@mhmpub.com.

As I write this, the first month of our brand new decade is in the history books. So far, 2020 has been anything but dull. Collectively, we've stepped off the brink into a year where uncertainty and excitement are like twins competing for parental attention.

The 2019 Novel Coronavirus, first identified in China in late December, continues to gain momentum. On Jan. 30, the World Health Organization (WHO) declared the outbreak a global public health emergency as the number of cases continued to multiply at an astronomical rate.

Efforts to contain the virus are sending shockwaves through the aviation industry, as one airline after another suspends service to China. As of Feb. 2, the Public Health Agency of Canada was leading the charge at Canada's biggest international airports (Toronto, Montreal and Vancouver), where passenger screening measures had been increased and public information was being disseminated about what to do in the event of illness.

Also on Feb. 2, the federal government announced it had chartered a plane that would deploy to Hanoi, Vietnam, where it would await clearance to land in Wuhan, China. There, it was to pick up Canadian citizens looking to flee what is known as Ground Zero of the coronavirus outbreak. Global News reported on Feb. 2 that as many as 543 Canadians in China had registered with consular officials, and 325 of those were asking for help to get out of the country. Once the chartered government aircraft leaves China, it will reportedly deliver its passengers to CFB Trenton, Ont., where they will be kept under observation for two weeks.

Meanwhile, uncertainty hangs like a shadow over The Boeing Company, which continues to struggle with the task of returning its 737 Max family to the air. With new president and CEO David Calhoun at the helm, Boeing

has promised complete transparency moving forward. On Jan. 29, the aerospace giant reported its first full-year net loss in more than two decades. But that \$636 million loss is nothing compared to the astronomical \$18.4 billion price tag that has been affixed to the 737 Max grounding as a whole. With the Max targeted to return to the air in mid-2020, Boeing is hoping it is on the brink of recovery from what is likely the worst crisis in its 103-year history.

Not to be outdone when it comes to uncertainty, Bombardier released a dismal preliminary fourth quarter and full year financial report on Jan. 16. In it, the Montreal-based OEM said it is "reassessing" its future partnership with Airbus to produce the A220 airliner. Bombardier – which has systematically been selling off its commercial aviation assets in order to focus on making business jets and railcars – promised to provide more information on Feb. 13 when it releases its final financial report.

In the meantime, news broke on Feb. 4 that Bombardier was reportedly in talks to sell its business aviation unit to rival Textron Aviation. Further details were not available at press time.

On a more positive note, proponents of electric commercial aviation are feeling even more certain about the concept after Vancouver-based Harbour Air and MagniX logged the successful first flight of an electric-powered DHC-2 Beaver in December. The feat attracted worldwide attention and Harbour Air CEO and founder Greg McDougall told *Skies* he doesn't feel it will be too hard to achieve certification by demonstrating the electric propulsion system "is as safe or better than the technology we're currently using."

There's no doubt this decade will bring further milestones as battery technology continues to evolve, and smaller and lighter units will open the door to even more exciting possibilities.

Also on the West Coast, folks at 19 Wing Comox, B.C., are most certainly happy about the arrival of the Airbus CC-295

aircraft maintenance trainer (AMT), a plane that will be used to instruct Royal Canadian Air Force maintainers on Canada's new fixed-wing search and rescue platform. This program milestone is significant, and will help Comox build capability ahead of the first aircraft's arrival mid-year.

Finally, mankind is on the brink of travelling further into space than ever before with the Lunar Gateway. Led by the U.S., Canada is participating in this project which will see the construction of a space station in the lunar orbit. Our task is to build the Canadarm3, a smart robotic system that will be capable of "manning" the Lunar Gateway even when humans are not present. The first module of the project – which will one day be a stepping stone to Mars – is set for completion in 2022 and the new space station will be in operation by 2026. Exciting, indeed!

Amidst all the uncertainty 2020 has brought so far, we at *Skies* are sure of one thing: There is no shortage of amazing stories being generated by all of you in Canadian aviation and aerospace. We're privileged to tell them. 🇨🇦

“Amidst all the uncertainty 2020 has brought so far, we are sure of one thing:

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Aiming higher: Promoting safety in air taxi operations



GLEN WHITNEY & HEATHER PARKER

Glen Whitney is senior air investigator and Heather Parker is senior human factors investigator at the Transportation Safety Board of Canada (TSB).

The air taxi sector provides a diverse array of aerial services to Canadians.

Whether it be transporting patients to hospitals, providing search and rescue support, or delivering food, equipment, and passengers to small communities, the vital air links developed by this aviation sector have helped Canada build and sustain its population.

However, there is also a more troubling side to the sector: the air taxi segment has more accidents, causing more fatalities, than all other sectors in commercial aviation in Canada combined.

UNDERSTANDING THE PROBLEM

To determine the underlying reasons for such an elevated toll, the Transportation Safety Board of Canada (TSB) conducted a four-year study of air taxi operations in Canada. We examined over 700 occurrences, analyzed approximately 300 hours of recordings, and interviewed 125 individuals from the air taxi sector and from Transport Canada. By interviewing such a wide segment of the industry — people whose backgrounds included medevac, floatplane and helicopter operations — we determined that the answer was partly because of the nature of the work.

This wasn't that surprising; air taxi pilots often have no set schedule and fly into remote areas in uncontrolled airspace with few or no aerodromes; flights tend to be shorter, resulting in more takeoffs and landings; and weather

exposes smaller aircraft to challenging work conditions, as these aircraft typically fly at lower altitudes and over rugged, coastal, or northern topography.

But the larger reason for so many accidents boils down to two things: an acceptance of unsafe practices, and the inadequate management of operational hazards. Simply put, certain practices have become accepted as the “normal” way to conduct business.

As these unsafe practices become more ingrained in the culture of the sector, and as flights are carried out successfully (though not necessarily safely), the associated risks become just “part of the job,” and therefore difficult to detect and reduce.

BALANCING COMPETING PRESSURES

Like any business, air taxi operators face competing pressures — pressures that they must balance in order to deliver a service, stay safe, and also stay economically viable. But those pressures are always shifting, pushing operations toward certain boundaries (see Figure 1).

In the first two frames, you can see the three competing pressures, and what operations look like when they are in relative balance. In the third frame, you can see that the pressures are out of balance, and the flight is operating at the margin of safety, where there is an increased risk of an accident. In the final frame, the flight is operating outside of the safety margin, where the likelihood of an accident is greatest.

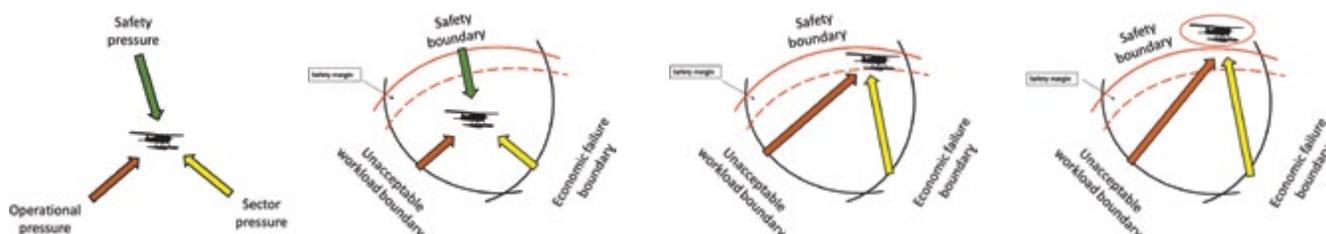
NEW TSB RECOMMENDATIONS

To increase the safety pressure, the TSB issued four new recommendations in its report on air taxi safety. The TSB recommended that:

- Transport Canada (TC) collaborate with industry associations to develop strategies, education products, and tools to help air taxi operators and their clients eliminate the acceptance of unsafe practices;
- industry associations promote proactive safety management processes and safety culture with air taxi operators to address the safety deficiencies identified in this safety issue investigation through training and sharing of best practices, tools and safety data specific to air taxi operations;
- TC review the gaps identified in this safety issue investigation regarding Subpart 703 of the *Canadian Aviation Regulations* and associated standards, and update the relevant regulations and standards; and
- TC require all commercial operators to collect and report hours flown and movement data for their aircraft by *Canadian Aviation Regulations* subpart and aircraft type, and that TC publish those data.

If Transport Canada and industry take action on these new recommendations, as well as an additional 22 TSB recommendations previously aimed at this sector, that will go a long way to raising the bar on safety for the air taxi industry in Canada. 🇨🇦

Figure 1. Competing pressures facing air operators.





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The cannabis conundrum: Are 'edibles' a dopey idea?



KEN POLE

Ken Pole has had a life-long passion for aerospace, writing about all its aspects for nearly 40 years. The longest-serving continuous member of the Canadian Parliamentary Press Gallery, he's also an avid sailor.

To be clear off the top: Yes, I have smoked marijuana. Decades ago and only once, it happened at the end of a long day on a federal election campaign media bus. Someone produced a joint at the end of a long day and “when in Rome. . . .”

In hindsight, it was a dopey move – pun intended. I wasn't a smoker and the next day, my throat felt like I'd been chugging razorblades. I haven't touched it since. Another confession: I did try a briar pipe in my youth, hoping to look intelligent. Friends and family said it didn't work!

Seriously, while society as a whole continues to wrestle with the persistent challenge of alcohol abuse, we now add cannabis to the list of things to avoid when climbing into an aircraft's

‘Cannabis use is especially problematic with the advent of “edibles” such as cookies and chewable candies.’

cockpit or cabin as well as when doing maintenance work, etc.

It's especially problematic with the advent of “edibles” such as cookies and chewable candies which contain THC. That doesn't stand for “The Healthy Choice” and it is not a candidate for the Canada Food Guide. Rather, it's tetrahydrocannabinol, the tongue- and mind-twisting psychoactive element in marijuana which acts much like the body's natural cannabinoids. THC attaches to cannabinoid receptors in areas of the brain associated with, among other things, pleasure. Hence “getting high.” But it also can induce hallucinations and delusions as well as potentially impairing motor skills for several hours after an “edible” intake.

The U.S. National Highway Traffic Safety Administration reports that as a psychoactive substance, THC is second only to alcohol detected in motorists – but unlike alcohol, it so far is hard to “breathalyze.” Checking a smoker can be straightforward because that form of cannabis tends to stink. Not so much the flood of other ingestibles which are now legal in much of Canada but are, parenthetically, an issue when entering the U.S. or the dozens of other countries which maintain a hard line on drugs of any kind.

As people become more accepting of cannabis, they should know that edibles can have quite different effects compared to smoking a joint. Rather than resulting in an immediate hit through the lungs, it can take much longer to manifest itself as it travels through our gut, and the effects can be persistent.

That's bad enough in a car and even worse when there are only two wheels and two dimensions to manage. Aircraft and airport operations obviously take it, literally and figuratively, to a whole other level.

It's seven months or so since Transport Canada addressed the issue in an Aviation Safety Letter, in which it set out a policy prohibiting flight crews and controllers from consuming cannabis for at least 28 days before going on duty.

Built on a *Canadian Aviation Regulations* fitness for duty requirement and based on “the best available science,” the Transport directive does not preclude operators imposing even stricter rules.

So, with that in hand, I asked the Canadian Air Transport Security Authority (CATSA), the Air Canada Pilots Association (ACPA) and Transport for a sitrep. My principal question was whether there have been any disciplinary actions not only against air crews but also ground employees and high-flying passengers.

CATSA, to give it its due, is not mandated to confirm “impairment of passengers or airport workers.” It pointed out in an email that its priority is “the highest levels of security” for travellers. However, when staff do encounter “problematic” passengers or airport workers, “they are trained to handle these situations in order to proceed with the screening process.” If a situation can't be “defused,” it added, police and/or the carrier are called in and when something that's outright illegal is involved, just the police.

ACPA's response was minimal. “As the policies/procedures surrounding cannabis and flight crews originate with Transport Canada and Air Canada, they are best positioned to comment if you have not reached out to them already.”

I had. Transport pointed me back to the June 2019 policy which, it said, “supports safe recruitment into and return to flying through successful treatment of Substance Use Disorders and other health conditions previously treated with cannabis.” It also pointed out that civil aviation medicine only tests for drugs when diagnosing and treating conditions such as the aforementioned disorders.

That said, “no enforcement measures have been taken to date since the . . . policy came into effect.” Hopefully, it'll remain that way because the obvious long-term risk clearly isn't worth a short-term reward, no matter the form in which the stuff is ingested. 🍪



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Tony Kern is one of the world's leading authorities on human factors in aviation. A former lieutenant colonel in the U.S. Air Force (USAF), he served as chief of the USAF Human Factors Steering Group and has authored eight books on professionalism inside and outside of aviation.

“

Do you remember what it felt like when you became a member of this industry?”

It's a question I routinely ask audiences to expose the gap in passion between our formative days and ... sometime later. I usually follow up by asking them to think of two or three times when they felt most alive and fired up about their profession.

The answers are varied, but tend to run in three directions. The first is a *tough challenge overcome*. Perhaps an emergency well handled, or an unpopular decision that turned out to be the right one – in other words, competence and courage under pressure. The second invariably is about *taking someone under their wing and becoming a mentor*, supporting a person who was struggling and helping them to regain their footing. The third is a bit more vague, but I would use the words

“The authentic joy you feel when you help someone else provides a booster shot of passion.”

turning point, representing isolated events when something happened that changed our professional direction.

Over the holidays, I sat and pondered these questions about my own journey. I ended up behind door number three – the turning point.

I'd been a jet jockey for Uncle Sam for a dozen years when it happened. On a routine night training sortie, two of my former students misdiagnosed a high-speed buffet as a stall indication, and executed a perfect staff recovery into the mountains of southern Texas on a moonless night. I had lost friends before, but this one was more personal. Deep reflection led me to change my focus from tactical excellence to human factors; and as a form of therapy to overcome the event, I began to write. A line from the foreword of my second book, *Flight Discipline*, sums up the “why” behind my new direction.

“I've been to too many funerals.”

Fast forward two decades, and I've worked with scores of aviation companies and addressed tens of thousands of industry professionals. Fatal mishaps are now rare (although still occurring too frequently). Now, it's not the physical deaths that haunt me. It's something more sinister and less visible: *the slow death of passion, and along with it professionalism, for many in our industry.*

Don't read me wrong here; the influx of young professionals has given our industry a much-appreciated breath of fresh air and enthusiasm. But the greybeards among us know that they are entering at a perfect time. Wages are up, the economy is booming, and upgrades and promotions are fast. We also know that our industry runs in cycles, and the good times are not guaranteed to last. So, I believe now is the time for the totality of the aviation world to recommit, fuel our passion, and achieve the levels of professionalism we will need when the wheel turns next.

To do so, let's take the historical wisdom offered by advice from the field at the top of this article.

1. Be ready for the tough challenge.

We've heard from those who cite this event – when handled successfully – as a moment when the passion returned and they felt most alive. But they also tell us that readiness is a combination of serious preparation and constant vigilance. Take your training seriously, and learn from every flight hour you log (or your non-pilot equivalent)!

2. Take someone under your wing.

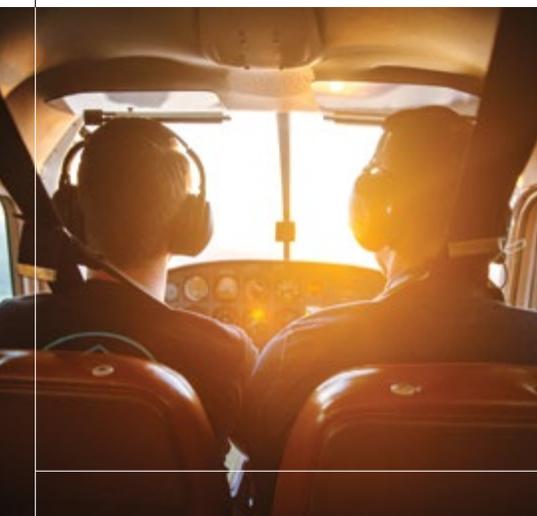
As I state repeatedly in *Going Pro*, the door to the highest levels of professionalism only open in one direction – outward. Once you have mastered the art of honest self-assessment and routine continuous improvement, share this skill with others. Go out of your way to assist someone who is new, different or struggling. The authentic joy you feel when you help someone else provides a booster shot of passion. Mentorship can become addicting in a very good way, leaving a piece of your legacy in everyone you influence and creating a professional ripple effect of which you may never know the true impact.

3. Recognize and leverage turning points.

When I share my story, the loss of two former students is a clear and unmistakable turning point. But turning point opportunities abound in our industry. Do I accept the position as a safety officer I've been offered? Change equipment? Take a risk and move to a new domicile to advance my career? Do I take night classes to gain a new skill or certification? Almost any choice that causes you to stop and reflect is a potential turning point capable of fuelling your passion.

At the dawn of a new decade, let's make 2020 count by rediscovering the joy of our industry and raising the bar of professionalism across the board!

Work smart, stay safe. ✈



SKIES DAILY TOP 10

HERE'S A RECAP OF OUR 10 MOST POPULAR ONLINE STORIES SINCE OUR LAST PRINT EDITION WAS PUBLISHED.

1

BATTLE CONTINUES OVER COCKPIT VOICE RECORDER DATA OF FLIGHT AC 624

Legal battles surround an Airbus A320-211 cockpit voice recorder nearly five years after the aircraft crashed in Halifax.

2

SAAB GRIPEN E: DARK HORSE

Saab firmly believes it has a compelling offer to make in Canada's procurement program to replace its aging fleet of CF-188 Hornets.

3

QUIET CEREMONY MARKS FIRST DELIVERY OF RCAF CC-295

The Royal Canadian Air Force took delivery of its first Airbus CC-295 fixed-wing search and rescue aircraft on Dec. 18.

4

AVIATION COMMUNITY SAYS GOODBYE TO FERN VILLENEUVE

Lt. Col (Ret.) Joseph Armand Gerard Fernand "Fern" Villeneuve, first leader of the RCAF Golden Hawks, passed away on Dec. 25, 2019.

5

MEET CAPT JUDY CAMERON, AIR CANADA'S FIRST FEMALE PILOT

Cameron was hired as Air Canada's first female pilot and began as a second officer on the Boeing 727 at the age of 23.

6

BOMBARDIER CONTEMPLATES LEAVING A220 PROGRAM

Bombardier has warned investors that it may exit its joint venture with Airbus to produce the A220.

7

LONGVIEW POSITIONING TO BE INNOVATION LEADER

The company is examining possible opportunities to modernize its 23 aircraft types.

8

REMEMBERING AVIATION LEGEND RUSSELL BANNOCK

Bannock's legendary contributions to Canadian aviation are without parallel and his loss is sorely felt across the industry.

9

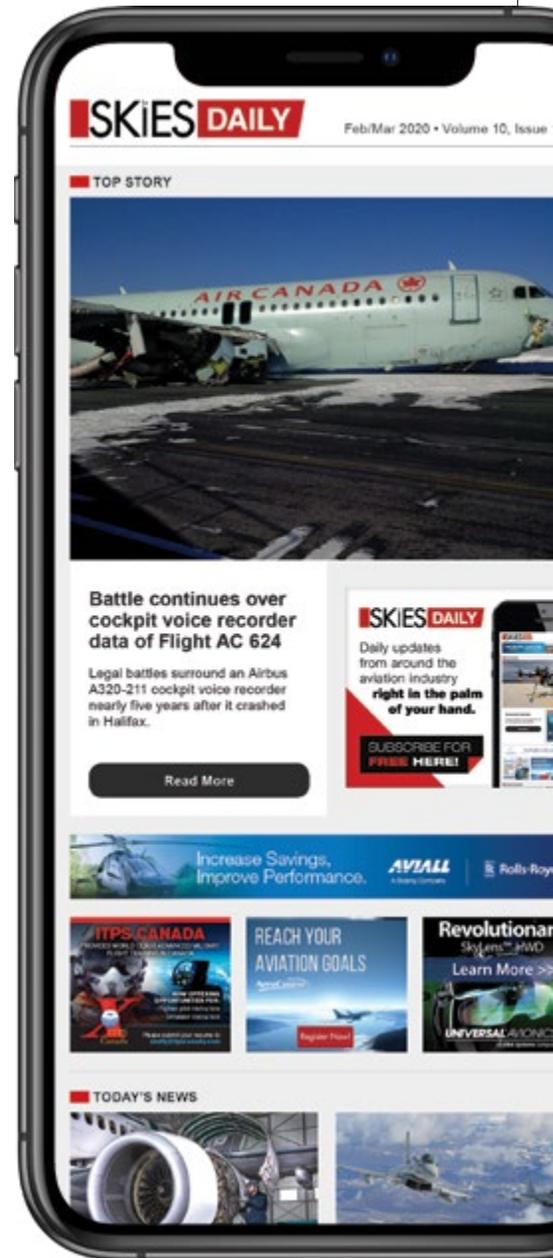
AIR CANADA INTRODUCES ITS INNOVATIVE INSURGENT: THE AIRBUS A220

In early January, Air Canada gathered media and guests to unveil its new, Canadian-made Airbus A220.

10

MAX DISRUPTION: HOW THE 737 MAX GROUNDING HAS AFFECTED CANADIAN OPERATORS

The three Canadian airlines operating the Boeing 737 Max have learned to be flexible since the aircraft's grounding.



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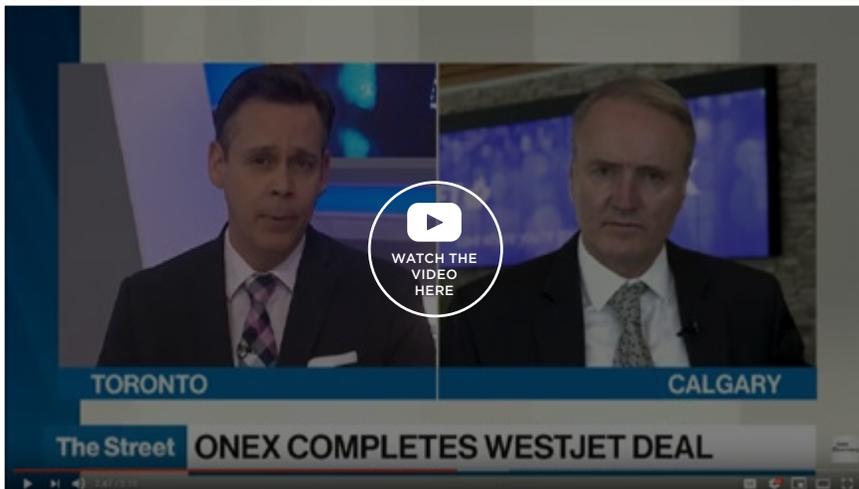
**AVIATION
INDUSTRY NEWS**

LIFT OFF: Boeing's 777X logs a successful first flight.

PRIVILEGED? Battle continues over CVR data from AC 624.

DELAYED: Snowbirds team deals with 2020 training delays.

WestJet CEO focused on 'competing hard'



The addition of Boeing's twin-aisle 787 Dreamliner in 2019 meant WestJet could make plans to start competing aggressively overseas. **Rinat Haque Photo**

With Onex's acquisition of WestJet in the rearview mirror, Ed Sims is concentrating on developing the airline's transborder and transatlantic market share.

BRENT JANG | AIRLINE NEWS

When Onex Corp. completed its \$3.5-billion acquisition of WestJet Airlines Ltd. in December, it marked a major milestone in the carrier's history. The Toronto-based private equity firm,

led by billionaire Gerry Schwartz, paid \$31 a share for Calgary-based WestJet. Including the assumption of WestJet's \$1.5-billion in debt, the enterprise value of the transaction totals \$5 billion.

WestJet chief executive officer Ed Sims, who leads the airline with 14,000 employees, said he's looking forward to collaborating with Onex.

"These are deeply intellectual people who are going to add an awful lot of structuring and financial horsepower to the capability we already have in the organization," said

Sims in an interview with *Skies*. "It's a formidable combination to bring these two organizations together."

Sims, who was born in Wales, has an eclectic background.

He graduated with a degree in English from Oxford University in 1985 and has worked in the tourism and aviation sectors for more than 30 years, with experience in Britain, Europe, Australia and New Zealand before arriving in Canada.

Sims left air navigation service provider Airways New Zealand to join WestJet in May 2017 as commercial vice-president. He has been WestJet's CEO since March 2018, taking over from Gregg Saretsky, who had served in the top job for almost eight years.

WestJet has steadily expanded from humble beginnings, launching with three used Boeing 737-200s in February 1996, and staffed by employees called WestJetters.

Today, WestJet not only has its mainline



WestJet CEO Ed Sims.
WestJet Photo

operations, but also oversees regional flights through Encore and Link, as well as discount carrier Swoop.

The 737-200s in a single-class cabin are long retired, but newer versions of the single-aisle 737 aircraft continue to serve as the airline's workhorses. After concentrating on Canada for its first eight years, WestJet branched out into the United States in 2004.

Over the years, Canada's second-largest airline added turboprops to its regional fleet, notably the Bombardier Q400 (now known as the De Havilland Dash 8-400).

The addition of Boeing's twin-aisle 787 Dreamliner in 2019 meant WestJet would make plans to start competing aggressively overseas, including on routes where Air Canada and foreign rivals have been flying with varying degrees of success.

WestJet's expansion has been bolstered by its rewards program and credit card affiliation that targets frequent fliers willing to pay for premium class seating.

"The network that we fly, if I think of the 42 cities that we now serve in Canada and 27 cities we now fly in the U.S., the network itself is more business and more premium-oriented," said Sims.

WestJet's fleet includes Boeing next-generation (NG) aircraft such as the 737-700 and 737-800.

"We now carry what I would call a premium economy rather than a business-style service on board all of our NGs, as well as the new Maxes."

The grounding of Boeing's 737 Max jet program in March 2019 created significant scheduling complexities for carriers worldwide, and WestJet was no exception. WestJet had been operating 13 Boeing Max 8 planes before the grounding, which followed two deadly crashes within a five-month span.

"Lesson number one for us has been just how challenging it is to get the world's

regulators on the same page," said Sims. "This is not the first time an aircraft type has been grounded. But it's the first time an aircraft type has been grounded in the era of social media."

On Jan. 21, WestJet announced it had removed the Max from its flight schedule through to June 24, 2020. This adjustment was made following a statement by Boeing in which the OEM revised its service re-entry estimate to mid-2020. WestJet said it has managed to complete more than 98 per cent of its planned departures even while its 13 Max aircraft have remained parked.

For his part, Sims is focused on the path ahead after WestJet faced an array of labour issues amid unionization drives over the past couple of years.

"I've had a lot of time in heavily unionized environments in other airlines and I see a fantastic opportunity to move away from discussing issues that divide us to actually negotiating on the interests that unite," said Sims. "The potential for unions to attract their members and the potential for WestJetters to feel 100 per cent comfortable, and no sense of misalignment of being part of a union and being a loyal WestJetter – that has taken us some time."

The Canadian Transportation Agency gave regulatory approval to Onex's WestJet purchase in December, reminding the private equity firm to stay onside with requirements that WestJet and Swoop continue to adhere to Canadian ownership rules. Non-Canadians are allowed to own up to 49 per cent of the voting interests in a Canadian carrier, and a single foreign investor is allowed to own a maximum of 25 per cent.

Chris Murray, an analyst with AltaCorp Capital Inc., said the CTA's insistence on regulatory compliance, including the composition of Onex's board of directors, doesn't appear onerous.

Sims said WestJet will be competing hard in 2020, hoping to increase its market share among air passengers. Its domestic slice of the pie has been around 34 per cent recently, while nearly 20 per cent on transborder into the United States and less than 10 per cent on transatlantic.

"We're now carrying one in three Canadians on our domestic services, and we carry a significantly lower share of Canadians on transborder services and lower again on transatlantic," said Sims.

"Our vision under Onex is that we can match our transborder and our transatlantic share, to be lifted to those levels of domestic," he said. "I think that's a huge opportunity." ✦

ITPS lands second COMAC contract

London, Ont.-based International Test Pilots School (ITPS) recently won its second consecutive contract to train test pilots for the Commercial Aircraft Corporation of China (COMAC) through 2020 and 2021.

ITPS has also provided consulting services in preparation for the first flight of the COMAC C919 and is currently contracted to provide support in China for current Flight Test Center of COMAC (FTCC) flight test programs.

"Graduates of the ITPS test pilot and flight test engineer courses in London will participate in the flight testing of the C-919 and, eventually, the CRAIC CR929 widebody airliner, COMAC's joint venture with Russia's United Aircraft Corporation," said ITPS president Giorgio Clementi.

COMAC is the second international aircraft manufacturer to select ITPS for training its flight test crews, after Airbus chose the school to train test engineers at the London facility in 2017.

Additionally, ITPS said it is currently recruiting instructors for a new division, the International Tactical Training Center, which started operations in late 2019 and will be providing fighter lead-in training for 18 Royal Malaysian Air Force students. ✦



Fred Hauviller, left, head of training at ITPS, with two COMAC pilots currently enrolled in the one-year Graduate Test Pilot Course and Giorgio Clementi, right, the president of ITPS. ITPS Photo

First flight for Boeing's 777X, its biggest jet yet



Boeing 777X WH001 made its first flight from Paine Field in Everett, Wash., on Jan. 25, 2020. The flight lasted three hours and 51 minutes. **Boeing Photo**

The 777X's wingtips fold upwards while the airliner is on the ground, reducing the total wingspan by about seven metres. **Howard Slutsken Photo**



◻ HOWARD SLUTSKEN | OEM NEWS

Boeing's brand-new 777-9 jetliner took to the air for the first time on Jan. 25 – the largest twin-engine airliner ever – ushering in efficiencies for its airline customers, and improvements in the passenger experience. The plane's maiden flight was three hours and 51 minutes in duration, with pilots reporting the 777-9 “flew beautifully”

during a detailed test plan that exercised its systems and structures.

“Today's safe first flight of the 777X is a tribute to the years of hard work and dedication from our teammates, our suppliers and our community partners in Washington state and across the globe,” said Stan Deal, president and CEO of Boeing Commercial Airplanes.

The first of four dedicated 777-9 flight test airplanes, WH001 was set to

undergo testing before flights resume.

The 777-9, the first of the new 777X series, will seat between 400 and 425 passengers, and fly up to 14,000 kilometres. The 77-metre-long twin-aisle jet is powered by two new massive General Electric GE9X turbofans.

Each generating 105,000 pounds of thrust, the 3.4-metre-diameter GE9X is the largest turbofan engine ever created and was specifically designed for the 777X. The huge aircraft's first flight was delayed by six months when testing uncovered an issue with a component of the GE9X, requiring the redesign of a compressor stator.

With an all-new wing, new engines and updated systems and flight deck, the 777X is nearly an all-new aircraft, and just shares the 777 designation with its successful predecessor that first flew 25 years ago, in 1994.

Larger windows, lower cabin pressurization, enhanced lighting, and bigger overhead bins are some of the features that passengers will find in

the new wide-body. Boeing re-shaped the fuselage frames of the plane to add about 10 cm of interior cabin width, which could translate to slightly wider seats in a 10-across economy configuration.

At a time when it's becoming a challenge to tell one aircraft type from another at an airport, the 777X will be uniquely identifiable on the ramp.

To optimize the new design's aerodynamic efficiency, the 777X is fitted with an advanced carbon fibre composite wing, with a huge wingspan of almost 72 metres – and the wing has a trick up its sleeve.

Just like aircraft carrier-based planes, the 777X's wingtips fold upwards while the airliner is on the ground, reducing the total wingspan by about seven metres. The wing-fold mechanism shortens the 777X's wingspan to match that of the current 777-300ER and -200LR, so that the new plane can use existing terminal gates and airport taxiways.

The wing-fold process is automated on landing, with the tips folding below 50 knots during the roll-out to reduce workload, before the pilots turn onto a taxiway made for the smaller 777s.

Before takeoff, pilots will manually unfold the wingtips, a 20-second long operation that's supported by an item on the plane's electronic checklist.

Eight airlines including Lufthansa, British Airways, Singapore Airlines and Cathay Pacific have ordered over 300 aircraft, with the first 777-9 targeted to enter service with Emirates in 2021.

British Airways has said that the 777-9 will replace that airline's fleet of large wide-bodies, primarily its aging 747-400s, the "Queen of the Skies."

The 777-9 that now begins flight testing was to be joined by the 777-8, its smaller, but longer-ranged sibling. Seating between 350 and 375 passengers, the 777-8 would be able to fly the world's longest routes, with a range of over 16,000 km. However, Boeing has frozen the development of the 777-8 until at least early 2021, citing uncertain demand for the jet.

Since 1995, over 1,500 Boeing 777s have been delivered to airlines around the world, including more than two dozen to Air Canada. The

airline took delivery of its first 777-300ER in March 2007, and its first long-range 777-200LR in June 2007.

With a total fleet of 25 aircraft – 19 777-300ERs and six 777-200LRs – the wide-body jets service high-density and long-range international and domestic routes.

Might aviation enthusiasts see a folded-wing 777X in Air Canada colours, taxiing up to a gate at a Canadian airport?

Not likely, according to Mark Galardo, vice-president, Network Planning at Air Canada, who said that the current fleet

still has lots of flying to do.

"We continuously look at all new aircraft and see no need for further adjustments for the foreseeable future. We're satisfied with our current 777 fleet that hasn't even hit mid-life yet, and therefore see no changes to this particular fleet."

Other airlines now flying 777s may echo Galardo's comments, and Boeing might find that to be the biggest challenge facing this enormous new airliner as the airframer tries to best the plane's incredibly popular predecessor. ✦

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Kito Abario Station Photo

Boeing's Calhoun focused on transparency in face of \$636 million loss

In the face of crisis, the OEM's new president and CEO remains optimistic about recovery.

► **KEN POLE** | OEM NEWS

As The Boeing Company struggles with arguably the worst crisis in its 103-year history, digging out of a financial black hole left by the worldwide grounding of its popular 737 Max series, its new president and chief executive officer, David Calhoun, remains optimistic about recovery.

"We have a lot of work to do," he acknowledged during a Jan. 29 conference call with industry analysts and media after only 16 days on the job. "I'm confident we'll manage the situation. . . . We will be transparent in everything that we do."

During the call, the aerospace giant reported a full-year net loss of \$636 million, its largest on record and the first in more than 20 years. In addition, Boeing appears to be grappling with issues surrounding other aircraft programs as well, announcing that it plans to slow production of the 787 Dreamliner to 10 per month — down from 12 — next year.

Calhoun said in a prepared statement

ahead of the call that Boeing is "focused on returning the 737 Max to service safely and restoring the long-standing trust that the Boeing brand represents with the flying public. . . . Safety will underwrite every decision, every action and every step we take."

The global Max fleet was grounded last March after two crashes in five months — October 2018 in Indonesia and March 2019 in Ethiopia — killed 346 people. It has been generally acknowledged that a flight control system software conflict was the underlying cause of the catastrophes.

The latest cost of the fleet being grounded and production and deliveries suspended is projected to be \$18.4 billion as the Chicago-based OEM waits for regulators to green light the aircraft's return to service, which Calhoun expects in mid-2020.

In the meantime, Boeing is taking on some \$12 billion in new debt to support its recovery. A key element of the overall cost of dealing with the Max fallout is \$4 billion identified as "abnormal production costs," most of them to be incurred this year. This includes supporting Max program suppliers.

There have been layoffs at some U.S. suppliers with more expected as a return to Max production and deliveries remains stalled. There are more than

600 Boeing suppliers in Canada.

"We're engaged at all tiers of the supply chain and have been for quite some time," Greg Smith, Boeing's chief financial officer and executive vice-president of enterprise performance and strategy, added during the call. "It's in all of our best interests to make sure they are healthy."

Counting on Boeing's services division and its defence, space and security arm to provide some overall relief from the impact on its commercial aircraft division, Smith pointed out that there is a seven-year backlog of some 4,400 737-family aircraft.

However, there's also the challenge of regaining trust in the Max platform. A Bank of America Merrill Lynch survey of more than 2,000 respondents in December indicated that two-thirds would wait at least six months before flying again in a Max. Some said that if given an option, they would choose another aircraft.

"I wish the moment was different, but . . . we will get through this," Calhoun said, apologizing to the families of the Lion Air and Ethiopian Airlines crashes and adding that he expected to be doing so "many, many" times as the investigations and legal fallout continue. ✂



The latest cost of the 737 Max grounding is projected to be \$18.4 billion. **Boeing Photo**

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The BelugaXL measures 63 metres long and eight metres wide, with a maximum payload of 51 tonnes. **Airbus Photo**

Airbus's BelugaXL enters into service



OEM NEWS

Airbus's long-awaited BelugaXL formally entered into service for the European OEM on Jan. 13. The aircraft is the first of six hefty cargo planes to be introduced to Airbus's fleet, which will replace the BelugaST that is based on the company's A300-600. The aircraft are used to carry completed

sections of Airbus aircraft from different production sites around Europe to the final assembly lines in Toulouse, France and Hamburg, Germany.

The XL is based on Airbus's A330 and measures seven metres longer than the ST, which the company said provides a 30 per cent increase in transport capacity. The massive freighter can carry two of the A350 XWV's wings as

opposed to only one for the BelugaST.

The aircraft measures 63.1 metres long. From the bottom of the fuselage to the top of the cargo hold, it is 18.9 metres high, equivalent to a three-to-four storey building and with a maximum payload of 51 tonnes.

The BelugaXL is powered by a pair of twin Rolls-Royce Trent 700 turbofan engines, and it needs all that power to move the 63x8 metre cargo bay – the largest cross-section of any cargo aircraft in the world. With a range of 2,200 nautical miles and a cruising speed of Mach 0.69, the fleet of massive planes is set to fly more than four million miles per year.

Aside from the technical aspects, the BelugaXL fully embodies its namesake. The cargo hold and fuselage combined form the shape of a beluga whale, and Airbus really leaned into the design by painting each XL with eyes and a mouth that envelops the aircraft's cockpit.

Its entry into service comes after a five-year development period in which it logged over 200 test flights and received its European Aviation Safety Agency type certification in November 2019, two months before its introduction to Airbus's fleet. The OEM anticipates all six of the new Belugas will be operational by the end of 2023. ✈️

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Precision Aviation Group acquires World Aviation Corporation

Precision Aviation Group Inc. has acquired Toronto-based World Aviation Corporation (WAC). WAC specializes in the rewind and repair of rotary and static electrical (air and oil-cooled) generator and motor sub-components.

“We are excited about the acquisition of WAC,” said David Mast, president and CEO of PAG. “The addition further diversifies our MRO capabilities by expanding our services into electric motor sub-component repairs. Our investment in WAC allows us to provide our customers with expanded support at our repair stations and will vastly increase the number of capabilities we have to reduce the costs associated with providing MRO services to our customer base.

“Additionally, WAC expands our footprint in Canada with this second location in Toronto (PAG also has a location in Vancouver), and we will be able to enhance support of our customer base in this region of Canada. WAC has been a trusted supplier to PAG for almost 20 years, and we are excited to bring them on board as part of PAG.”

Moty Zeharia, president of WAC, said the company is enthusiastic about joining PAG. “They have been a key customer of ours for a very long time and have been great to work with.

Now, as a part of PAG, we will significantly expand our product and service offerings by making significant investments in new products, processes and repair capabilities. We have worked closely with the management team of PAG throughout the acquisition process and believe that this partnership will provide significant benefit to our customers, vendors, and employees.” ✦

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Canadian firefighters answer the call in Australia

Aerial firefighting companies have stepped up to assist Australia in combatting one of its worst fire seasons on record.

► **ROBERT WILLIAMSON**
FIREFIGHTING NEWS

Firefighters of all stripes face danger on a daily basis. Airborne crews are not immune from that danger, and the world was reminded of this sad fact on Jan. 23, when B.C.-headquartered Coulson Aviation confirmed that one of its C-130 large airtankers had crashed while working under contract to the New South Wales Rural Fire Service (NSW RFS) in Australia.

All three American crew members perished in the accident that occurred on Jan. 22 during a firebombing mission in the Snowy Monaro Area of southern New South Wales.

NSW premier Gladys Berejiklian addressed the media after the incident, saying, “Today is a stark and horrible reminder of the dangerous conditions that our volunteers and emergency services personnel across a number of agencies undertake on a daily basis.”

As of Jan. 27, there had been 25 fire season fatalities in NSW, including the three aboard the Coulson C-130.

Australia’s worst fire season in recent memory began in late October 2019, and

so far has burned 12.35 million acres of land. In a show of support, Canada has deployed close to 100 firefighting specialists to help battle the fires, many of whom left in December and sacrificed time with their families over the holidays. On Jan. 28, a Royal Canadian Air Force CC-177 Globemaster III transport aircraft departed for Australia via the U.S., where it was scheduled to pick up a load of fire retardant. The aircraft was expected to alleviate some of the demand on Australian military aircraft for a few days.

Other Canadian aircraft have been there since the fires began, including those belonging to Coulson Aviation, a subsidiary of the Coulson Group based out of Port Alberni, B.C. The company has sent a wide array of aircraft to battle the wildfires, including two Boeing 737 Fireliners, a pair of C-130 Hercules airtankers (including the one that crashed), three Sikorsky S-61 helicopters and an S-76 helicopter.

“If we had more to bring, they would be over there,” said Britton Coulson, co-president of the Coulson Group. It’s the company’s 19th year fighting fires in Australia, and the company has crews stationed there year-round.

Along with Coulson, Abbotsford, B.C.-based Conair has its Avro RJ85 AT aircraft contracted to help combat the fires, which have killed an estimated one billion animals and destroyed over 2,500 homes.

The shift work has been gruelling, as

firefighters have been battling blazes for upwards of 12 hours per day, and while the logistical work is nowhere near as terrifying, according to Coulson there is still plenty that needs to be done to get aircraft to places in need.

“It’s a lot of co-ordination, it’s a lot of trip permits [and] it’s a lot of fuel permits,” he said.

The conditions of the island nation are known to be challenging, especially to aerial firefighters, with high temperatures and now, with the raging fires, a busy air traffic environment. To help manage these conditions, Coulson often flies at night using special equipment.

“The big benefit of night vision goggle firefighting is the temperatures are down over the day,” explained Coulson. “Typically, the relative humidity is higher at night than it is during the day, so you’ve got lower temps and higher relative humidity, which are both good for firefighting, and then usually you have less wind. And then the fact that during the day, especially when we’re talking about Australia ... the airspace is so congested with air tankers and helicopters that it’s less efficient than it could be.”

At this point, Australia is still in its summer season, meaning it could be months before it sees any relief from cooler temperatures. Until then, it seems as though Canadians are willing to tough it out and provide assistance in any way they can. ✖



This is Coulson Aviation's 19th year fighting fires in Australia. On Jan. 22, one of its C-130 Hercules airtankers crashed while on a firebombing mission and the company lost three of its team members. **Coulson Photo**

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According to the TSB report, AC 624 “severed power lines, then struck the snow-covered ground about 740 feet before the runway threshold.” TSB Photo



Battle continues over cockpit voice recorder data from AC 624

◉ KEN POLE | SAFETY NEWS

Nearly five years after an Air Canada Airbus A320-211 crashed short of the runway at Halifax Stanfield International Airport, the legal battle continues over whether cockpit voice recorder data should be released to both sides in a class-action lawsuit.

The *Canadian Transportation Accident Investigation and Safety Board Act* states that “every on-board recording is privileged” but a Nova Scotia Supreme Court judge directed the Transportation Safety Board of Canada (TSB) to release the recordings as well as any transcripts.

However, TSB spokesperson Chris Krepski has told *Skies* that the agency not only wants the ruling by Justice Patrick Duncan stayed but also would be appealing. The filing was confirmed by Kate Boyle, a member of the class actions group within the Halifax-based law firm Wagners.

The Nova Scotia Court of Appeal set Feb. 6 for a hearing on the TSB’s request that the motion should be stayed and

June 9 for a hearing on the appeal.

The TSB and the Air Canada Pilots Association (ACPA) would not comment further on the specifics of the case. The TSB’s Krepski said only that “as this is a matter before the courts, the TSB will not make further comments,” while his ACPA counterpart, Julie Rolph, would only reiterate the organization’s disappointment at Duncan’s ruling.

Rolph did cite an affidavit submitted to the court by Capt David Cadieux, chair of ACPA’s flight safety division, which states that “the privacy of pilots should be protected, especially when personal information incidental to events is recorded.” Cadieux also said that “as the privilege . . . is eroded, so too is the vital ability of pilots to speak freely while flying and while dealing with emerging in-flight issues, a prospect that raises broader and significant safety concerns.”

Five crewmembers and 133 passengers were aboard AC 624 from Toronto on a non-precision approach at 12:30 a.m. on March 29, 2015. According to the TSB report, the aircraft “severed power lines, then struck the snow-covered

ground about 740 feet before the runway threshold.” It “continued airborne through the localizer antenna array, then struck the ground twice more before sliding along the runway,” coming to rest “about 1,900 feet beyond the threshold.” There was no fire but the Airbus was a write-off.

The TSB report found that the aircrew – identified in the court documents as John Doe #1 and John Doe #2 – had not monitored altitude and distance from the threshold and had not adjusted to the flight path angle once they had begun their descent. It also noted that the “challenging conditions” made it likely that the crew delayed disconnecting the autopilot “until beyond the minimum descent altitude” and that “reduced brightness of the approach and runway lights” had “diminished the flight crew’s ability” to notice that they were short of the runway.

Twenty-five people required hospital treatment for what Air Canada described at the time as “observation and treatment of minor injuries.” The class action lawsuit, alleging negligence causing injury and seeking compensation, was filed against Air Canada, Airbus,

the airport authority and the federal government. The TSB and ACPA were granted intervenor status.

The statement of claim filed by Wagners alleges that the aircrew ignored regulatory runway approach minimums, opted not to divert to another airport, did not request weather updates from air traffic control, did not follow ATC instructions, did not declare an emergency “in a timely manner” and had operated the Airbus “without due care and skill despite knowing that damage would probably result.”

The statement also alleged negligence not only by the airport authority with regard to runway lighting but also by Nav Canada for what the plaintiffs’ lawyers say included “a failure to inform the flight crew of unsafe weather conditions, unserviceable equipment and poor visibility.”

Moreover, Airbus allegedly failed “to provide adequate instructions and training” on “systems that would be pertinent to the possible causes of the accident” and Transport Canada “failed to fulfill its responsibility as an industry regulator, including how it assessed and approved Air Canada’s non-precision approach procedures.”

In addition to the plaintiffs in the class action, Airbus, the airport authority and Nav Canada asked that the TSB hand over the recording and any transcripts, but the board claimed statutory privilege.

But Justice Duncan, who heard arguments last July, stated in his November written ruling that “statutorily prescribed exceptions” in the legislation mean the definition of “privilege” is limited in scope. “The necessary implication is that the TSB can, subject to statute, communicate contents that are related to the causes or the identification of safety deficiencies. . . . In the circumstances of this case, the public interest in the administration of justice outweighs the importance attached to the statutory privilege protecting the cockpit voice recorder.”

CVR data were an issue after the August 2005 crash of Air France Flight 358, an Airbus A340-313 arriving from Paris at Toronto International Airport, ran off the end of the runway and crashed into a ravine.

On final approach, the crew received a report from an aircraft ahead that

heavy precipitation was compromising runway traction. Approximately 320 feet above the ground, the crew took manual control but crossed the threshold 40 feet above the glide slope and landed 3,800 feet down the 8,000-foot runway. Two crewmembers and 10 passengers were seriously injured and the plane was destroyed by fire.

Justice Duncan pointed out that in hearing a case brought by Air France against the Toronto airport authority, Ontario Chief Justice George Strathy, faced with “the same balancing exercise”

and noting that one pilot had not objected, had ordered the CVR data released because it included “highly relevant, probative and reliable evidence that is central to the issues in the litigation.” ✈

Editor’s Note: An unofficial CVR data poll posted on the [Skies Facebook page](#) on Jan. 6 elicited a tremendous response, logging well over 800 votes. Interestingly, respondents were closely divided, with 56 per cent saying CVR data should be made available to judicial inquiries and 44 per cent taking the opposite point of view.

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Snowbirds grapple with training delays, pilot replacements



Two of the Snowbirds' more senior pilots decided not to continue for the 2020 season, so they will be replaced. An announcement about the new team members is expected in February. **Heath Moffatt Photo**

◉ **CHRIS THATCHER** | MILITARY NEWS

While the Royal Canadian Air Force Directorate of Flight Safety continues its investigation into the crash of a CT-114 Tutor Snowbird enroute to the Atlanta Air Show last October, the Canadian Armed Forces Air Demonstration team has resumed flying in preparation for the 2020 airshow season.

Pilots with 431 Air Demonstration Squadron at 15 Wing Moose Jaw, Sask., began training flights on Dec. 6, 2019, following an operational pause that grounded the Snowbird fleet and pushed back pre-season preparation by about one month.

The Snowbirds are slated to begin their airshow schedule on June 6 and 7 at Selfridge Air Force Base in Michigan, but that start date could be changed if the demo team feels it still needs more preparation.

"We have offset our season so we can have roughly the same amount of training that we normally have every year," said Maj Jean-Francois Dupont,

the team lead known as Snowbird 1. "But we need to be flexible because there are so many changes."

In addition to the flying pause, the nine-person team is introducing two new pilots, one of whom is still being confirmed. Dupont, also the deputy commander of the squadron, cautioned that while winter training is progressing, it's too early to assess when the team will be ready.

"As we get closer to (spring training in Comox) in May, we'll have a good idea if we can start the show season on time, or if we need to delay a little more," he explained. "Our goal is to make an exciting and safe show, so if we have any doubts or anyone is struggling to get to that point, we will delay the show season as required."

In a typical pre-season, the Snowbirds will complete between 80 and 100 missions during the winter months before starting spring training at 19 Wing Comox, B.C. Those numbers vary depending on weather and aircraft availability, but "our goal is not to scale that back," said Dupont, who previously flew as Snowbird No. 2 for the 2010 to 2012 seasons.

He noted, however, that as temperatures plummeted below -35 C in early January, aircraft were more difficult to start and operate, further slowing down some of the training. "It is really tough on the pilots and the ground crew to get the jet ready when it is really cold. We take our time. We make sure we don't rush anyone. So it slows everyone down and makes the day longer. And when it is really cold, we [limit] our range from the airport just so we stay safe."

Flight safety investigators have yet to pinpoint exactly what caused the CT-114 to lose engine thrust as the team was flying to an airshow at the Atlanta Motor Speedway in Hampton, Ga., on Oct. 13, 2019. The pilot, Capt Kevin Domon-Grenier of Saint-Raymond de Portneuf, Que., lost engine power shortly after a routine check while inverted and opted to eject after determining the aircraft was too low to attempt a safe recovery to an airport. He ejected successfully, sustaining minor injuries, but "reported anomalies with the ejection sequence," according to an occurrence summary by investigators.

While investigators focus on the cause

of the engine mechanical failure and the ejection sequence, a full risk assessment was conducted on the likelihood of a reoccurrence before the Tutors could resume flying.

“Because there is an ongoing investigation, there is not much detail we can provide,” said Dupont, a CH-149 Cormorant helicopter flight commander by training with 442 Transport and Rescue Squadron in Comox. “At the end of the day, we were confident with the jet and the engine, and we went back flying.”

Until more is known about the cause, the pilots will fly higher and at faster speeds during winter training “just to give [them] extra time to make a decision and keep everybody safe,” he said.

Though team members received counselling to process the crash, most were keen to get back in the air. “Like when you fall off your bicycle, when it’s safe, the sooner you can go back up fly-ing, the easier it is to get going,” he noted. “We didn’t rush into it, but we flew as soon as we could.”

While the flying delay hampered winter training, the greater challenge may be incorporating two new team members in the shorter time span. Snowbird pilots change on a regular basis due to new postings, career opportunities and family reasons, but rarely does the squadron attempt to change two senior pilots right before the start of a season. Normally, new pilots would begin conversion on the CT-144 over the summer and start training in the fall.

“Evert year we can change up to half of the team just by the nature of the way we do our work, so we were already planning to have a bit of a new team,” said Dupont. “But two of our more senior pilots decided not to continue for the 2020 season, so we are making changes that will bring us a full team.

“We are currently up to eight of nine. We are just working on that last pilot. We do have a solution, we just want to make sure it is ready to go. We’ll most likely announce the full team sometime [in February].”

The 2020 air show season, which will include about 30 shows, marks the 50th anniversary for the Snowbirds. ✂

Lockheed Martin delivers 134 F-35s in 2019

Lockheed Martin delivered 134 F-35 aircraft in 2019, exceeding the joint government and industry 2019 delivery goal of 131 aircraft. This represents a 47 per cent increase from 2018 and nearly a 200 per cent production increase from 2016.

In 2020, Lockheed Martin plans to deliver 141 F-35s and is prepared to increase production volume year-over-year to hit peak production in 2023.

Using lessons learned, process efficiencies, production automation, facility and tooling upgrades, supply chain initiatives and more, the F-35 enterprise continues to significantly improve efficiency and reduce costs.

The price of an F-35A is now US\$77.9 million, meeting the US\$80 million goal a year earlier than planned.

The F-35’s mission readiness and sustainment costs continue to improve with the global fleet averaging greater than 65 per cent mission capable rates, and operational squadrons consistently performing near 75 per cent.

Lockheed Martin’s sustainment cost per aircraft per year has also



Lockheed Martin plans to deliver 141 F-35s in 2020, and is prepared to increase production volume to hit peak production in 2023. *John Chung Photo*

decreased four consecutive years, and more than 35 per cent since 2015.

Today, 975 pilots and 8,585 maintainers are trained, and the F-35 fleet has surpassed more than 240,000 cumulative flight hours. Eight nations have F-35s operating from a base on their home soil, eight services have declared initial operating capability and four services have employed F-35s in combat operations. ✂

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Griffons continue to perform in NATO Mission Iraq



Canada has deployed about 850 Regular and Reserve personnel into four countries as part of Op Impact, including around 200 for the NATO Mission in Iraq. Here, members of 408 Tactical Helicopter Squadron participate in an exercise in California. **Cpl Desiree T. Bourdon Photo**

◉ **CHRIS THATCHER** | MILITARY NEWS

The Royal Canadian Air Force (RCAF) recently completed a “tail swap” of three of its CH-146 Griffon helicopters supporting Operation Impact, Canada’s training mission in Iraq.

The three Griffons were part of the tactical aviation detachment (TAD) of about 50 personnel based near Baghdad, providing logistical support and transport to the commander and head-quarters staff of NATO Mission Iraq, a multinational effort led by Canadian MGen Jennie Carignan to strengthen the capacity of Iraqi security forces.

The routine changeover of the three helicopters was done “to ensure deeper maintenance is completed and wear on the engine and airframe is consistent across the fleet,” explained a spokesperson for Canadian Joint Operations Command.

“A tail swap is done as part of the regular maintenance cycle where aircraft are inspected at different hours flown milestones. Throughout this cycle, there are different levels of inspection required, and when the routine inspection exceeds the capacity of the deployed TAD, a tail swap is conducted for the maintenance to be done back in Canada without an interruption to operations.”

To support the NATO mission, the three

Griffons are equipped with standard protection such as the C6, GAU 21 or Dillon M134 machine guns, but they don’t have a MX-15 camera or other sensors normally fitted to conduct reconnaissance, close air support or convoy escort.

The RCAF also operates a detachment of up to four CH-146 helicopters based in the northern Iraqi city of Erbil to support a Canadian Special Operations Forces mission. Both TADs are comprised primarily of aircrew, maintainers and support staff from 408 Tactical Helicopter Squadron in Edmonton.

The Canadian Armed Forces (CAF) temporarily paused all training activities of Iraqi forces and moved some of its personnel to Kuwait following the United States assassination of Iranian Gen Qassem Soleimani, head of its elite Quds Force, on Jan. 3 and the Iranian retaliatory ballistic missile attack on Iraqi bases housing U.S. troops on Jan. 7.

The CAF would not disclose whether CH-146 aircrews and maintainers were part of that repositioning. “For security reasons, we will not provide more specific details as to movements of CAF personnel in the region,” said a spokesperson for the Department of National Defence (DND) in an email.

The CAF has deployed about 850 Regular and Reserve personnel into four countries — Iraq, Jordan, Lebanon and Kuwait — as

part of Op Impact, including around 200 for the NATO Mission in Iraq. The majority are from 3 Canadian Division, which is principally based out of CFB Edmonton.

While training activities remained suspended as of Jan. 24, some mission critical activities such as air sustainment operations resumed in mid-January, according to DND, and personnel “remain ready to return to their mission when conditions are right to do so.”

The tactical aviation detachment at Camp Taji airfield about 30 kilometres north of Baghdad was established in January 2019 by 438 Tactical Helicopter Squadron from St. Hubert, Que. It was a rare overseas deployment for the total force air reserve squadron, made up of more than 50 per cent reservists, and an indication of how stretched 1 Wing had become at the time, supporting multiple missions in Iraq, Mali and at home. Just once before in the history of Canadian tactical aviation had an aviation detachment comprised of at least 40 per cent reservists conducted overseas operations. ✦

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This Air Canada Airbus A320 gets a New Year's Eve deicing at Montreal-Trudeau International Airport, courtesy of the Aero Mag 2000 team. **Célian Génier Photo**



An Air Tindi de Havilland Canada Dash 7 turboprop lands at Yellowknife airport. **Stephen M. Fochuk Photo**



An Air Canada Embraer E190 screams overhead on final approach to Toronto Pearson airport.
William Fillion Sauro Photo

Air Canada welcomes

THE A220

while Bombardier considers

EXITING THE PROGRAM

BY FREDERICK K. LARKIN

On Jan. 15, several hundred members of the Air Canada family and guests gathered in a hangar at Dorval, Que., to celebrate and inspect the latest addition to the carrier's fleet – an Airbus A220-300.

Air Canada's relationship with the type began nearly four years ago,

when it signed a letter of intent (LOI) to purchase 45 aircraft (then known as the Bombardier CS300) on Feb. 27, 2016. The LOI was finalized on June 28 that year and included options for an additional 30 units.

The company's first jet (serial number 55067, C-GROV) first flew on Dec. 11, 2019 at Mirabel, Que., and was delivered

to Dorval nine days later. Since then, it has completed numerous familiarization and training missions.

On Jan. 16, Air Canada operated its first A220 revenue flight between Montreal and Calgary. For the next while, the aircraft will serve that city-pair on weekdays and shuttle between Montreal and Toronto during weekends.

Air Canada expects to have 17 A220 aircraft in service by the end of 2020. It will excel on longer, thinner routes that don't support larger aircraft. **Air Canada Photo**

WHAT'S SO EXCITING?

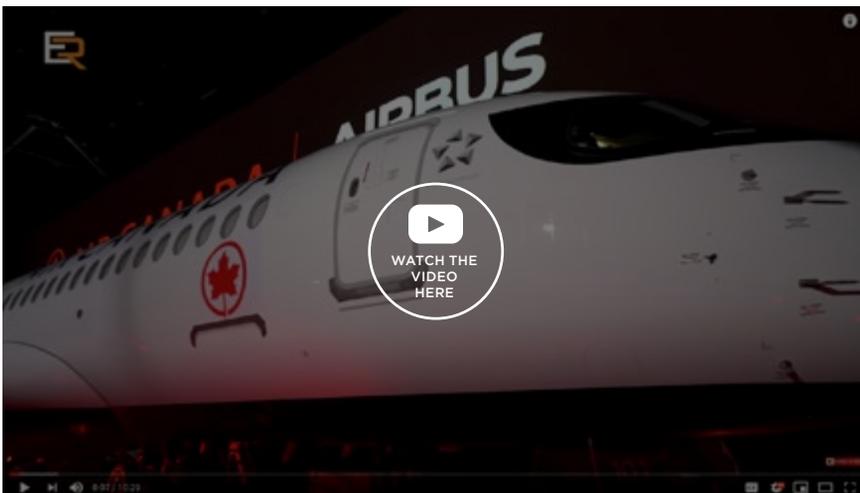
Any new airliner that can attract customers and operate economically is bound to generate revenues and produce profits for its operator. That is why Air Canada's A220-300 is so attractive. A survey of its cabin reveals a comfortable environment.

Up front, the business class cabin has 12 seats (three rows, four abreast) that feature a 37 inch/94 cm pitch. Further aft, the economy class cabin's 125 seats (25 rows, five abreast) each have a 30 inch/76 cm pitch. At 19 inches, the Y-class seats are the widest in AC's fleet – albeit one inch wider than the rest. The spacious feel to the entire cabin is due to its wider aisle, windows that are 50 per cent larger than those of an A320, and 15 per cent bigger overhead bins. When you consider the new Panasonic in-flight entertainment system that features a 12-inch screen in the economy cabin and mood lighting, you sense that some passengers may not wish to deplane at their destination.

Financial folks will be pleased with the A220-300's impressive operating



By May 4, the airline expects to have received eight A220-300s. The aircraft's impressive range will open up new routes for Air Canada. Here, pilots train in the simulator. **Brian Losito Photo**



On Jan. 16, Air Canada operated its first A220 revenue flight between Montreal and Calgary. **Patrick Cardinal Photo**



cost metrics. Its new Pratt & Whitney PW1500G geared turbofan engines, also produced in Mirabel, enable the airplane to burn 20 per cent less fuel per mile flown compared to previous generation models. The jet also produces 20 per cent fewer CO2 emissions and has as much as a 50 per cent smaller noise footprint. It is an exemplary corporate citizen.

A key attribute of the aircraft is its impressive range. Thanks to its less thirsty engines, an A220-300 can fly 3,200 nautical miles (nm). That is 33 per cent further than the 2,400 nm that a similarly-sized Airbus A320-200 can travel.

AIR CANADA'S INTENTIONS

By May 4, the airline expects to have received eight A220-300s. That day it will be using the aircraft to initiate two city-pairs: Montreal - Seattle, Wash., and Toronto - San Jose, Calif. With stage lengths/block times of 1,985 nm/5:50 and 1,950 nm/5:30, respectively, these new routes will permit the aircraft to demonstrate its transcontinental range capability.

By the end of 2020, Air Canada expects to have 17 units in service. It plans on utilizing the airplane on new long and thin routes that can't support





Air Canada says the Airbus A220-300 offers a 20 per cent reduction in CO2 emissions per seat compared to similar aircraft. **Célian Génier Photo**



Pratt & Whitney said in January that a software update is planned for the A220 engine this spring. **Brian Losito Photo**



In addition to passengers, Air Canada staff have responded positively to the A220-300. **Célian Génier Photo**

larger models; to increase frequencies on key spokes into its hubs at Toronto, Montreal and Vancouver; and to provide appropriate gauge on seasonal services. Other potential new city-pairs include Vancouver - Halifax and Vancouver - Washington, D.C. Regardless of how it may ultimately be deployed, the A220-300 is expected to act as a market share disruptor by diverting competitors' passenger traffic to Air Canada.



By the end of 2019, Airbus had delivered 105 aircraft, including 37 A220-100s and 68 A220-300s. **Frederick K. Larkin Photo**

A LATE BLOOMER MATURES

What began as Bombardier's new Commercial Aircraft Program in early 2004 has evolved into an extremely successful airliner in the 100-to-150 seat niche. By the end of 2019, 600 A220s had been ordered. Included in that tally were 95 A220-100s and 505 of the larger A220-300s.

Aircraft delivered by the end of 2019 totalled 105, including 37 A220-100s and 68 A220-300s. The A220-100 owners included Delta (28) and Swiss International (nine). A220-300 owners were Air Canada (one), Air Baltic (22), Air Tanzania (two), Egyptair (seven), State Transport Leasing of Russia (six), Korean Air (10) and Swiss International (20).

Sizeable orders for A220-300s from Air France (60) and JetBlue Airways (70) reinforce the decisions made by others before them. As a result of the growing interest in the aircraft, production is forecast to increase. During 2019, 48 A220s were delivered from the Mirabel facility. The Mirabel plant has a maximum annual capacity of 120 units. The new facility in Mobile, Ala., is gearing up to eventually produce 48 A220s per year for U.S. buyers.

BOMBARDIER QUESTIONS A220 COMMITMENT

Since July 1, 2018, the A220 program has been owned by Airbus SE (50.01 per cent), Bombardier Inc. (34 per cent) and Investissement Quebec (16 per cent).

But on Jan. 16, 2020, Bombardier warned investors that it may exit its joint venture with Airbus to produce the A220 airliner.

In its preliminary fourth-quarter report, the Canadian OEM said it's anticipating a US\$130 million loss for the period, which may force it to sell off assets in order to pay down debt – one of which is its stake in the A220

commercial aviation venture.

In the report, Bombardier remarked that while the A220 program “continues to win in the marketplace and demonstrate its value to airlines,” the Airbus Canada Limited Partnership (ACLP) – the name of its joint program with Airbus – had made the call for additional cash investments to support production ramp-up. In turn, that would extend the timeline for the program to break even and potentially generate a lower profit margin over the life of the partnership.

“With its exit from commercial aerospace, Bombardier is reassessing its ongoing participation in ACLP,” the company said in the statement.

In the original deal, Bombardier agreed to fund the program with up to \$925 million over a three-and-a-half-year span. Since Airbus's acquisition of the former C Series aircraft family, the company has delivered 105 aircraft out of 600 total orders.

Now, Bombardier is contemplating extricating itself from the program entirely, even though it's invested \$6 billion into the A220 venture, in an effort to shed further costs. The announcement sunk the company's stock by nearly 32

per cent on the Toronto Stock Exchange on Jan. 16. As a result, Moody's Investors Services – an American credit rating agency – changed Bombardier's rating outlook from stable to negative.

The statement about the partnership with Airbus came just after Air Canada celebrated the entry into service of its first A220-300.

All of this follows a four-year stretch that has seen Bombardier sell off most of its aviation assets in a turnaround plan aimed at levelling off costs, leaving the company with only its rail and business aviation divisions.

In its preliminary fourth-quarter financial report, Bombardier said it will be providing additional information when it reports its 2019 financial results on Feb. 13. ■



FREDERICK K. LARKIN

Frederick K. Larkin | Licensed to fly before he could drive, Ted Larkin has closely followed the airline, business aviation and aerospace industries for more than 50 years. During nearly three decades in the investment business, he advised institutional investors in North America, Europe and Asia on their holdings in aviation-related corporations.



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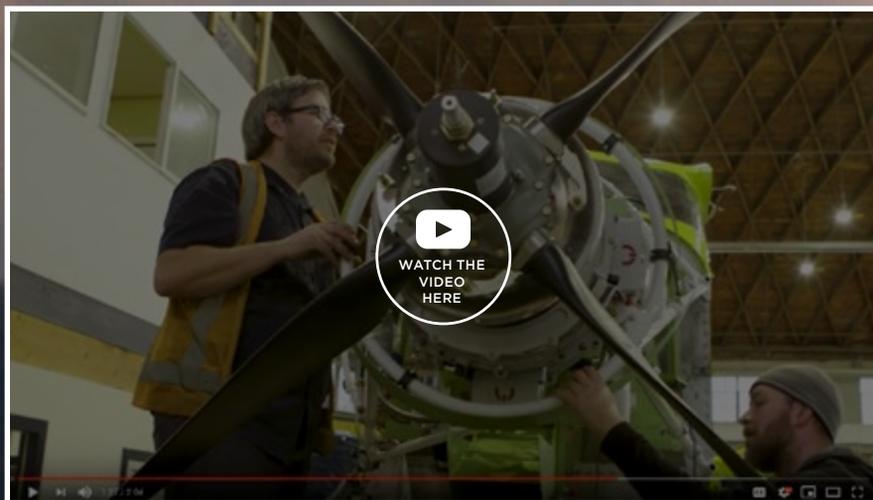
Harbour Air & MagniX are

ELECTRIC

BY HOWARD SLUTSKEN



The successful four-minute first flight of Harbour Air's ePlane was powered by an electric engine capable of generating 750 horsepower. It was de-rated to the electric equivalent of 450 horsepower. [Harbour Air Seaplanes Photo](#)



Not so long ago, the idea of electric commercial aviation was a decidedly futuristic notion. But last December, B.C.-based Harbour Air and MagniX made a giant leap forward with the first flight of their DHC-2 Beaver “ePlane.” We take a look at what’s next.

FLYING



On Dec. 10, 2019, aviation history was made in Canada as the world’s first electrically-powered commercial passenger aircraft flew at Vancouver International Airport (YVR).

In a marriage of old and new technology, a 63-year-old de Havilland Canada DHC-2 Beaver floatplane, powered by an advanced MagniX electric propulsion system, lifted off from the airport’s floatplane terminal for its first test flight on a mostly cloudy West Coast morning.

At the controls of the modified Harbour Air plane was Greg McDougall, an 8,000-hour Beaver pilot and the airline’s CEO and founder.

Instead of a Pratt & Whitney radial piston engine or a P&W Canada PT6 turbine, the “ePlane” was powered by a magni500 electric motor capable of generating as much as 560 kilowatts, or 750 horsepower. To match the power of a stock, piston Beaver, the propulsion system was de-rated to the electric equivalent of 450 HP.

As McDougall pulled the plane “onto the step” and flew off for a short, four-minute test flight, the plane’s four-bladed Hartzell composite propeller generated all of the remarkably quiet takeoff sound – a fraction of the thunder from the legacy Beaver’s radial piston.

“I didn’t have time to really do too much experimenting with different flight configurations. We were limited by the weather,” explained McDougall in an interview with *Skies*.

Although the battery-powered ePlane was at its 5,600-pound maximum gross weight, McDougall was surprised by the performance of the electric propulsion system’s instant torque. With a large group of international media watching and a helicopter camera ship following, he had planned to lift off at a specific target to make sure everyone had the perfect “photo op.” “But I had to throttle it back on takeoff because the plane lifted off a lot quicker, even with the eight or nine knot tailwind blowing.”

As a technology demonstrator, the ePlane won’t be carrying passengers – there isn’t room for seats in a cabin that’s filled with lithium-ion batteries – and it will only have a 15-minute endurance with a 25-minute reserve.

“Those are batteries that NASA is using, but they’re not batteries that we’d use if we were going to try and make it economical to fly today, because

they're very low in watt-hours per kilogram," said McDougall.

The energy density – the power to weight ratio – of today's batteries is a key factor for aircraft electrification, as is the shape and size of each unit. While there may be other battery solutions with higher energy density and a smaller form factor, Harbour Air and MagniX are being cautious.

"They are batteries that have been to space," said McDougall. "So, if you're choosing a battery for a prototype, then that's the one you choose."

A PIONEERING PLATFORM

The electric Beaver floatplane launches McDougall's quest to make Vancouver-based Harbour Air a fully-electric airline, building on its more than 12 years as North America's first carbon neutral airline.

He explained that as novel as it is, the electric powerplant certification is not unlike the process needed to gain approval for a new engine, such as the Beaver's conversion from a piston to a turbine.

"The Beaver is the platform where we can get the Transport Canada regulatory process started, because the pathway to certification at this point doesn't exist. It

has to be pioneered," said McDougall.

"All we should have to demonstrate is that the electric propulsion system is as safe or better than the technology we're currently using. We don't feel that's hard to do, but it's new and it hasn't been done before," he added.

While the ePlane continues its flight tests, the first phase of the approval process will take place in the U.S., where MagniX will certify the components of the electric propulsion system under Federal Aviation Administration (FAA) regulations.

Once that's complete, phase two will see the certification of Harbour Air's installation, with the support of Transport Canada.

"The Government of Canada believes that the electrification of transportation is a key part of Canada's transition to a low-carbon economy," said a spokesperson in an email to *Skies*.

"The *Canadian Aviation Regulations* allow the department to certify novel or unusual designs such as electric propulsion aircraft, through the development of special conditions-airworthiness, as required."

After a review of the electric propulsion system, Transport Canada authorized the ePlane's first test flight, and the

department "will support the design certification initiative once the company is ready to enter that phase of the project."

McDougall said that Harbour Air has briefed the Minister of Transport's office, and that the ePlane has received "a tremendous amount of attention from the [British Columbia] provincial government."

Once certified, Harbour Air will hold the worldwide supplementary type certificate (STC) for the Beaver conversion and will look to extending the technology to the rest of its fleet.

ALICE...IN WONDERLAND

Remarkably, it's only taken MagniX two years to take the magni500 from an idea to an engine flying in a commercial aircraft.

"It's amazing what you can do when you take talented, passionate people and say, 'You have no constraints to your thinking,'" said Roei Ganzarski, CEO of MagniX. "Of course, we didn't invent the electric motor, but we innovated an existing technology and made it aerospace-worthy."

The "magni-fied" electric Beaver performed better during its first flight than ground testing had suggested, according to Ganzarski.



While the ePlane continues its flight tests, the first phase of the approval process will take place in the U.S., where MagniX will certify the components of the electric propulsion system. **Scott McGeachy Photo**

After a review of the electric propulsion system, Transport Canada authorized the ePlane's first test flight. **Howard Slutsken Photo**



“All we should have to demonstrate is that **the electric propulsion system is as safe or better than the technology we’re currently using.**

We don’t feel that’s hard to do.”



Following the test flight, Harbour Air and MagniX spoke to well-wishers and the media. **Scott McGeachy Photo**



Once certified, Harbour Air will hold the worldwide supplementary type certificate for the Beaver conversion and will look at extending the technology to the rest of its fleet. **Harbour Air Seaplanes Photo**



Eviation’s Alice is a futuristic-looking tri-motor, with a propulsor at the tip of each high-aspect-ratio wing and a pusherprop in the fuselage under a high V-tail. Its engines are also designed by MagniX. **Eviation Photo**

“We were pleasantly surprised that the propulsion system used less power from the batteries than we anticipated. Even when you test things on the ground, it’s academic in nature until you actually fly.”

With headquarters in Seattle, Wash., and engineering centres in Seattle and on Australia’s Gold Coast, MagniX is developing motors generating 375, 750 and 1,500 horsepower.

The MagniX system is “power agnostic” – the source of the electrons doesn’t matter to the motors. Electricity

for future aviation solutions could come from batteries, hydrogen fuel cells, or a fuel-powered generator.

MagniX’s next prototype aircraft, a magni500-powered Cessna Grand Caravan, is targeted to fly in the first quarter of 2020. As a pure test aircraft, the Cessna is dedicated to wring out the propulsion system in the air, at its full 560 kilowatt/750-horsepower rating.

And then there’s Eviation’s Alice – a clean-sheet, nine-passenger, all-electric aircraft that’s been designed around the capabilities of an electric propulsion system.

Alice is a futuristic-looking tri-motor, with a propulsor at the tip of each high-aspect-ratio wing and a pusher-prop in the fuselage under a high V-tail. Elegantly curved, the sleek Alice looks fast just sitting on its main and tail landing gear. The fly-by-wire, all composite aircraft will cruise at 240 knots, with a 650-mile range.

The first Alice is undergoing initial systems integration and taxi testing in Prescott, Ariz., and Ganzarski hopes the plane will begin flight testing this summer in Moses Lake, Wash. (Update: An electrical system fire on Jan. 22

significantly damaged the prototype, and the impact on the flight schedule was unknown at press time.)

“What Eviation has been able to do with the Alice is truly optimize the aircraft to be electric – for example, how many batteries, and where you put them in the aircraft. As you can imagine, building a brand new aircraft has added a level of complexity versus magni-fying one.”

FUTURE FEEDERS?

The electric Beaver, Grand Caravan, and Alice are just three electrically-powered planes either in development or already flying.

Hawthorne, Calif.-based Ampaire has replaced the rear engine of a six-seat Cessna Skymaster with an electric motor, creating a hybrid-propulsion system that retains the plane’s forward piston engine. In partnership with Hawaii-based Mokulele Airlines, an Ampaire 337 will begin a series of test flights this fall between Maui’s Kahului and Hana airports.

In France, VoltAero is developing the Cassio, a four- to six-seat hybrid aircraft based on the design of the Cessna Skymaster, but with a hybrid electric/

‘The “magni-fied” electric Beaver performed better during its first flight than ground testing had suggested.’

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piston engine at the rear of the fuselage and an electric motor mounted at the front of each boom.

And the team composed of Airbus, Rolls-Royce and Siemens is working on the E-Fan X hybrid demonstrator. Using a BAe-146 testbed, the ambitious project will replace one of the quad-jet's turbofans with a two megawatt electric motor, with power supplied by batteries and a turbo-generator mounted in the fuselage.

The next few years will see new electric designs emerge from hangars around the world – planes that may change the current airline business model.

“Over the next five to 10 years, six- to 19-passenger aircraft with up to about 1,000 miles of range is the sweet spot for growth, not only for electric aircraft but for a new electric transportation business model,” commented Ganzarski.

He believes that the reduced operating costs and infrastructure requirements of electric aircraft could bring airline service back to local airports. Just as it was in the post-Second World War days of Douglas DC-3 feeder services, electric planes could re-connect small communities through a network of short hops, with flight durations already suited to the capabilities of current battery technology.

“My children are teenagers now, and the most exciting thing to me is that eventually, their children will only fly in electric planes in distances of up to 1,000 miles, and they will look back in horror at how we once flew these distances with gas-guzzling, emission-creating airplanes.”

A UNIQUE SPACE

While the electric Beaver is flying its short test hops on the path to certifying its electric powerplant, McDougall's focus is on the electrification of Harbour Air's workhorse, the single-turbine DHC-3T Otter.

“The MagniX propulsion system is completely transferrable into the single Otter, and we'll put batteries into the belly area where the fuel tanks are,” said McDougall. “The motor will work. We love it – 750 horsepower. It replaces a PT6 in an absolutely brilliant way, and you get instant torque out of it. With a PT6 you have to wait until it spools up.”

From its bases in Vancouver Harbour and at the floatplane terminal at YVR, Harbour Air serves 12 destinations on the B.C. coast with its fleet of over 40 aircraft. Most of its flights are a half-hour or less – ideally suited to the capabilities of today's battery technology.

“We're sitting in a very unique space that enables us to take advantage of something that other airlines just wouldn't even be able to consider,” he said.

McDougall expects that the MagniX installation in the Otters will give the planes at least 30 minutes of flying time. Harbour Air operates its flights under Visual Flight Rules (VFR) regulations, which will require an additional 30-minute battery reserve.

It'll be a while until the operational procedures and infrastructure requirements are worked out, but McDougall has been told by the propulsion system's engineering team

that recharging will be “a minute for a minute. Half an hour flight, half an hour recharge. Don't forget you're not charging the full battery, you still have the 30-minute reserve in the battery, so you're going to be recharging from half.

As someone who is both an enthusiastic supporter of the electrification of transportation and an early adopter of the technology – he had one of the first Tesla electric cars in Vancouver – McDougall is hopeful his airline will be flying electric planes sooner rather than later.

“I would hope to see an Otter in the air with paying passengers on it within two to three years, but I'm always optimistic. There's no reason why it can't happen. From where the technology is today, where it needs to go is not that far away.”

“I think it's really important for Canada to lead the world on this. We've always been very innovative in the aerospace sector and we have the opportunity. I'll be pushing very hard for this to happen.”



TO SEE MORE AMAZING PHOTOS FROM THIS STORY, [CLICK HERE!](#)



HOWARD SLUTSKEN

Howard Slutsken's lifelong passion for aviation began when he was a kid, watching TCA Super Connies, Viscounts, and early jets at Montreal's Dorval Airport. He's a pilot who loves to fly gliders and pretty much anything else with wings. Howard is based in Vancouver, B.C.



The ePlane's first flight made headlines around the world. The aircraft reportedly performed better than ground testing had suggested. Tom Banse Photo

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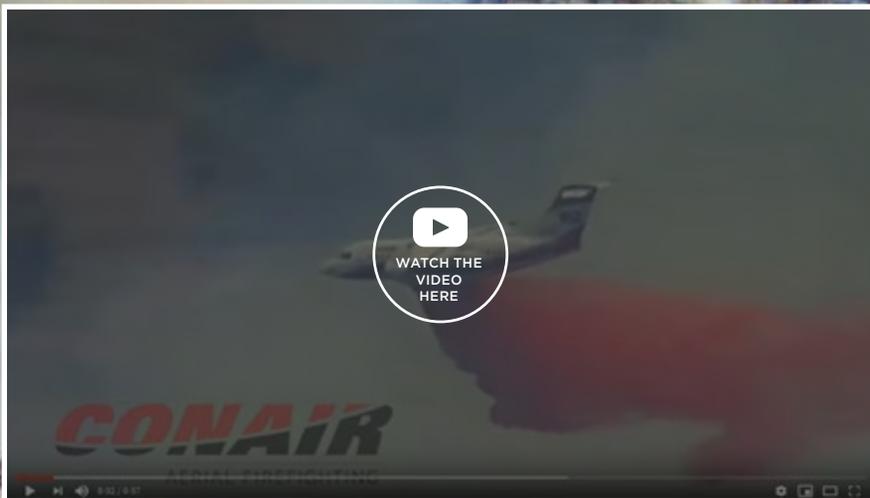
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A Canadair CL-415 operated by Conair's U.S. division, Aero-Flite, drops water over a fire in California. **U.S. Forest Service Photo**



An aerial photograph of a forest fire. A firefighting aircraft is visible on the left, dropping a stream of white retardant onto the flames. The fire is intense, with bright orange and yellow flames rising from a dense forest of green trees. The foreground shows a mix of green and brown, dry-looking vegetation.

HOT WINGS

Since 1969, Conair Group Inc. has specialized in designing, building and operating aerial firefighting aircraft. Today, with the frequency and severity of wildfires on the rise, the company is looking to the future with state-of-the-art equipment and a renewed sense of purpose.

BY HOWARD SLUTSKEN



The role of an air tanker is to support the firefighters on the ground. **Michael Piper Photo**



The amphibious Air Tractor AT-802 Fire Boss can maintain a high tempo of water drops, scooping from a nearby water source. **Chad Morrison Photo**



The TC690 Turbo Commander serves as the "bird dog" air attack control and lead aircraft. **Craig George Photo**

The missions are flown with military precision in aircraft that are supremely maintained to an almost 100 per cent dispatch rate. A successful flight can help save properties, forests – and lives. The targets are dynamic, in ever-changing conditions, and the flying is some of the most challenging that pilots will ever experience.

This is Conair Group Inc., the world's largest privately owned aerial firefighting company.

"The absolute truth of our business is that we have never successfully put out a forest fire with airplanes," said Jeff Berry, director, Business Development.

"They're put out on the ground. The role of an air tanker is to support the firefighters on the ground and buy them

time. Anybody that says they put out fires with airplanes has never fought a fire on the ground."

If anyone should know, it's Berry, who started fighting forest fires in the late 1970s as a "ground pounder," and worked his way up to managing the aviation program for the Province of British Columbia before joining Conair.

INCREASING INTENSITY

The Abbotsford B.C.-based company has been flying for over 50 years, but the recent frightening increase in intensity and duration of major fires around the world is leading Conair to look carefully at its operations, fleet and training.

"We've just had the worst seasons in history," said Berry, giving the examples of the devastating 2016 fire in Fort

McMurray, Alta., the 2017 and 2018 seasons in B.C., and the extreme fires that began at the end of 2019 in Australia.

When Berry describes recent fire seasons as being "off the charts," he means it literally. Decades ago, the Canadian government created the Forest Fire Danger Rating System, which is in use worldwide.

The rating system's Build-Up Index (BUI) chart helps determine fire intensity. It was created with a top-end value of 200, reflecting the state of fires back then.

But fires have changed – in 2018, the BUI in the Caribou region of British Columbia was 450 – way off the chart.

"Every single agency we talk to is worried, and they all want [planes that are] bigger, faster, more, and sooner," said Berry.



Ethan Delichte Photo

The venerable Lockheed L-188 Electra (above) and Conair CV-580 (below) have been important components of Conair's fleet, but both types are reaching the end of their flying careers.



Jeff Bough Photo

STEARMAN & TBM

Conair – the portmanteau of “aerial contractors” – was established in 1969 when a group of pilots purchased the assets of Skyway, a crop-spraying company that had done pioneering work in aerial firefighting.

“In 1958, Skyway converted the Boeing Stearman and Grumman TBM to go fight fires,” explained Barry Marsden, CEO of Conair.

With a fleet strategy of acquiring low-time and low-cycle airframes from both ex-military and airline sources, Douglas A-26s were purchased in 1970 and converted to fulfil Conair’s new contracts.

“We were able to grow with the customers and meet their needs. We continue to do that, while being creative in trying to look at the next tool that

they would need,” said Marsden.

The company now has a large and growing customer base that includes the governments of British Columbia, Alberta, Saskatchewan and the Yukon; the U.S. Forest Service; the State of Alaska; Sécurité Civile France; and Australia’s National Aerial Firefighting Centre.

Conair’s first large aircraft was added to the fleet in 1971. That Douglas DC-6B was also the first 3,000 US gallon tanker in North America.

“I flew the DC-6B a lot, and really enjoyed it. I also flew the A-26s, TBMs and Stearmans, and enjoyed them all for their different character,” said Marsden.

TANKER TYPES

Air tankers are categorized based on capacity: Type 1 aircraft can

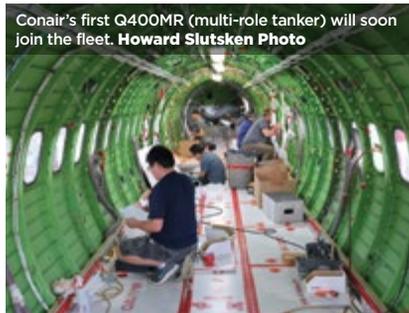
carry 3,000 US gallons/11,350 litres; Type 2 is between 1,000 – 2,999 US gallons/6,800 – 11,349 litres; Type 3 carries 800 – 1,799 US gallons/3,028 – 6,799 litres; and Type 4 is less than 800 gallons.

Then there’s the handful of VLATs – very large air tankers – conversions of the McDonnell Douglas DC-10 and Boeing 747 that can drop prodigious amounts of retardant – 11,600 gallons (43,910 litres) for the DC-10 and 18,500 gallons (70,030 litres) for the 747.

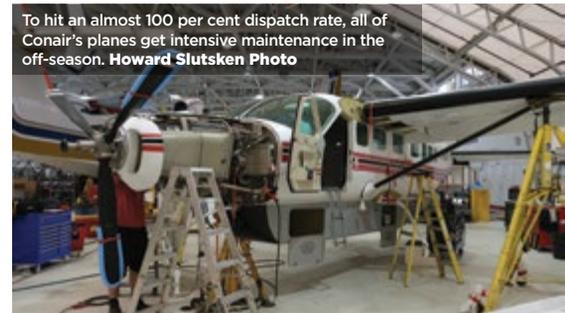
Conair has a fleet of 70 aircraft, with 58 planes based in Abbotsford and 12 in Spokane, Wash. The air tankers range from the Type 1 Lockheed L-188C and BAe/Avro RJ85 quad-jet, the Type 2 Conair CV-580, and the Type 3 Air Tractor AT-802 Fire Boss.



A BAe/Avro RJ-85 quad-jet air tanker undergoes maintenance at Conair's Abbotsford, B.C. base. Howard Slutsken Photo



Conair's first Q400MR (multi-role tanker) will soon join the fleet. Howard Slutsken Photo



To hit an almost 100 per cent dispatch rate, all of Conair's planes get intensive maintenance in the off-season. Howard Slutsken Photo

AIR TANKER TYPE CATEGORIZATION

TYPE 1	TYPE 2	TYPE 3
3,000 US GALLONS / 11,350 LITRES	1,800-2,999 US GALLONS / 6,800-11,349 LITRES	800-1,799 US GALLONS / 3,028-6,799 LITRES
 Avro RJ85 AT	 Q400MR	 Air Tractor AT 802
 L-188C Electra	 Convair CV580	 Canadair CL215T
Fleet balance is not about throwing stones at one air tanker type or another, it is about finding the correct mix of capabilities.		
Source: Conair Group		
 Air Tractor AT802 Amphib		

The company also operates float-equipped AT-802s and amphibious Canadair CL-215/CL-415 waterbombers – all Type 3s.

Land-based tankers, loaded with orange-coloured retardant, can only do part of a firefighting mission and are augmented by the amphibians – the float-equipped Fire Boss and purpose-built Canadair CL-215/CL-415s. These planes skim the surface of a nearby lake or river, fill their tanks and quickly fly to the fire location to maintain a high frequency of water drops.

“As the climate changes have taken hold and as fire intensities increase, it has become absolutely essential that you blend retardants and [water] suppressants, ring the fire with retardant to slow it down, and then you cool the inside to keep it from spotting over and buy crews enough time to go in and put it out,” explained Berry.

Conair’s fleet of four-engine Lockheed L-188C Electras and Convair CV-580 twin-turboprops have provided yeoman’s service for years, but time is running out for the venerable air tankers.

“Both the Convair and the Electra are fantastic airplanes. But the risk that

we’re taking on behalf of the customer is that we can’t predict when a big structural integrity problem is going to occur right in the middle of the season and ground an aircraft,” said Berry.

According to Berry, the two first-generation turboprops were designed before widespread fatigue damage was understood. The planes’ challenging inspection procedures, obsolete avionics and instrumentation, decreasing OEM engine support and a rapidly diminishing parts supply will drive both the Convair and Electra from Conair’s fleet within the next few years.

THE NEXT GENERATION

Selecting a new type for conversion into an aerial firefighter requires weighing several factors, including airframe suitability, availability of aircraft, acquisition price, spares inventory, and operational and maintenance history.

In the early 1990s, Conair identified the Bombardier Q400 – now the De Havilland Canada DHC-8-400 – as an ideal candidate for conversion. In response to a request from the French government, the twin-turboprop was

turned into the world’s first multi-role air tanker. After almost 15 years operating two of the planes, the French Ministry of the Interior ordered six additional aircraft in April 2019.

As a Type 2, the Q400MR has a tank capacity of over 2,600 US gallons (9,842 litres), while the cabin can be configured for passengers, freight or medical evacuations, or as a “combi” with mixed use.

Conair will soon complete the conversion of the first Q400MR for its own fleet. Over the next few years, six of the speedy, modern aircraft will replace the aging CV-580s.

Conair’s expertise in creating operational improvements to its airframe conversions extends to the Q400MR. “We’ve developed a Flight Envelope Advisory System that gives the pilots more control of flaps at low speeds and different weights, making the aircraft safer to operate at low speed,” said Berry.

The first jet-powered tanker to undergo a Conair conversion was the British Aerospace BAe/Avro RJ85. Beginning in 2009, over 30,000 hours of engineering work and flight testing was required to produce the first aircraft.

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The Q400MR can operate as an air tanker or be configured for passengers, freight or as a medevac. **Damien Rembert Photo**

“Going forward, Conair’s **all-turbine fleet**

will be focused on the Fire Boss, CL-415, Q400MR, and the RJ85.”

“The thing that makes the RJ such a great [firefighting] airplane is that it was originally designed to fly into the challenging London City Airport [U.K.]. It has a clamshell [airbrake] and it can just hang there. It’s got a nice square wing, so when it slows down, it doesn’t nose up on you. When you’re on short final, you can see where you’re going,” said Berry.

Conair has completed eight RJ85 conversions and acquired more than a dozen additional aircraft that were recently retired from airline service. As a

Type 1 tanker, the RJ can carry 3,000 US gallons (11,356 litres), and will replace the Lockheed Electra in the fleet.

“We looked at the 737 before we made a decision on the RJ and felt the RJ was a better low-speed handling airplane, which is really our life,” added Marsden. “We would like to look at a very large tanker at some point in the future, but I don’t know what airframe that would be – probably a twin-engine.”

Going forward, Conair’s all-turbine fleet will be focused on the Fire Boss, CL-415, Q400MR, and the RJ85.

KEEP ‘EM FLYING

Conair’s planes might not fly much – with each aircraft logging just 150 to 200 hours per year – but firefighting missions require a high tempo, and planes can add between 400 and 600 takeoff and landing cycles every year.

But just like a fire truck, they must launch within minutes of receiving a “scramble” call, and Conair is proud of its remarkable aircraft dispatch rate of 99.5 per cent.

Flight operations director Claude Marchand and his team of engineers and pilots keep the planes flying, with the work done at Conair’s extensive maintenance, repair and overhaul (MRO) and training facilities at its Abbotsford base.

During the fire season, fully equipped maintenance “shops on wheels” are deployed to remote bases, with parts delivered in Conair’s Cessna Grand Caravan and Rockwell Turbo Commander shuttles. In a fire, those planes also serve as “bird dog” air attack control and lead aircraft.

The demands on the firefighting fleet translate into an intensive maintenance schedule, amplified by the age of some of the aircraft.

Each aircraft cycles through Conair’s packed hangars in the seven-month off-season to undergo a full maintenance regime, returning to the flight line for pilot currency and training in advance of the fire season.



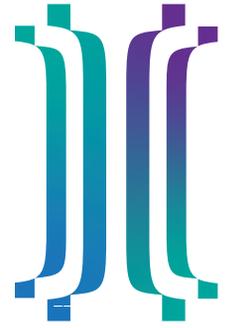
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The BAe/Avro RJ85's low-speed flight characteristics made it an ideal choice for Conair's fleet. **Terry Pierson Photo**



“Conair’s Distributed Wildfire Simulation Centre will link **six fixed-base simulators** – one dedicated to the AT802 Fire Boss with five re-configurable units that will match every plane in the fleet.”

TRAIN LIKE YOU FIGHT, FIGHT LIKE YOU TRAIN

In step with Conair’s transition to new generation aircraft, Marchand’s cadre of 80 pilots and managers are making training and operational changes to optimize cockpit procedures.

Both the Q400MR and the RJ85 can transit from base to a fire location much faster than the CV-580 and Electra, and pilots fly in a comfortable flight deck with up-to-date automated flight control systems.

But the new aircraft were designed to carry passengers in airline service, not fly low-and-slow in a turbulent environment, driving Conair to a team approach for its cockpit crew pairings.

“We will take the experienced firefighter pilot, put him in the left seat, and we’ll hire an airline pilot that has a lot of time on type and we’ll put her in the right seat,” said Marchand. “After take-off, the right-seater will use automation to get to the fire. Once there,

the firefighter will take over and hand-fly the mission.”

Last year, Conair commissioned a Level D full-flight simulator for the RJ85, for training the company’s own pilots and other operators’ crews. The sim only reproduces airline operations, not firefighting missions, but Conair will soon revolutionize the way its crews are trained.

Mirroring networked training systems that have been developed for the military, Conair’s Distributed Wildfire Simulation Centre (DWSC) will link six fixed-base simulators – one dedicated to the AT802 Fire Boss with five re-configurable units that will match every plane in the fleet. Conair is planning to have the DWSC operational in Spring 2020.

“You’ll be able to put a fire on the landscape and then meet over it with a group of airplanes, look out the window of your cockpit, see the other airplanes, watch them drop, and practise all the elements of aerial firefighting,” said Berry.

“Our slogan, borrowed from the Air Force, is ‘train like you fight, fight like you train,’ and we’re developing a world-class aerial firefighting training and tactics centre that will allow us to do just that.”

As Conair looks to the future and moves into its second half-century of operation, Marsden is justifiably proud of his 400-person team.

“We’ve been able to attract the right people to work and stay in the business,” he said. “It’s really the people that are there to support you, and make the company look good and perform well for the customer.”



HOWARD SLUTSKEN

Howard Slutsken’s lifelong passion for aviation began when he was a kid, watching TCA Super Connies, Viscounts, and early jets at Montreal’s Dorval Airport. He’s a pilot who loves to fly gliders and pretty much anything else with wings. Howard is based in Vancouver, B.C.

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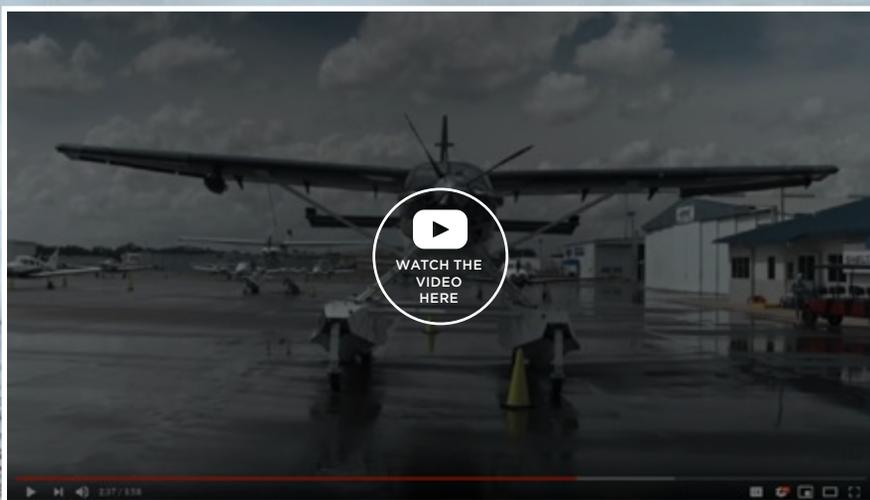
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Stylish VERSATILITY



Daher's Kodiak 100 on amphibious floats offers ramp appeal in spades while delivering on the capabilities of a traditional bushplane. Test pilot Conrad Hatcher put the aircraft through its paces and found it capable of impressive results for just about any mission. **BY CONRAD HATCHER | PHOTOS BY ERIC DUMIGAN**



Aerodynamics meets hydrodynamics - the Kodiak seems ready to leap into the air courtesy of its super efficient Aerocet 6650 composite floats.





A beauty and a beast: Nobody ever said a pretty airplane had to be small! When sitting on the ramp on its floats, the Kodiak appears massive.

Daher's Kodiak 100 (formerly manufactured by Quest) is one of those airplanes that just looks robust, capable and ready for adventure.

It was designed from the outset to operate away from civilization, often by pilots with limited experience in all kinds of conditions, with few support services. Many of these aircraft have been operated by humanitarian organizations in remote parts of the world.

More recently, the Kodiak has been aimed at the general aviation market in developed parts of the globe. This has resulted in the company offering more choices of interior trim levels and appointments.

Prior to this pilot report, I was well acquainted with the Kodiak when operated on wheels, and I was impressed with its short field capabilities. It is equally as impressive as a cross-country airplane as it is able to deliver 170 knots true airspeed at typical altitudes. With all the history that I had with this airplane, I was excited to have the opportunity to fly it in its amphibious configuration.

SKY-HIGH APPEAL

When sitting on the ramp on its composite Aerocet 6650 floats, the Kodiak appears massive. The cockpit entry door seems to be two storeys high with a daunting climb to the top. The all-composite Aerocet floats look like a couple of small yachts attached to the bottom of the airplane, while at the same time they appear to have been specifically made for the Kodiak.

Observers will say the Kodiak has “ramp appeal.” This is just a fancy way of saying that it is an attractive airplane and apparently many people agree. I heard more than one comment that it was a “very good-looking airplane” when it was parked on the ramp at my home airport.

Ramp appeal should never be underestimated because, after all, who wants to buy an ugly airplane? My own opinion is that the Kodiak has very nice lines and that it exudes the aura of a brawny, well-built and capable aircraft. It is classically good looking in the same way as a Norseman, Beaver, Otter or Caravan. Indeed, the aircraft the Kodiak is most compared to and often confused with is the latter.

I think if I was a Kodiak owner, I would become tired of hearing my airplane described as being “kind of

like a Caravan.” This is not to say that Cessna does not produce a fine airplane; its sales success and track record are well documented, and the comparison is normally meant as a compliment. However, I believe this comparison does not adequately recognize the Kodiak's attributes, most notably its excellent handling and truly impressive short and rough field capabilities.

I love this airplane for the fact that you don't need to be an amazing pilot to make it do amazing things. These benefits are magnified when the airplane is equipped with amphibious floats and the result is a very pilot-friendly experience.

The key to this superior handling is the design of the wing, which incorporates a discontinuous leading edge, making the Kodiak a stable and predictable platform at any speed. It always feels “right,” and the pilot can be confident that the airplane is designed to look after everyone on board. Keep in mind that this airplane was originally conceived to be flown by low-time pilots in some of the most remote parts of the world. One has to think that a weekend cottage run or fishing trip should be a cakewalk.

KODIAK AMPHIB BY THE NUMBERS



						
ENGINE PT6A-34 (750 SHP)	MAX CRUISE AT 10,000' 162 KTAS	RATE OF CLIMB 1,060'/MIN	SERVICE CEILING 20,000'	GROSS WEIGHT 7,255 LBS	LANDING WEIGHT 7,200 LBS	USEFUL LOAD 2,690 LBS

	ON LAND 975'		OVER 50' OBSTACLE (LAND) 1,507'		ON WATER 1,735'		OVER 50' OBSTACLE (WATER) 2,333'
TAKE OFF RUN				LANDING ROLL OUT			
				ON LAND 1,291'			
				OVER 50' OBSTACLE (LAND) 2,046'			
				ON WATER 1,314'			
				OVER 50' OBSTACLE (WATER) 3,061'			

Data source: Aerocet

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The cockpit of the Kodiak is thoroughly modern which belies its “classic” exterior. The most notable flight deck feature is the presence of Garmin’s G1000NXi avionics suite, augmented by several other touches that scream anything but “bushplane!” This is not your grandfather’s de Havilland DHC-2 Beaver; there is no dizzying array of round dials, needles, warning lights and switches for the pilot to manage.

The instrument panel is wonderfully uncluttered and functional. Pilots should adjust easily to the three-screen version of the G1000, which incorporates two primary flight displays (PFDs) and a centre multi-function display (MFD). All required information is beautifully displayed and easy to interpret. The G1000 integrates all necessary engine parameters with layers of navigation, weather, flight guidance and other supplementary information. There is no separate annunciator panel to display system faults and malfunctions as would be expected in an aircraft of this category in the “dark ages” before the advent of glass.

Even the interior climate is digitally controlled, with no levers to manually open and close valves to allow the cabin to be heated or cooled. The result is that the pilot has access to all the information required to safely fly the airplane under visual or instrument flight conditions, including synthetic vision and terrain avoidance. This is a valuable safety feature considering the Kodiak may be expected to operate in remote areas away from the helpful eyes of air traffic control.



The Kodiak looks at home on the water in Ontario’s Muskoka District.



The rear baggage door is wide enough to accommodate nearly anything you might want to carry and incorporates a nifty airstair door.



The flight test “motley crew” from left to right: Isaac Capua of Aviation Unlimited; the author, Conrad Hatcher; and Mark Brown, Kodiak demo pilot.

“It would be possible for even a **novice float pilot to safely fly the airplane**

to some tight spots in a variety of water conditions.”



Mark Brown demonstrates how the 180-degree-opening cockpit door secures to allow easy movement onto the floats for docking.



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The cockpit is spacious and comfortable – the large windshield and side windows afford a spectacular view.



The Kodiak is a great performer on water, with the Aerocet floats giving it “speedboat” handling.



The control column is solid and substantial. It conveniently incorporates the electric trim, push to talk and autopilot disconnect controls.



The throttle quadrant incorporates the necessary engine controls along with the trim for pitch, yaw and ailerons.

Notwithstanding its back-country capabilities, the Kodiak is well equipped to operate in the world’s busiest airspace in instrument meteorological conditions (IMC) while minimizing pilot workload.

This airplane is uncommonly versatile and offers the owner unlimited options for prospective destinations. The flight test airplane was equipped with the optional Garmin radar combined with the capability to display XM satellite weather on the large MFD for increased pilot awareness. Operators who are determined to maximize the utility of the airplane would do well to add weather radar for summer operations and to consider the optional Flight Into Known Icing (FIKI) package for winter. Admittedly, the FIKI system is not certified while the airplane is on floats, but this aircraft is a true four seasons machine when appropriately equipped. It’s a great floatplane but it’s not *just* a floatplane; think of it as a luxury SUV that can pretty much go anywhere at any time.

The passenger cabin is well appointed, spacious and comfortable. The aft cabin is entered through a huge door that not only makes entry easy via the wide steps integrated into the lower door, but it also facilitates loading and unloading just about anything you can legally stuff into the back of the airplane. I’m pretty sure if you had to move a jet ski, central air conditioner or furnace it would fit in the back cabin of this airplane to be transported wherever it needed to go.

All that utility doesn’t mean that passenger comfort is sacrificed. The flight test airplane was outfitted with the “mid” grade trim level, but it is doubtful that anyone would ever complain about the interior. If a more utilitarian interior is desired or needed, the “basic” trim level could be selected. If unbridled luxury is your thing, you might consider upgrading to the premium trim level. Passengers are seated in individual chairs with ample elbow and head room; there is even an aisle down the centre like a business jet or airliner. This is a nice contrast for those whose experience with floatplanes is limited to being shoehorned into Cessna 180s, 185s and 206s.

I was honoured to make the evaluation flight for this article with factory pilot Mark Brown. His capabilities as a pilot and his skill handling the Kodiak are only matched by his passion for the

brand. I have rarely been able to stump him with any question I might ask with respect to all things Kodiak, and he handles the aircraft with ease and confidence whether on land or water.

Our flight occurred soon after the French company Daher purchased Quest, making the Kodiak a stablemate with its TBM line, the pressurized, high-flying, fast-moving turboprop single.

I am hopeful that Daher's expertise and worldwide reputation will increase awareness of the Kodiak and that it will translate to increased sales for an airplane that so richly deserves it.

LET'S GO FLYING

My flight in the amphibious version of the Kodiak began on land.

Starting the Pratt & Whitney Canada PT6A-34 is similar to starting other aircraft equipped with this engine, with one added feature: the propeller can be locked to prevent the aircraft from moving when it is on water and unmoored. This is a great feature since turboprops produce significant thrust at idle and the Kodiak would simply run away from the dock if this was not installed.

Taxiing the airplane on the "mile high" Aerocet amphibis is much easier than one might expect. It is easily steered with differential braking and it goes pretty much where you expect it to go. Equally satisfying is the takeoff run, which I completed by following Brown's clear, simple directions. "Set power, slight back pressure on the yoke, keep straight."

Before I knew it, we were airborne and climbing like an elevator. Admittedly, we were well under the maximum allowable gross weight of 7,355 pounds, but it was nevertheless impressive. The takeoff run is listed as 975 feet at maximum weight at sea level when on amphibious floats; I estimate that our ground run was about half that when departing at our lighter weight. Impressive!

During some local flying I was able to enjoy the airplane's superb handling and creature comforts. The flight manual supplement issued for float operations states that pilots can expect to incur a seven to eight per cent penalty in cruise speed versus the same aircraft on wheels. Practically speaking, this translates into a 10 to 14 knot penalty with the floats hanging under the airplane, meaning a cruise speed of 150 to 160 knots is possible. That's not bad for an airplane with such impressive

runway and water performance.

Finally, it was time to sample the capabilities of the Kodiak on water. The approach to landing was easy and extremely stable. It would be possible for even a novice float pilot to safely fly the airplane to some tight spots in a variety of water conditions. In the hands of an experienced float pilot, I am certain that the Kodiak can be operated into small lakes that are not accessible in other airplanes.

Taxiing the airplane "on the step" is rock solid and frankly a ton of fun. I think the smile on my face will need to be surgically removed! The takeoff from the surface of the water is equally impressive and just as easy as departing from a runway.

The flight manual suggests that at maximum weight the takeoff run on water should last a brief 23 seconds. I was having too much fun to use a stopwatch, but I have no reason to doubt the manufacturer's claim.

All too soon, we were lined up for a

runway landing, taking great care to ensure that we had the landing gear in the "down" position. I am sure that the soft touchdown was more attributable to the excellent design of this airplane than any high skill on my part.

The saddest part of this experience was watching the airplane leave without me – but at least I still have the smile! 😊

 TO SEE MORE AMAZING PHOTOS FROM THIS STORY, [CLICK HERE!](#)



CONRAD HATCHER

Conrad Hatcher is a current corporate pilot, Class 1 flight instructor and pilot examiner. He is a lifelong aviation enthusiast and all-around aviation geek. In 20,000-plus hours of flying he has had the opportunity to fly many general aviation aircraft. His friends say that he can always be counted on for an opinion and most of them will admit (privately) that on aviation matters, he is usually correct.





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ALONE

IN THE AIR

Hoarfrost's Aviat A-1B Husky descends over McLeod Bay, on base leg for the small sand "airstrip" Dave Olesen uses during freeze-up and breakup.



When Dave Olesen flies his single-engine bushplanes in the wilds of the Canadian North, he's quite often the only pilot below 10,000 feet. Far beyond any airports, preparation and planning are always the keys to survival.

BY LISA GORDON | PHOTOS BY KRISTEN GILBERTSON OLESEN

When Dave Olesen goes flying, his basic survival kit is always right in his flight coverall.

Before he takes off in his single-engine Aviat Husky or Found Bush Hawk, he stuffs his pockets with the necessities of life: waterproof matches, a lighter, string, pliers, a belt knife, signal mirror, water and a compact survival blanket. In the back of the plane are an Arctic tent, food, campstove, a rifle, snowshoes and a snow shovel.

A southern pilot might wonder why so much gear is necessary. But if they were to take off with Olesen from his remote home base on McLeod Bay at the northeastern tip of Great Slave Lake,

they'd immediately understand. Once he is out over the tundra two hours or more to the north and east of home, a GPS query for "nearest airport" come back as "none."

Olesen – whose company, Hoarfrost River Huskies, offers northern air charters and dog team expeditions – knows that his own safety and that of his passengers depends on being prepared for an unexpected campout.

Since 1987, he and his wife, Kristen, have carved their homestead into a starkly beautiful plot of land on the bay at the mouth of the Hoarfrost River. Their home is 265 kilometres (165 miles) northeast of Yellowknife, N.W.T., as the raven flies, and 337 km (210 miles) by lake from the nearest highway.

The couple raised their two daughters there, home schooling them in not just academics but wilderness living as well. Nowadays, the girls are off at university and work and Hoarfrost River is home to just Dave and Kristen and their 30 sled dogs.

Born in Illinois, Olesen became a dog musher in the 1970s and was drawn to the Canadian North. He participated in expeditions across the top of Canada, from Yellowknife to Baker Lake, Nunavut, and up the coast of Hudson Bay.

Olesen immigrated to Canada in 1987, chucking his jobs as pilot and guide in northern Minnesota, and cashing it all in to buy the Hoarfrost River property.

With a 97-kilometre (60-mile) fetch of open water to the southwest, a glassy-calm summer morning for float flying is a real pleasure.



JUST TO BE THERE

“When I first came north, aviation was simply a way to move us around,” said Olesen, who came to the N.W.T. with a 1946 Piper Cub. “It was an old-time airplane. People looked askance at me – ‘Who is this guy?’”

Kristen joined him in 1989 and by 1992, the region was in the thick of the diamond rush.

By then, the Olesens had become good friends with Peter and Teri Arychuk, co-founders of Yellowknife-based Air Tindi. The company had recently acquired several Twin Otters to support mining exploration in the region.

“Peter and I were dog sledding to town one December night and he said, ‘Come and fly in the right seat of a Twin Otter,’” recalled Olesen.

He flew as a co-pilot for two summers, before buying an Aviat Husky in 1994.

“I just wanted to continue an outfitting business and racing sled dogs. I was convinced that if I bought it (the Husky), they (Air Tindi) could operate it in their fleet. It became a really good thing.”

The Husky was an attractive and cost-effective option for wildlife surveys and geological exploration. Olesen flew it under the Air Tindi banner until 2005.

In 2006, he and Kristen decided to launch their own air operator business and base it from their home at Hoarfrost River. Their location on Great Slave Lake meant that fuel and other heavy shipments could arrive by water.

“Over the years, two things have become obvious to us,” Olesen told *Skies*. “One, you can in fact base a charter

business at the Hoarfrost; and two, if you really want to grow that charter business and jump in wholeheartedly, you’d need to move to Yellowknife.”

For the Olesen family, the answer was simple.

“Our take has always been that aviation is the thing that allows us to live where we live. Our years there have been all about being out there – a bigger charter business is a workable dream, but it’s not our dream.”

MAKING IT WORK

Olesen, 62, is the textbook definition of “bush pilot.” He’s an outdoorsman who is more at home staking out a tundra wolf den with a researcher than sitting in a meeting room at The Explorer Hotel in Yellowknife, where he spoke with *Skies*.

Aviation has always provided the family's bread and butter, and Olesen hires out for a variety of missions. One day he might be gathering lake sediment samples; the next, he could be flying over a herd of caribou with a wildlife biologist.

Between them, Olesen's two aircraft fly about 700 hours a year. That includes many 4.5-hour ferry flights for maintenance, which is done at Tim's Air Maintenance in Fort Nelson, B.C.

"If we can do about 550 revenue hours between the two planes in a year, we're fine," said Olesen. "The biggest headache over the years has been maintenance logistics. If I could do it all over again, I would get my AME [aircraft

maintenance engineer's licence] as well as my pilot licence. On the other hand, it's really good to have an outside set of eyes on your aircraft."

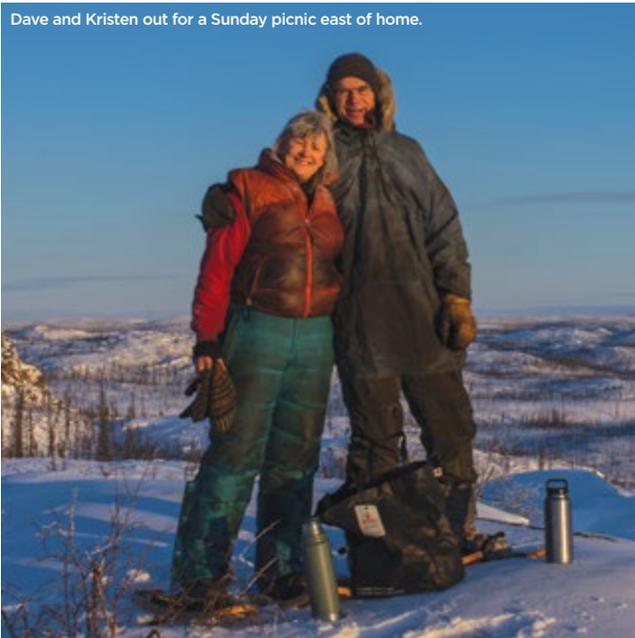
Both of his planes are equipped with tundra tires or wheel skis and operate from the ice or a sandy landing strip until mid-June, when Olesen flies his aircraft to Fort Nelson to have the floats installed. A mere three and a half months later, it's time to equip for winter all over again.

Hoarfrost River Huskies still relies on the Olesen family's passion for dog mushing. Both Dave and Kristen were "hard-core" mushers back in the day, training and competing in the Iditarod, the Yukon Quest, and other big races.

"We've continued to have dogs and do some guiding and outfitting," he explained. Through connections to the University of Alberta and Wilfrid Laurier University, the Olesens welcome a class of students to their homestead in winter. Half the class sleds out to the tundra with Olesen for a week while the other half stays at Hoarfrost River to work on academic credits – then they switch.

Sometimes, the temperature during those trips drops to -50 C (-58 F). Students sleep in expedition-type tents equipped with woodstoves. "Two mornings while they were out in 2018, we were the coldest spot in the country," recalled Olesen.

Dave and Kristen out for a Sunday picnic east of home.



The Hoarfrost River home base in late spring, two years after the fire of 2014. Ice offshore usually lasts until the fourth week of June.



On a foggy June morning, Dave walks on candled ice out to the Bush Hawk — with his life jacket on.





A dogteam and double sled set off west down the coast of McLeod Bay. Yellowknife is 212 miles (340 km) by boat, snowmobile, or dogsled; 143 nautical miles (265 km) by air.



Kristen and Dave, with their daughters Annika and Liv, on the site of the home lost to wildfire in 2014. They have just moved into the new home they built in its place.

QUIET SKIES

These days, Olesen wonders about the future of bush flying. He said the skies and the VHF radio are “eerily quiet” on any given day.

“The biggest challenge nowadays is being out there without a lot else going on,” he added. “I can get this nervous feeling. The other day, I was up northeast of Bathurst Inlet dropping off supplies in the Husky. If something even minor goes wrong, you know it’s going to be a big headache. I’m not terribly worried nowadays about being rescued, since Kristen is tracking the plane, but more uptight about getting fixed, way out there.”

If you fly, it’s a given that your aircraft will eventually be grounded. Repairs might be simple close to urban centres, but they present a big logistical challenge at and beyond Hoarfrost River.

“When things happen, it basically costs you a pile of money,” said Olesen. “I’ve bent a prop, blown a cylinder, and once had a broken ski axle. That little ski part was just \$500, but it had to come from Ontario and then we had to get it to the plane, which was way out on the tundra. These are not things you claim from your insurers. You just fix them.”

That last repair ended up costing the Olesens over \$10,000. They had to hire other aircraft to fetch the passengers who had been on board, get Olesen back to base, and then to meet up with the mechanic, fly back in, install the part, and finally get everybody back to where they started.

“Early on in our years of running on our own, we quickly realized we had to build up a big reserve – it almost can’t be too big. Because it’s not a matter



Aloft together on a muskox photo flight for wildlife researchers, Dave and Kristen pass over the Kahochella Peninsula southwest of their home.

of if in this business. It’s a matter of when! If you’re operating up here, you’d better be prepared for an ongoing string of expensive fixes. There is always something coming.”

Aside from the lack of help in an emergency situation, Olesen is uneasy about the quiet skies for another reason.

“It’s really interesting now to see the evolution of the industry in remote areas. I don’t see the next generation coming up behind us showing any strong interest in bush flying as a career, and it baffles me.”

That lack of interest can perhaps be attributed to the ongoing pilot shortage. It’s no longer necessary for newly minted pilots to log hours in the North before getting their “big break.” Instead, airlines are competing to hire as many

pilots as possible, creating a vacuum that affects smaller operations first.

And, of course, the economy plays a big role.

“In the North there’s not a lot of [aviation] activity right now – with mineral exploration down, everybody is struggling,” observed Olesen. “And that just compounds my sense of, ‘OK, if we do break something out where I work, it will be wildly expensive to get it fixed.’ There are very few piston singles on skis [to fly a part in if needed].”

While the Olesen daughters, aged 20 and 23, have shown some interest in aviation, mom and dad aren’t pushing the issue.

“I think pilots in aviation families have to tread carefully,” he said. “You can’t assume anyone wants to do something. They have to find their own path.”

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STEERING THE COURSE

As Olesen contemplates the future, though, he is mostly pleased.

“We’re really in a situation now where people like us and we can charge what we need to charge, per hour or per mile. And that makes a big difference.”

Kristen holds down the fort as base manager, tracking the planes as Dave flies, answering inquiries, sending out invoices and paying bills. As often as she can, she’s outside feeding her photography business with a never-ending stream of northern subjects.

“I think we’re both of a mind that we’d be quite happy to have an uneventful course to steer for the next few years. There are some aspects of this business that are a pain in the neck. So, when I’m finally out there flying, I have made a resolution to try to enjoy every minute.”

From his unique vantage point, Olesen has watched two wolves take down a caribou from 1,000 feet above. He’s seen caribou migrations, beautiful and

strange atmospheric conditions, and the wild and variable weather brought on by climate change.

“One of the lessons of living out where we do is that we know so little. Living somewhere for 33 years – that’s just a blip.”

It may be but a blip, but for the Olesens it’s the story of their family – filled with both good memories and bad.

In the summer of 2014, their homestead was destroyed by a wildfire. The family spent five winters living in their workshop, but finally moved into a new two-storey log home on Jan. 11, 2020 – at 43 degrees below zero.

In July 2017, Olesen’s Bush Hawk capsized in gale-force winds while doing survey work on floats in the Central Barrens. The plane was recovered, undamaged except by its immersion, but one week before it was to return to work, six months after the flip, the hangar facility and office at Fort Nelson burned to the ground, destroying two planes – one of them the Hoarfrost Bush

Hawk – and gutting a longtime centre for aviation maintenance in the North.

“When the news of that came in the next morning, you could have knocked me over with a feather,” Olesen recalled.

He said after those major setbacks, he and Kristen are finally beginning to feel that they are “ahead of the curve.”

But there’s never been any illusion that smooth sailing lies ahead.

“Running a little air service in the North is a pretty good gig. It’s not for the faint of heart or for anyone who wants guarantees. It sure keeps your interest up.” 



TO SEE MORE AMAZING PHOTOS FROM THIS STORY, [CLICK HERE!](#)

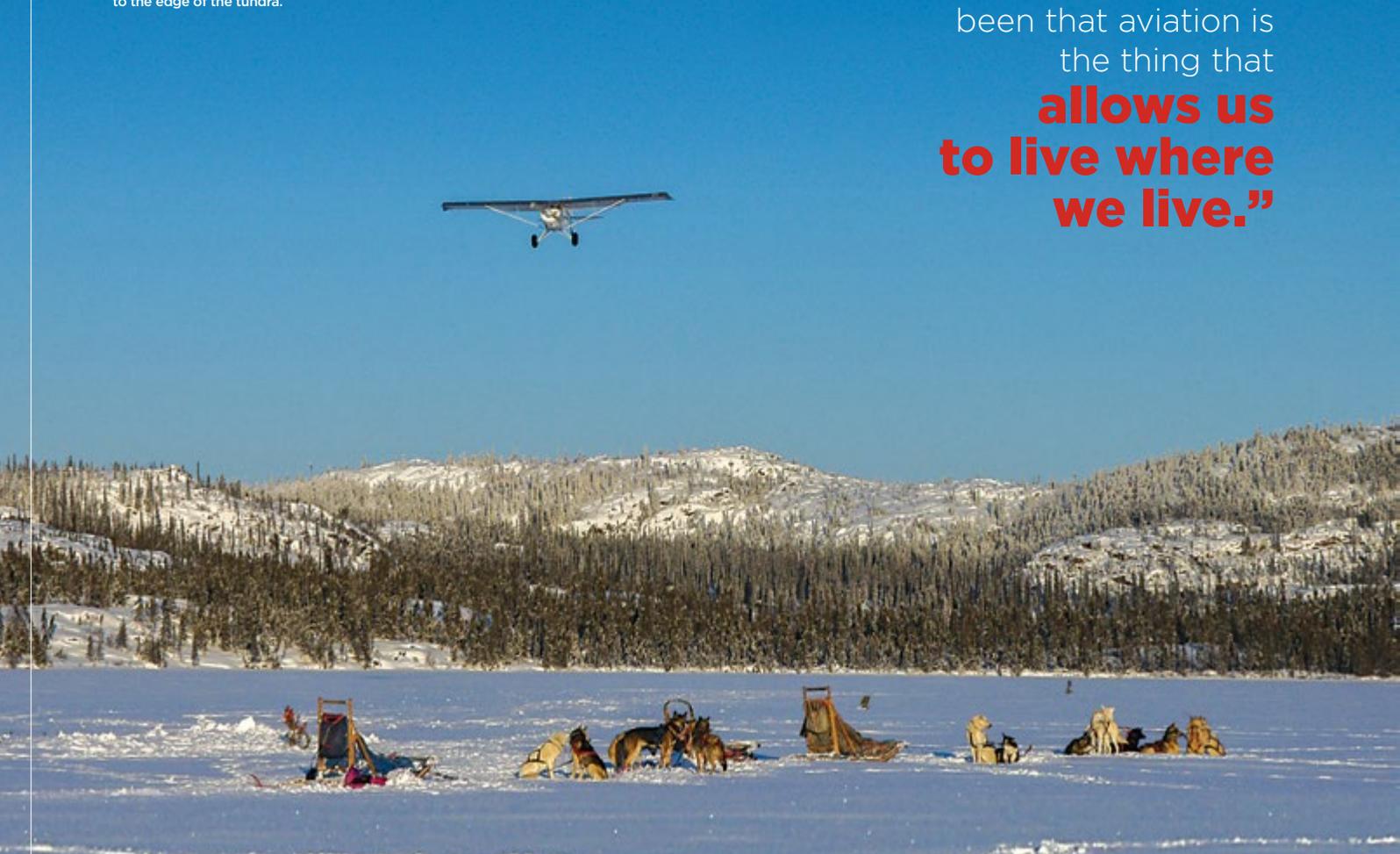


LISA GORDON

Lisa Gordon is editor-in-chief of *Skies* magazine, Canada’s largest and most-read aviation industry publication. Contact her at lisa@mhmpub.com.

Heymitch Lake, named for a family friend, is on a side loop of Olesen’s trail system. The main route parallels the Hoarfrost River and leads north and east 32 kilometres (20 miles) to the edge of the tundra.

“Our take has always been that aviation is the thing that **allows us to live where we live.**”





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EXCHANGE INCOME CORPORATION:

Envisioning

Exchange Income Corporation (EIC) launched in 2004 with the acquisition of Winnipeg-based Perimeter Aviation, a provider of scheduled flight and cargo services into Northern Manitoba.

EIC is a publicly traded, acquisition-oriented company that prides itself on its diverse holdings, which generally fall into two baskets: aerospace and aviation services and equipment, and manufacturing.

In the years following its acquisition of Perimeter, EIC went on to acquire

eight other air operators, including Calm Air International, Custom Helicopters, Keewatin Air, Moncton Flight College, PAL Aerospace, PAL Airlines, and partner operators Wasaya Airways and Air Borealis. It also added Regional One to the fold, which focuses on aircraft leasing and parts.

Combined, EIC's group of air operators flew about 217,000 hours in 2019. Its fleet of 214 aircraft range in size from a Diamond DA20 single-engine trainer at MFC up to a twin-engine ATR 72 turboprop at Calm Air.

LIFE IN FLIGHT

With close to 700 pilots on its payroll, EIC began to anticipate the current pilot shortage several years ago. To keep its cockpits occupied, company directors began to lay the groundwork for a program that would generate a homegrown fix to a global industry problem.

"There is continuous demand for pilots, so in 2017 we started having discussions inside EIC about coming up with an internal solution," explained David White, executive vice-president of Aviation at EIC. "At that same time,



a life in flight

BY LISA GORDON

we were in the process of acquiring the Moncton Flight College (MFC) which was a key element of the equation.”

The February 2018 acquisition of MFC was the missing piece that allowed EIC to design a program it calls Life in Flight, which has been carefully structured to support and transition a pilot from their introductory flying lesson all the way through to a flight crew position at an EIC member airline.

A great deal of planning had to be done before Life in Flight could be officially unveiled at the May 8, 2019

EIC annual general meeting. To lay the groundwork, the corporation called upon its in-house expertise, assembling a core group of representatives from all EIC aviation operations.

“It was a collaborative approach,” recalled Mike Tilley, MFC CEO. “We came into the family and working with David and the other EIC air operators, we talked about what was important to them and the regional differences and challenges. We took all the feedback and honed in on what the program would look like.”

Operators were asked to describe the obstacles they face when it comes to finding, training and retaining pilots. A key message that emerged from these conversations was that new pilots often lack a reliable support network — so that become integral to Life in Flight.

“We heard that some people just didn’t understand aviation,” said White. “We realized there was a mentorship piece we had to tie into, [so they can] reach out and talk to peers.”



A Keewatin Air Beechcraft King Air 200 basks in the northern lights. EIC Photo

In 2004, Exchange Income Corporation was launched with the acquisition of Winnipeg-based Perimeter Aviation. **EIC Photo**



DEFINED CAREER PATH

EIC wanted potential students to see the rewards of the Life in Flight program laid out in front of them. In exchange for a five-year work commitment, grads embark on a clear path to a job with an EIC air operator and a rewarding and lucrative piloting career.

To attract students, EIC designed a Life in Flight website and regularly posts on Instagram and Facebook.

"We're hoping to attract young people," said Tilley. "We're looking for people who are interested in becoming a pilot; and also, strategically, people who will want to live and work in the communities that we serve. If you're from the North, and you want to be a pilot, we're very interested in you. Often, it's hard to retain people up there. As well, locals can also become role models for their communities and inspire others."

Interested applicants have an interview with MFC and also with its air operators.

"If you know where you'd like to end up working, there will be a representative from their HR department in the interview, too," noted White. "We want to be able to offer potential students a job even before



Three Life in Flight students with an MFC Diamond DA20 training aircraft: Kristi-Lee Bauchke, Troy Wilson and Kirk Sparkes. **EIC Photo**

they start their training, so we want to be sure they're the right candidate for us."

Those who are accepted find themselves facing the hefty cost of flight training. Life in Flight offers a solution to that challenge. Students are eligible to apply for access to up to \$100,000 in funding through a unique plan offered by a major Canadian bank.

"It helps pay for your training but also your living expenses, so you can do an accelerated one-year program to get your commercial pilot licence [with multi-engine instrument rating]," explained Tilley.

Throughout the training phase, students are paired with a mentor at their chosen air operator. This ensures they have critical support during an intensive training phase.

Following the one-year program, it takes an additional three months for students to earn their instructor rating. At that point, they are no longer a student and transition to being an EIC employee.

The first part of their five-year work commitment involves building at least 1,500 hours of experience as an MFC flight instructor.

"No matter where you're from, you end up working at the school for about two

years to help train the next generation," said Tilley.

At that point, grads move on to a full-time pilot position at the EIC air operator of their choice.

"The total commitment to be part of the program is five years combined between the flight school and the air operator," he continued. "Once they do that, they get a completion award that will help pay off whatever might be left on their student loan."

White said by that point, EIC hopes to have a crop of 4,000-hour pilots, hopefully debt free, with a career ahead of them at EIC or wherever they want to go.

"We do feel that by attracting people from the areas we service they are more likely to stay with us longer."

STRATEGIC LAUNCH

When Life in Flight grads move into the right seat at an EIC air operator, they will already have about 1,500 hours of experience. White said that helps the company address not only the pilot shortage, but also the experience shortage.

In addition, "The beauty of having a collection of companies like EIC has, including the Moncton Flight College, is that we can collaborate on standard

"Life in Flight students can apply for up to **\$100,000 in funding**

through a unique plan offered by a major Canadian bank."

operating procedures and get that training in at the *ab initio* level to help these people be successful."

To get the program off the ground, EIC hired a program director, Robin Jacuzzi, a commercial pilot whom both White and Tilley consider to be the ideal mentor.

Life in Flight accepted its first official intake of 13 students on Nov. 5, 2019. They joined an additional eight students who were part of a previous "soft launch."

"We've been trying to be strategic and not jump the gun," said Tilley. "We don't have unlimited seats. The first group includes people who've been in our hiring lens for the past while."

Currently, Life in Flight is only open to Canadian students, but international students are part of the future design. EIC also has plans to replicate the program for maintenance, flight operations and flight medical personnel.

With funding, mentorship and a defined career path, EIC's Life in Flight program is an attractive option for new aviators looking to build their careers with more job security than ever before.

"For me, it's a very proactive step towards protecting the future," concluded MFC's Tilley. "We're offering somebody a great career with best in class training, they have it funded, and they get their first and second job. It's a great choice for them to consider." ■



Students in EIC's Life in Flight program attend classes in rooms themed after the company's various air operators. It allows them to become immersed in specific company cultures — in this case, Calm Air. EIC Photo



A Calm Air ATR 42 on the gravel runway at Elk Island Airport in Manitoba. EIC Photo



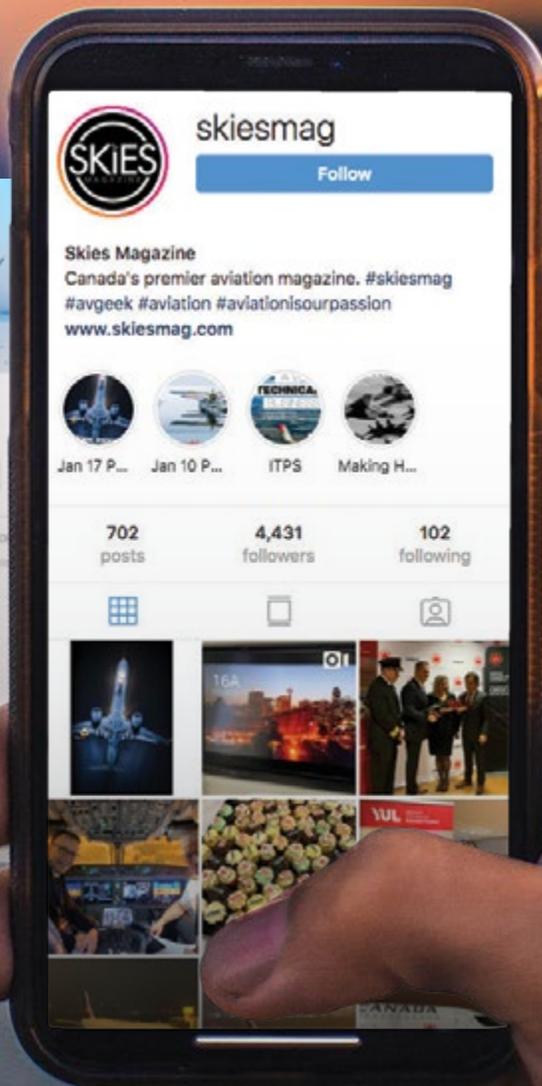
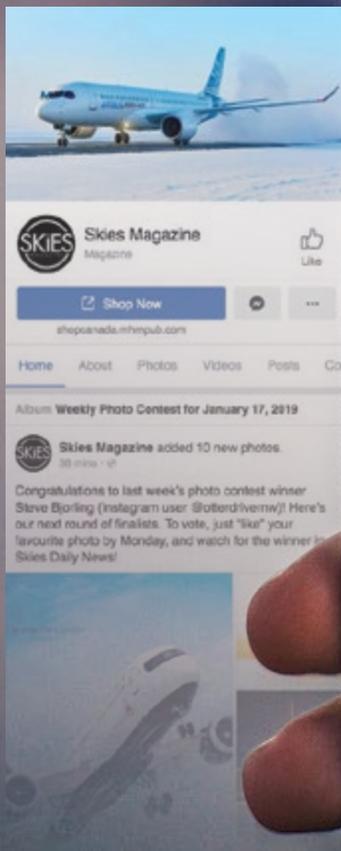
LISA GORDON

Lisa Gordon is editor-in-chief of *Skies* magazine, Canada's largest and most-read aviation industry publication. Contact her at lisa@mhmpub.com.

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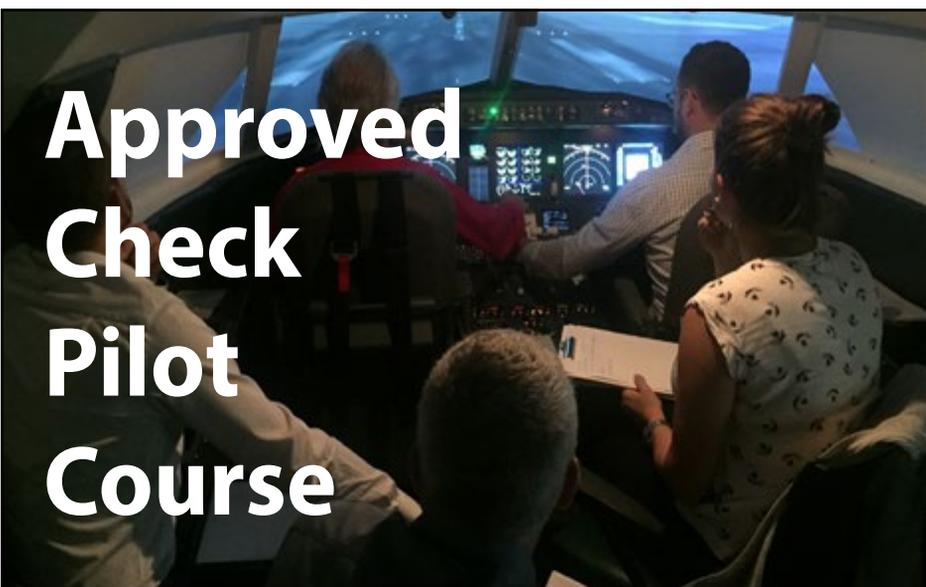
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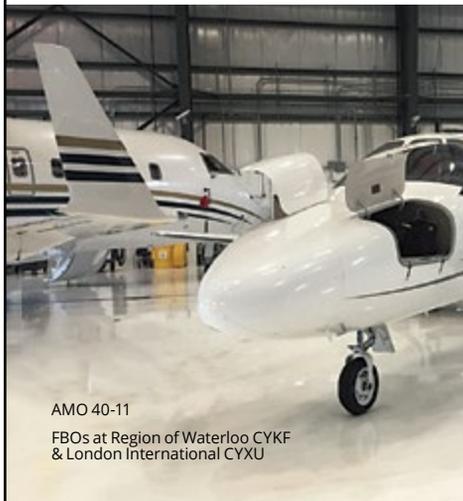
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MUSKOKA AIRPORT (CYQA)



ROBERT WILLIAMSON

Robert Williamson is a junior editor at *Skies*. After working in broadcast, he joined MHM Publishing to pursue a lifelong dream of writing and editing for a print magazine. His interest in aviation developed from his father's passion for the industry.

In most cases, sitting in a pre-flight departure lounge can be an absolute drag. Stale air, tired faces and the bright, distracting glow of LED lights are a recipe for utter boredom.

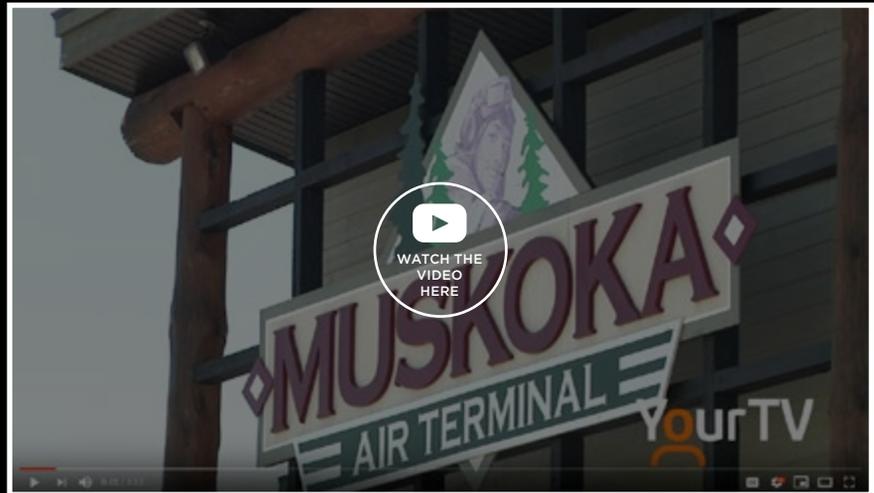
Not so at Muskoka Airport, where passengers are treated to a waiting area that is literally a breath of fresh air. On the Muskoka Patio, a fenced off pre-boarding space, the open design allows passengers to soak in the sights and sounds of the region one last time before taking off. Len O'Connor, the airport's CEO, said this unique feature is the airport's attempt at "trying to bring Muskoka into this facility."

Connecting the airport with the region's natural beauty is a no-brainer; Muskoka is a globally recognized tourism hot-spot. Until last year, there were limited options for getting to Ontario's "cottage country," with driving or floatplanes being the most popular. But the airport wanted to change that, and in 2019 it welcomed scheduled passenger operations with both FlyGTA and Porter Airlines, introducing new routes that connected the area with Toronto, St. Catharines and the Niagara region.

Initially introduced for the busy summer months, Porter operates 20 flights between Toronto and the region from June until September. The airport recently announced that there would be options for winter flights through FlyGTA as well. According to Michael Duben, the Muskoka region's chief administrative officer, the airline partnerships were of mutual interest during the planning stages.

"The first meeting with Porter, I attended about four years ago, so it took quite a while," Duben told *Skies*. "We've been having discussions with Porter for some time."

Part of the process involved introducing the Canadian Air Transport Security Authority (CATSA) to service the Porter flights (FlyGTA is an air taxi service and thus isn't required to go through the same security measures to operate from Muskoka). The solution involved constructing an area that was deemed completely secure; and though that burden fell on the airport itself, Purves stressed the importance of CATSA's contribution.



"The solution to coming up with the CATSA service for, what was it, 20 flights in a year, was very creative," said Bud Purves, the airport's chair. "I've got to compliment the people in CATSA, and even the [Transport] minister himself got involved and he wrote us a letter and responded to find a creative solution that was cost effective for the district as well as [the] border [agents]."

According to Purves, the new passenger routes are only a slice of what's to come for the airport. After meeting with stakeholders recently, the region and airport are developing a joint master plan for the facility, hoping to drive revenue in the coming years.

"One of the areas we're looking to put a lot of emphasis on in the future is relationships with potential partners at the airport. We realize that the airport would only be better with more partners involved, like tourist operators, local vendors, and even some of the other government areas. So it's an important area to us and that's an area that I think we can do better at than we have in the past," he said.

While there is room for improvement, the airport already contributes approximately \$40 million annually to the surrounding region, a number that is set to increase with the new passenger routes. But Duben believes the airport's biggest contribution to the area will come in the way of jobs.

"I would argue that the jobs that are being developed through some of our newer tenants, whether it's FlyGTA or Porter ... that's where I think the benefit really comes in, are increased jobs," he explained.

Along with the carriers operating flights out of Muskoka, a number of businesses have populated the airport's campus, in turn helping to drive employment in the region. These include a new MRO facility opened by Skyservice Business Aviation, Ferrari Flight Training, Muskoka Aircraft Refinishing, Northern Air Solutions — an air ambulance and aerial charter company, and Freedom Flite — an MRO operating at Muskoka, among others. The airport expects the number of businesses to grow along with the Porter and FlyGTA services.

As the airport has flourished, driving employment and tourism, it's become a point of pride for the region — a sentiment echoed by Duben.

"I think it's a jewel, there's no doubt in my mind," he exclaimed. "It's quite impressive that it can be here. I mean, when people think of Muskoka, they think of it as lakes and woods and nature trails and rivers, and things like that. But to know that there's an airport this size that gets this much activity, I think would surprise a lot of folks." 📸



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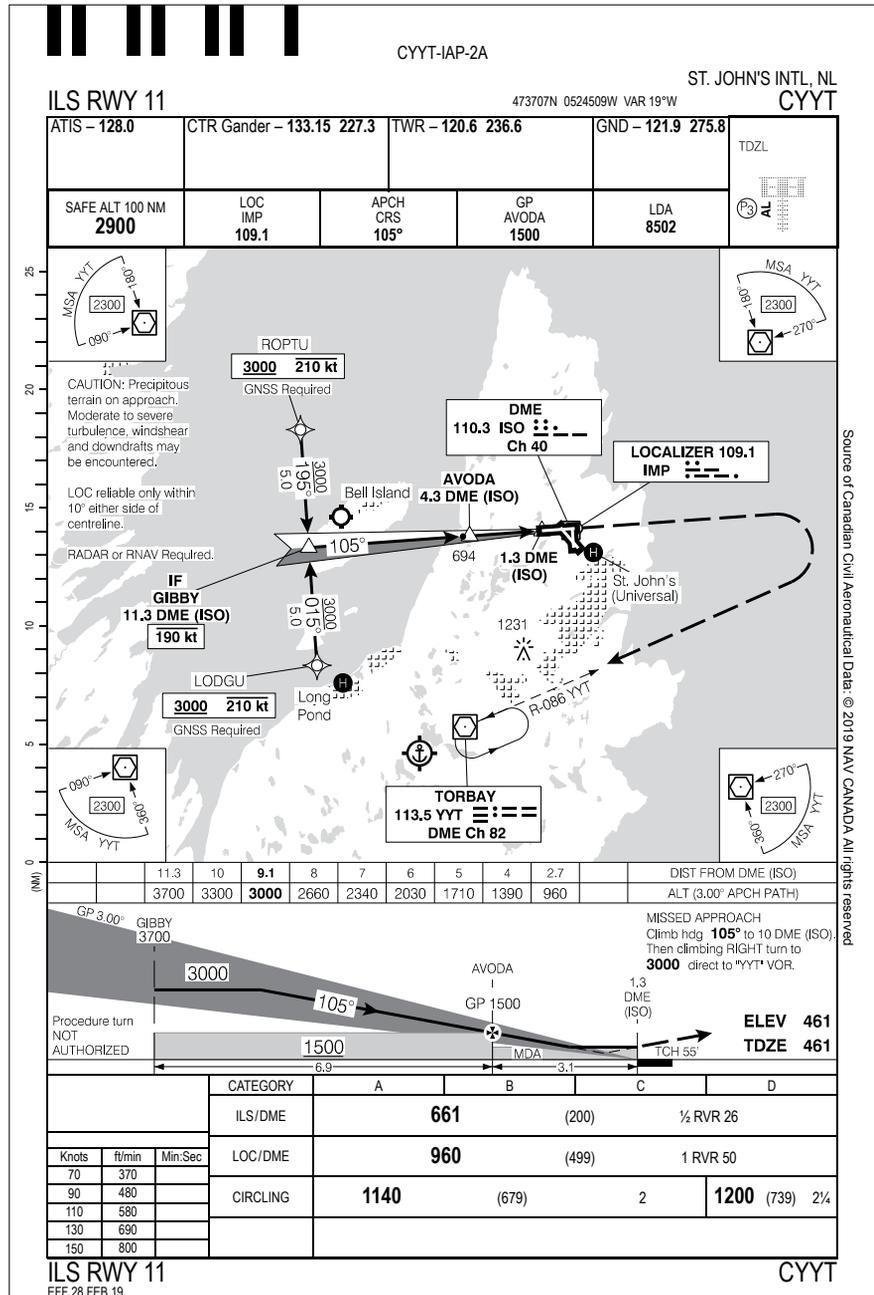


JOHN MONTGOMERY
John is the founder and president of Professional Flight Centre in Delta, B.C., which was established in 1986. A 12,000-hour ATPL pilot and multi IFR instructor, he also specializes in ground school and seminar instruction. John can be reached at john@proifr.com.

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5. How much obstacle clearance is provided at the Safe Altitude 100 NM of 2,900?
6. What is the clearance limit of this approach and what should be your course of action if you arrive there before you receive further clearance?



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Meet Irv Gendel: Volunteer tour guide and aviation aficionado

BY LISA GORDON & NATASHA MCKENTY

Irv Gendel remembers doing a touch-and-go at the new municipal airport in Kitchener-Waterloo before it officially opened in 1950.

Since then, the Southern Ontario airport has grown and changed with time, and so has Gendel. Now, the 89-year-old Kitchener resident is a familiar face at the Region of Waterloo International Airport, where he is a regular volunteer at the Waterloo-Wellington Flight Centre (WWFC).

One look into Gendel's eyes reveals the truth: Like many around the airport, aviation is his true passion – a passion kindled by years of flying experience that have generated an abundance of really good stories.

Some of those tales are suitable for the Grade 6 students that Gendel regularly tours around WWFC. The goal is to introduce them to aviation, perhaps igniting a spark of interest that may one day turn into a career.

"I'm for aviation and I know there's going to be a tremendous shortage of pilots. If I can just even get one, it's worth it," he told *Skies* in a recent interview, adding that women especially have come a long way at Porter Airlines and in the Royal Canadian Air Force, for example.

Female pilots were exceedingly rare when Gendel finished his private pilot training three weeks before his 17th birthday in 1947.

He went into the car business while simultaneously developing a reputation as a freelance "pilot for hire" and an aircraft dealer who bought and sold many types of planes.

"I became really good at it," he recalled.

"Anytime I wanted to buy an airplane I'd go down to the U.S., buy one, and call Miss Macneice at the Ministry of Transportation back home.

"Is that you, Irv? Did you buy another airplane?" she'd ask. I'd say yes and within an hour, I'd have the registration and ferry permit by telegram. I brought them up here, got them licensed in Canada, and flew them until I could sell them."

After a while, Gendel abandoned cars to pursue his commercial pilot licence and instrument rating. That's when he realized his true passion was instrument flying.

"My glory in flying is when I can't see out the window. There's no feeling like when you come out of a cloud and there's the runway right in front of you."

He developed a reputation for being proficient behind the controls of many different types of aircraft and it was common for someone to call and ask, "Can you fly this...?"

"And I'd say, 'Yeah, I can fly that bird,'" said Gendel, who logged more than 10,000 hours in the cockpit over his 37-year flying career.

He did a lot of work for Millardair, flying the Douglas DC-3 and other aircraft, and was a corporate pilot for Ornamental Mouldings of Waterloo, which hired him to fly executives to North Carolina every Wednesday.

Among his notable passengers were former Prime Minister John Diefenbaker and the presidents of General Motors and Ontario Hydro.

"Anybody that was anybody, Carl Millard had me flying them – because I was a smooth pilot."

Gendel also lived in Florida for a number of years, working as a ferry pilot for Dolphin Aviation in Sarasota.

A mild heart attack that he didn't even feel caused him to lose his aviation medical and ended his flying career at age 42.

"There was a little scar on the tip of my heart and

they really shouldn't have taken it away, because I could have been flying," he reflected. "I did get it back. But by the time I got it back, I was a little too old to fly."

Gendel feels his flying career wasn't long enough, but otherwise his only regret is not logging more jet time.

He enjoys meeting the 11-year-olds who tour WWFC as part of the Grade 6 science curriculum. Typically, he performs about 15 tours every month. The kids always connect with Gendel, who spices up the narrative with some of his own stories.

To show appreciation for his many volunteer hours, WWFC recently presented the octogenarian with a gift certificate for a sightseeing flight. But Gendel doesn't want to use it until he feels he has "earned" the gift.

"I'm not going to use it for a while and I'll tell you why," he said. "Two reasons: First of all, I want to fly in an airplane when I don't have to wear a jacket. Second, I want them to get their money's worth . . . I want to wait until maybe June and when this (the school tours) is all done, and then . . . I'll take the flying."

Will he be looking out the window when he does take off on that flight? Nope. His eyes will be glued to the instrument panel.

"I'm not going to be able to look out the window. That's where I get my thrills." ✈

Gendel in the pilot's seat of a Douglas DC-3 in the early 1950s. Photo courtesy Irv Gendel



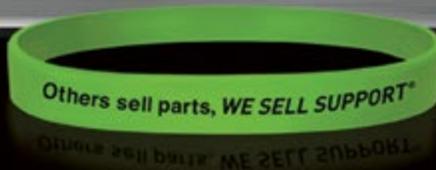


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