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ON THE COVER

As the COVID-19 pandemic gathered steam in late March, voices from Canada's air transport sector came together in a growing chorus to request emergency financial assistance from Ottawa. For many operators, the situation is dire. Cover design inspired by Alex Praglowski and created by Kaytlyn Wismayer



Let's Connect

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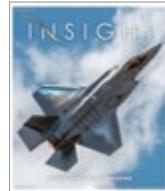
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Social Snap

An Airbus A320neo makes a stop in Iqaluit, Nunavut for cold weather testing on March 6. **Colin Gibson Photo**

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Finding opportunities to shine



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.

Keeping up with global aviation and aerospace news these past few weeks has been exhausting. Like many of you, when it comes to COVID-19 and its effect on the industry, I've wanted to just look away.

The week of March 16 was unlike any other since we launched *Skies*. It began with Prime Minister Justin Trudeau's announcement that Canada was taking even more aggressive steps to contain the COVID-19 virus. These measures included closing the border to those who were not Canadians or permanent residents. In addition, just four of Canada's airports would be accepting international flights, and air operators were now mandated to screen passengers and deny boarding to any who exhibited signs of infection.

There were bombshell announcements nearly every day. On St. Patrick's Day, when some usually indulge in a green beer, the MHM Publishing team moved into home offices as the province of Ontario declared a state of emergency. I participated in a media call that morning with the International Air Transport Association (IATA), which estimated that only about one in 10 of the world's airlines have sufficient cash reserves to get through this emergency.

Everywhere, operators were reacting, trying to deal with a crisis of epic proportions. In a matter of days – in some cases, hours – the robust industry we had all become accustomed to was decimated. Airlines scrambled to repatriate Canadian customers stranded in foreign lands. Layoff notices were issued by the thousands to pilots and cabin crew. What was once an industry ripe with opportunity for up-and-coming young graduates had turned on a dime; the very existence of many Canadian operators is in jeopardy. Without substantial government aid, our industry landscape will look drastically different when we come out on the other side of the COVID-19 crisis.

The rest of the week was filled with a motley assortment of grim news from carriers who grounded their fleets and hunkered down to weather an uncertain future.

And yet, there were bright spots, too. Sunwing Airlines offered free seats to stranded Canadians – even those who had originally travelled with other airlines – just to bring people home. Porter Airlines' management team cancelled their own salaries as hundreds of their staff were presented with layoff notices. Northern operators like Air North and Air Inuit reduced their schedules but resolved to continue servicing isolated northern communities that depend on air travel. Cargojet redeployed its overseas fleet to deliver essential items that will keep North American supply chains moving.

—
“We're all facing the unknown and it's stressful.”

Outside of aviation, companies that are known for distilling whiskey will now be brewing hand sanitizer. Automotive parts suppliers say they can re-tool to build essential medical equipment such as ventilators and personal protective equipment. There are many examples of Canadians coming together to meet the COVID-19 challenge.

There are so many unknowns. Will our air operators survive this crisis? How long will it take to get back to normal? Will the Canadian Forces Snowbirds, who were already grappling with training delays, even perform during their 50th anniversary year? Will newly-graduated pilots find the jobs they had in their sights just a few short weeks ago? Will

all the aircraft orders that have vanished reappear after we get back on track?

We're all facing the unknown and it's stressful. We're all being asked to do things that are outside our comfort zone, like staying away from elderly family members to protect them. We're keeping our kids home from school and going out only when necessary for food and other essentials. Earlier today, I cut my husband's hair – which definitely falls into the realm of the unknown!

There are many heartwarming stories being passed around via social media, the platform that draws us together even as we practise social distancing. Community members are coming together to offer support. In my town, volunteers are ringing the church bells every day at noon to remind those in isolation that they are not really alone. We are all in this together.

It's the same for the aviation industry. By the time this issue of *Skies* is released, this story will have changed yet again.

I read an article the other day that prompted me to look up a famous quote from Prime Minister Winston Churchill. On June 18, 1940, he delivered a speech to the House of Commons of the Parliament of the United Kingdom. France had fallen; but Churchill marshalled England's resolve to fight on against Hitler's Germany.

“Let us therefore brace ourselves to our duties, and so bear ourselves, that if the British Empire and its Commonwealth last for a thousand years, men will still say, ‘This was their finest hour.’”

Today, our enemy can't be seen. It passes from person to person undetected, slipping under our defences and waiting patiently to launch its attack. As citizens of the world, it is our common foe. It threatens our health, our livelihood and our retirement savings. In a word, it threatens our future.

The situation is dire – but there are opportunities for us to shine. There are opportunities for this to be our finest hour. 🇨🇦

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Preserving frontline experience



CHRIS THATCHER

Chris Thatcher is the editor of *RCAF Today* and a regular contributor to *Skies Magazine*.

Twelve months ago, the headlines most frequently associated with the Royal Canadian Air Force (RCAF) were around fighter jets and pilot shortages.

The competition to replace an aging fleet of CF-188 Hornets is finally nearing the end of the request-for-proposal stage, a step closer to a decision on a new fighter. New planes only have value, however, if there are sufficient pilots, aircrews and maintenance technicians to operate and sustain them. A year ago, the Air Force was struggling to retain its most experienced pilots and technicians. Auditor General Michael Ferguson warned in a 2018 report that the RCAF was at risk of not having “enough experienced pilots to train the next generation of fighter pilots” if trends continued.

While the high demand from commercial aviation remains – notwithstanding any downturn that may be caused by COVID-19 – the Air Force appears to have abated the worst of its personnel decline. As of December 2019, the RCAF had a shortfall of 203 pilots across fixed-wing, fast jet and rotary-wing aircraft, a notable decrease from a gap of 275 in the fall of 2018.

The overall attrition seems to have “plateaued a bit,” Col Mark Larsen, director of Air Personnel Strategy, said in an interview in February. The decrease is being attributed to a number of factors, but it’s a welcome sign that some of the retention measures are having an impact. Larsen admitted the Air Force had anticipated it might take a year or two before those efforts showed results.

The pilot shortage might be the most visible and frequently touted number in the media, but Larsen and a small Air Force cell are monitoring a range of indicators – from aircrew candidates on the basic training list, to the number of newly winged graduates, and the status of the operational training units (OTU)

– to gauge the impact of several new initiatives launched last July to retain experienced pilots and keep them on frontline squadrons.

It’s all part of two multi-year programs, Operation Experience and Operation Talent, to hold on to members and improve the quality of service. As RCAF commander LGen Al Meinzingler stated at the time, “We are at risk of losing the depth of experience that our more senior personnel possess and, thus, the ability to mentor, train and transfer knowledge to our newer aviators and bring them to an operationally effective level . . . We must nurture an environment where the RCAF’s quality of life and quality of service make it more attractive for our members to stay than to leave.”

The RCAF’s primary focus has been preserving frontline experience. It has reduced the number of pilots entering the training system in an attempt to minimize delays as pilot candidates transition through the various phases of flight training, and to reduce the backlog at OTUs where they acquire aircraft type training before transitioning to operational squadrons. It’s a bit counterintuitive, Larsen admits, but it ensures a better first officer-to-aircraft captain ratio.

To keep experienced pilots in the cockpit and not at a desk, the Air Force has introduced a range of initiatives over the past year. The most significant might be a new trade, the Air Operations Officer, a battlespace manager in operations centres whose position would previously have been filled by personnel on ground tours. But it has also turned to more contracted instructor pilots for basic flight instruction, a way of retaining experience even if it is no longer in uniform.

The intake plan for the current fiscal year includes 74 pilot candidates recruited externally and 22 transfers from other military occupations. The Air Force is on target to reach that goal. And it’s worth noting those figures include six former RCAF pilots and three pilots

from other nations under an initiative to streamline re-enrolment of skilled aviators from the RCAF and allied militaries. There’s also been modest success – 12 as of when we spoke – to encourage pilots contemplating release to transfer to the Reserves and continue to serve while working in the commercial sector.

That intake target will likely drop again next year. With two new aircraft entering service – the CH-148 Cyclone helicopter and the CC-295 fixed-wing search and rescue aircraft – expect capacity in the training system to be stretched as aircrews continue with or begin conversion programs from the legacy fleets. But the lower numbers allow the Air Force to better manage the process.

The pilot initiatives, and there are several more, are part of a much larger effort to encourage talent to stay. Op Experience and Talent are seven-year plans, so any declaration of success is premature. But the early positive indicators are reason to hope the RCAF will see “dividends in the coming years,” said Larsen. 📈

“The Air Force appears to have **abated the worst** of its personnel decline.”

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Pan(dem)ic & fixing stupid: Aviation's involvement varies



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.

One of the most memorable speeches in English literature is courtesy of William Shakespeare. It takes place in Act III Scene II of his epic *Julius Caesar* after the emperor is assassinated. “The evil that men do lives after them,” Mark Antony says. “The good is oft interred with their bones.”

It was, in hindsight, a cynical viewpoint which has nevertheless prevailed through the four centuries since Shakespeare put quill to paper. You'd be forgiven if you don't think the words have anything to do with aviation.

But you'd be wrong. Thousands of flights carry millions of us daily to destinations near and far without incident. We travel securely in the knowledge that aviation remains the safest way to get around.

That said, news of one incident or accident – fuelled by the Internet – can turn the tide of public opinion into panic in a heartbeat. Consider not only the horrendous impact of COVID-19 on thousands of victims worldwide but also on every aspect of this industry.

Who is to blame? There's no escaping the fact that the virus first erupted in the central Chinese city of Wuhan. The local Communist Party, possibly afraid of upsetting Beijing, dispatched police to gag the young physician who had tried to raise the alarm among his colleagues.

That response effectively planted the seed for what the World Health Organization eventually confirmed as a pandemic. The Chinese doctor died of the virus, as have many hundreds of others as it jumped borders and oceans, facilitated by increasingly affordable air travel.

Airlines' initial attempts to cope with it were somewhat compromised by a mish-mash of government responses which morphed from outright denial into what we have today: most scheduled services cancelled and carriers begging for help as their costs

continue even as revenue evaporates.

Generally, the industry has behaved responsibly, opting for full refunds or free rebooking. That was the “good,” if you will, as defined by Shakespeare. The flip side was manifest in a couple of examples of how not to handle passengers.

A Quebec family with three children had boarded for an Air Transat flight to Paris in late February. They were summarily removed after other passengers pushed the panic button by complaining about one of the children coughing, even though a doctor on board had said the 21-month-old had a simple cold.

Similarly, when a WestJet Toronto-Vancouver passenger asked cabin crew pre-departure for a headache pill, he was questioned about whether he had a fever or had been to Asia. He hadn't but was nevertheless ordered off because he might have COVID-19.

I think it'll be a frosty Friday in July before either carrier can expect repeat business from those passengers. Each incident was, in a small way, an example of how “panic” and “pandemic” – separated by about 30 entries in most dictionaries – collide. Stupidity and ignorance didn't help.

However, on March 16 when WestJet suspended all international and transborder services until late April, it said it would facilitate Canadians' return from overseas by lowering ticket prices on remaining seats back to Canada.

“We now have the responsibility . . . to bring our citizens home,” said the airline's president and CEO Ed Sims. It was a savvy offer which might well help to counter any ill-will from that passenger's eviction in Toronto.

Meanwhile, there's the overall financial health of the airline industry to restore. It has been bleeding the world over and Canada's is no exception, hence the industry's appeal for help. This is, after all, a much

worse environment than 9/11, when governments did come to the rescue with short-term assistance.

John McKenna, president and chief executive officer of the Air Transport Association of Canada, told me in mid-March that aviation had to get some of the protection promised in a multi-billion-dollar economic stimulus package the government rolled out.

“It can't be a promise; it has to be hard cash – soon!” said McKenna. “We need . . . help or air transport services in Canada might not be the same in two weeks' time. These are companies that cannot afford to wait six months.”

And that cannot be allowed to happen in a country which is as dependent on aviation as ours. Simply having the banks reduce interest rates on loans won't cut it. ❌

“Meanwhile, there's the overall financial health of the airline industry to restore.

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Downtime upgrades



TONY KERN

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.

There's nothing like a global pandemic to help you get caught up on a few things! Like many others, the COVID-19 outbreak has given me time to reflect from my home office, not only on what the pandemic means to our industry, my customers and business, but on my own readiness for many things completely outside of the current situation. It has given me a gift that is rare in my life: the gift of time.

This morning I woke up early with a question on my mind that I and many others have been pondering for decades. Since we all know that accidents and incidents occur in a linear chain of events, why don't we recognize them as they are happening, and take the actions necessary to stop them?

It's a big question, and for some reason, in the wee hours of pre-dawn darkness, something popped into my head. It was a story a German friend of mine told me last week in a discussion of why bad things happen inside good systems to well-trained and well-intentioned people. Out of the blue, he looked at me and said, "My grandmother always told me not to try to catch a falling knife."

I nodded politely as if I understood the non-sequitur as sage wisdom, but then fessed up and asked Elmar what the heck that had to do with what we were talking about. He explained.

"When you drop a knife it's the first mistake, and the natural tendency is to try and catch it. When we do that, we are escalating the risk significantly. But, it's in our nature, so we reach for it and make things worse. We must train ourselves *in advance* to let it drop. Mishap chains are like that: something goes wrong, and we react rather than thinking or applying our training. Then it snowballs."

Thinking through the scores of accident investigations I have participated in or studied, I could see similar patterns of getting caught up in the initial event, losing situational awareness, and letting the situation escalate out of control. So, what is the aviation version of not reaching for the falling knife?

I think the answer lies in accepting the situation and focusing forward. Let the knife fall – or its operational equivalent – and address the new situation at face value. Maybe you made a mistake and are embarrassed. Don't let your emotional jetlag keep you in the past. Instead of wasting critical brain time on what *happened*, adjust your mindset to what *now*, and what *next*.

Sipping my second cup of coffee as the sun rose over the hills of Southern Texas, I let my mind wander. Now that I was thinking about knives, I recalled another bit of family wisdom from my own father. I had been watching with fascination through my seven-year-old eyes as he used an old whetstone to sharpen his pocket knife to a razor's edge.

"Isn't a knife that sharp dangerous, Daddy?" I asked. He continued the slow and methodical stroking against the stone as he explained. "No, son, it's the dull knife that is dangerous. When you work with a dull knife, you get frustrated, and push harder. When you make a mistake or the knife slips, you get hurt. When you work with a sharp knife, you have far better control. It's not the knife that is dangerous; it's the person who is using it and the way they use it. When you sharpen the knife, you are preparing to use it correctly."

Nearly six decades later, the true lesson he was teaching me is clear. Make sure the tools of your trade are sharp and you are operating under control. Rest, professional study, proficiency, continuous improvement, briefings – all of these are ways we can sharpen our most valuable tool: ourselves.

Having a little downtime might be just what we need to reflect on the important things that time pressures have prevented us from doing. Now's the time to train ourselves – in advance – for the things we will need again soon in the heat of the battle. It's the time to train ourselves about falling knives, and to sharpen our tools so we have better control over them – and therefore, the situations in which we will use them.

Stay safe, stay healthy, and make the most of your time! 📌

—

“Mishap chains are like that: something goes wrong, and **we react rather than thinking or applying our training.** Then it snowballs.”



SKIES DAILY TOP 10

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

1

CANADA CLOSES BORDERS TO FOREIGN NATIONALS, RESTRICTS MOST INTERNATIONAL FLIGHTS TO 4 AIRPORTS

Prime Minister Justin Trudeau said Canada is taking "increasingly aggressive steps" to prevent the spread of the COVID-19 virus.

2

WESTJET CEO FOCUSED ON 'COMPETING HARD'

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

3

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.

4

GOVERNMENT PROPOSES MEASURES TO EXTEND RUNWAYS AT 28 AIRPORTS

The proposed measures also include other means of compliance for airports where land is not available for extensions.

5

CONAIR GROUP: HOT WINGS

Since 1969, Conair Group Inc. has specialized in designing, building and operating aerial firefighting aircraft.

6

AIR CANADA A319 LANDS SAFELY IN TORONTO AFTER WHEEL FALLS OFF

An Air Canada flight was able to make a safe landing in Toronto on Feb. 18 despite missing a wheel.

7

BOMBARDIER BIDS ADIEU TO ITS AIRLINER ASPIRATIONS

Financial priorities have dictated the sale of what began as the C Series jet.

8

VOODOO SHOES

Abbotsford International Airshow will feature custom-designed shoes that pay tribute to the iconic CF-101B Voodoo.

9

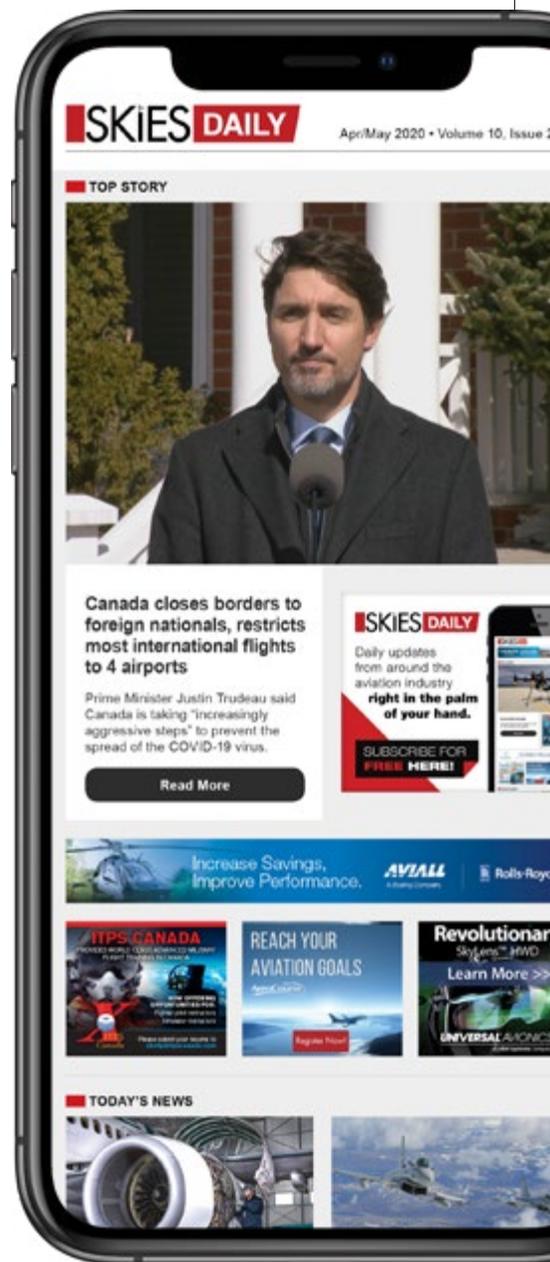
LEGAL BATTLE RAGES ON OVER FLIGHT AC 624 COCKPIT RECORDER

The Transportation Safety Board of Canada has been directed to provide recordings and any transcripts of Flight AC 624's cockpit recorder.

10

NEW DEFENCE PROCUREMENT AGENCY WOULD BE DISRUPTIVE, COSTLY

It is unclear how the government will consolidate the myriad of procurement functions of multiple departments.



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Briefing Room

**AVIATION
INDUSTRY NEWS**

ET 302: Interim accident report criticizes Boeing software and training. ▶

AC 624 crash: Court stays CVR ruling pending June appeal. ▶

SAF+: Montreal group aims to transform industrial CO₂ into sustainable aviation fuel. ▶



CANADIAN OPER

Efforts to contain the unprecedented COVID-19 pandemic have thrust Canadian air operators into uncharted territory as they cut capacity, seek relief and issue thousands of layoff notices.

◉ **LISA GORDON** | INDUSTRY NEWS

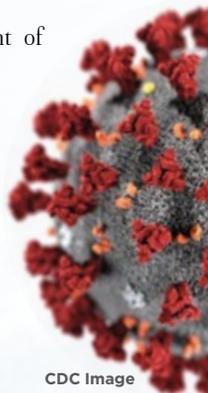
Only about 30 of the world's airlines have enough cash to weather the economic storm induced by the COVID-19 pandemic, according to an industry association that represents nearly 300 air operators.

The Montreal-based International Air Transport Association (IATA) – whose Canadian members include Air Canada, Air Transat, Cargojet and WestJet – said on March 17 that the crisis had affected

markets representing 94 per cent of global passenger revenues.

“In times of crisis like this, balance sheets are key to survival,” noted IATA chief economist Brian Pearce during a media call.

“The vast majority of airlines still have high levels of debt, which means they still have fixed obligations to pay even when there is no revenue . . . [at the start of the year], 75 per cent of the airlines we



CDC Image

Domestically, Air Canada said it plans to service all Canadian provinces and territories during the month of April. The carrier's CEO said the COVID-19 travel restrictions are having a "cataclysmic effect" on the airline industry. Alvin Man Photo



OPERATORS IN CRISIS



looked at had less than three months of cash to cover those bills. That is pretty much running out for many airlines now, and that's driving the liquidity crisis we have today."

IATA issued a call for governments around the world to take "extraordinary measures" that will safeguard cash flow, such as waiving slot rules, removing taxation and fees, and reducing income and payroll taxes.

Here in Canada, voices from the national air transport sector have come together in a growing chorus to request emergency financial assistance from the federal government in Ottawa.

The situation is dire, believes John McKenna, president of the Air Transport Association of Canada (ATAC). On behalf of its membership, which includes commercial operators, flight training institutions and aviation industry suppliers, ATAC submitted

an "urgent appeal for immediate government financial support" to Prime Minister Justin Trudeau on March 16.

"We need . . . help or air transport services in Canada might not be the same in two weeks' time," McKenna told *Skies*. "These are companies that cannot afford to wait six months."

The National Airlines Council of Canada – which represents Air Canada, Air Transat, Jazz Aviation and WestJet – issued a call for a number of

WestJet is suspending all scheduled commercial operations (international and transborder) for 30 days, effective March 22, and will be concentrating on repatriating Canadians who are still abroad. Galen Burrows Photo



measures it said were both necessary and urgent. “This includes addressing airline liquidity, providing relief from various government charges such as airport ground rent, navigational fees and excise tax, and an immediate pause in non-pandemic related regulatory and policy development.”

On the evening of March 18, Trudeau tweeted that he had spoken earlier that day with the CEOs of both Air Canada and WestJet about the toll COVID-19 is taking on the airline industry.

“We know some sectors of our economy – like travel and tourism – are more vulnerable than others, and we’ll keep working together as we look at ways to support those affected,” Trudeau said on Twitter.

Canada’s two largest airlines were no doubt relieved to see that tweet, which came in the middle of a gut-wrenching week full of hard decisions.

Although the coronavirus had been marching inexorably toward Canada for some weeks, the pace picked up tremendously on Monday, March 16, when Trudeau announced Canada was closing its borders to foreign nationals, with some exceptions.

In addition, only four airports in the country would be handling international flights: Vancouver, Calgary, Toronto and Montreal. Canadian air operators were also mandated to refuse passage to any travellers exhibiting symptoms of COVID-19.

Subsequently, it was announced the Canada-U.S. border would be closed to non-essential travel on March 21.

It didn’t take long for operators to react.

Leisure carrier Sunwing Airlines said on March 16 that it would be focusing on bringing Canadians home, cancelling all southbound flights from March 17 to April 9. Any open seats remaining after check-in for each flight would be offered to Canadian citizens or permanent residents free of charge in an effort to bring everyone home, the leisure carrier later added.

Additionally, Sunwing said uncertain market demand for its southern vacation packages had forced the airline to issue layoff notices to its 470 pilots, as well as cabin crew, as of April 8.

“Our pilots and flight attendants play a crucial role in our operations and this was not a decision that we took lightly,” said Sunwing Airlines president Mark Williams. “Once we have confirmation on a return to service date of our southbound flights, we fully intend to recall our flight and cabin crew members. These are incredibly difficult decisions to make. But the circumstances we face are dire and we must take action to ensure the long-term viability of our business.”

Williams also said that while Sunwing has never sought government support in the past, it is seeking assistance now under these exceptional circumstances.

Over in Calgary, WestJet president and CEO, Ed Sims, announced on the evening of March 16 that the airline would be suspending all scheduled commercial operations (international and transborder) for 30 days, effective March 22.

“We will be operating rescue and repatriation flights in partnership with the Canadian government,” wrote Sims, who added that ticket prices into Canada were being reduced. “In addition, we will also reduce our domestic schedule by approximately 50 per cent. At this point, all network changes are in place for the next 30 days.”

WestJet’s ultra-low-cost carrier arm, Swoop, is suspending all international and transborder flights as of March 22 – a restriction that will be in place until May 31.

Swoop began operating extra flights on March 23 to bring home Canadian travellers. A total of 15 flights were scheduled over three days to repatriate 2,349 Swoop customers, said the airline.

Canada’s largest airline and flag carrier released its own pandemic response plan on March 18. Air Canada will gradually suspend its international flights by March 31; after that date, it plans to serve a small number of international and transborder destinations to facilitate the repatriation of Canadian citizens who are still abroad, as well as the transportation of necessary cargo. The changes reduce the airline’s international network from

Sunwing has issued layoff notices to 470 pilots, as well as cabin crew, effective April 8. President Mark Williams said the airline is seeking government assistance. Eric Dumigan Photo



Chorus Aviation operates under a capacity purchase agreement with Air Canada, whereby it services regional routes for the mainline carrier. On March 18, Chorus said it is in a strong liquidity position with a current cash balance of \$132 million. Alvin Man Photo



WestJet's ultra-low-cost subsidiary, Swoop, has suspended all international and transborder flights until May 31. The airline had offered scheduled service to 17 destinations in Canada, the U.S., Mexico and the Caribbean. Eric Dumigan Photo



101 airports served to just six. In the U.S., service will be reduced from 53 airports to 13 and is subject to further reductions based on government orders.

Domestically, Air Canada said it will continue to fly to all Canadian provinces and territories during the month of April.

“The restrictions on travel imposed by governments worldwide, while understandable, are nonetheless having a cataclysmic effect upon the global airline industry,” said Air Canada president and CEO Calin Rovinescu.

On March 20, the Canadian Union of Public Employees (CUPE), which represents Air Canada’s flight attendants, confirmed the airline will be laying off about 3,600 mainline cabin crew and all 1,549 Rouge employees. The layoffs will take effect on April 30 at the earliest, said CUPE.

“This has been the most challenging time any of us will likely ever experience as flight attendants,” said Wesley Lesosky, president of the Air Canada component of CUPE. “Our members have been on the front lines of this crisis since day one, and it has been a tough journey ever since. Our hearts go out to all of our members, especially those who fell sick while doing their job.”

CUPE represents 15,000 flight attendants at nine different airlines in Canada, including Air Canada, WestJet, Sunwing and Air Transat. The union called on Ottawa for financial support “tied to protecting jobs and ensuring that airlines recall our members quickly.”

On March 23, Transat A.T. Inc. announced it would be laying off 70 per cent of its staff and reducing work time and/or salaries for the remainder. About 3,600 employees will be affected by the cost-cutting move, including all flight crew at Air Transat. The Montreal-based holiday travel provider has halted all ticket sales to and from most U.S. and European destinations. It, too, is focused on bringing Canadians home but will shut down international operations until at least April 30 once the repatriation flights are completed.

Porter Airlines is also shuttering its operations temporarily, effective March 20 to June 1. The Toronto-based operator of Dash 8-400 aircraft said it will also be forced to issue layoff notices to many of its 1,500 employees, but plans to recall all team members once the airline is up and running again.



“Executive chairman Robert Deluce and I will not receive any salary during this time, in alignment with the impact on our team members. All other management who remain during the temporary suspension will see salary reductions of up to 30 per cent until flights resume,” said Michael Deluce, Porter’s president and CEO.

ESSENTIAL SERVICES

IATA director general and CEO, Alexandre de Juniac, pointed to the crucial role that air cargo operators play in delivering medicines, equipment and time-sensitive materials to keep the global economy functioning. In a March 16 press release, IATA urged governments “to take urgent measures to ensure that air cargo will be available to support the global fight against COVID-19.”

Mississauga, Ont.-based Cargojet said on March 19 it is now experiencing significantly higher demand from the e-commerce sector, as well as for health care and essential supplies. The operator said it was reassigning aircraft from international cargo routes to the Canadian overnight network and preparing to handle additional demand through the addition of daytime flights. In addition, “we are paying special attention to ensuring that supply chains to northern communities remain strong,” said Cargojet.

Canada’s northern air operators are also responding to the crisis. Both Air North and Air Inuit said they had scaled back operations due to reduced demand, although they will keep flying while taking all recommended precautions to stem the spread of COVID-19.

Glenn Priestley, executive director of the Northern Air Transport Association (NATA), told *Skies* on March 20 that northern operators are an essential service.

“Northern air carriers are not the largest in Canada, but we do provide essential service to the largest proportion of Canada’s land mass and to many communities that have no road access and/or are not served by mainline carriers,” he said.

NATA has petitioned the federal government for immediate financial relief for its 30-plus operator members. Specifically, Priestley said this included “temporary suspension of the excise tax on jet fuel, Nav Canada charges, the Air Transport Security Charge, and airport rents with a flow through to airport fees.

“It is imperative that northern air carriers are not overlooked in discussions concerning airline financial support.” ✖

- With files from Ken Pole and Robert Williamson

Air Transat is shutting down operations until at least April 30 once its customers have been repatriated to Canada. Temporary layoffs and other cost-cutting initiatives are in place. Alvin Man Photo



Cargojet said it is experiencing higher demand from the e-commerce sector as consumers rely more on delivered goods. It has restructured to dedicate more aircraft to Canada-U.S.-Mexico supply chains. Alvin Man Photo



Air Canada Rouge will be laying off its entire staff of 1,549 cabin crew, effective April 30 at the earliest. Galen Burrows Photo



Air North and other northern operators are soldiering on, albeit with reduced schedules. They are essential lifelines to many northern communities without road access. Simon Blakesley Photo



Porter Airlines has ceased flying until June 1, laying off many of its 1,500 employees. Senior management also said they will not be drawing salaries during this time. Eric Dumigan Photo



Ethiopian Flight 302 report criticizes Boeing software, training

SAFETY NEWS

The Ethiopian Aircraft Accident Investigation Bureau (AIB) released its [interim report](#) on the crash of Ethiopian Airlines Flight 302 (ET 302), citing inadequate training provided by Boeing and the activation of the Maneuvering Characteristics Augmentation System (MCAS) as the principal causes of the crash.

Ethiopian Flight 302, a Boeing 737 Max 8 aircraft, crashed on March 10, 2019 shortly after taking off from Addis Ababa Bole International Airport in the Ethiopian capital, killing 157 people on board. The accident occurred only five months after a 737 Max operated by Indonesian airline Lion Air crashed under similar circumstances, resulting in the loss of 189 people aboard that aircraft.

After the Ethiopian crash, aviation regulatory bodies the world over banned the Max from their airspace, eventually resulting in the grounding of the type.

The release of the interim accident investigation report came a day before the one-year anniversary of the crash of the Egypt-bound flight. In it, the AIB found that the 737 Max aircraft had “a valid certificate of airworthiness and [had been] maintained in accordance with applicable regulations and procedures,” had no technical problems before departure, and the aircraft weight and balance was within the operating limits.

This differed slightly from Indonesia’s final crash report on the Lion Air crash, which cited a number of factors that included the aircraft’s design along with the crew’s response and a lack of documentation on the aircraft’s flight and maintenance histories as the causes of the accident.

This latest report from Ethiopia details an almost second-by-second account of the harrowing moments between ET 302’s taxi to the runway and its impact with terrain.

During the flight, as was the case in the Lion Air crash, the MCAS played a



The release of the interim accident investigation report came a day before the one-year anniversary of the crash of Egypt-bound Flight 302. LBG Spotter/Wikimedia Commons Photo

major role. The system was designed to lower the nose of the plane if sensors told it that the angle of attack (AOA) was too high – which could cause the aircraft to stall.

The information fed to the MCAS was wrong on both flights.

The AIB found Flight 302’s left and right AOA sensors differed by 59 degrees, causing the MCAS to push the nose of the plane downwards. As a result of this, at one point “the pitch angle dropped from 0.5 degrees nose up to -7.8 degrees nose down,” resulting in the rate of descent increasing from 100 feet per minute to over 5,000 feet per minute.

The report stated that the pilots recognized the fault and disengaged the MCAS, attempting to manually regain control and pitch the nose back up. But “approximately five seconds after the last manual electric trim up input, a fourth automatic trim nose-down (MCAS) triggered.”

The fourth adjustment made by the MCAS sent the 737 Max 8 into a dive from which the pilots were unable to recover.

At the time of the crash, the plane was pointing down at a 40-degree angle and travelling at a speed of more than 500 feet per second, according to the report.

The document did not cite pilot error

as the cause, although it did say that the crew turned the MCAS back on after it repeatedly pointed the aircraft’s nose down during takeoff and ascent. Rather, the report stated that “the difference [in] training from B737NG to B737 MAX provided by the manufacturer was found to be inadequate.”

The AIB made a number of recommendations as Boeing continues its work to return the 737 Max family to the air. These include a redesign of the MCAS and increased training for pilots who fly the aircraft – citing the need for simulator sessions to familiarize pilots with “normal and non-normal MCAS operation.” Boeing originally claimed pilots wouldn’t need simulator training to transition to the Max, but reversed its stance in January of this year.

The fallout from the crashes has been significant for Boeing, leading to the firing of CEO Dennis Muilenburg in December 2019, who had been in the role for over four years at the time. The company has also halted production of the Max as it works towards the aircraft’s recertification, which has contributed to the US\$19 billion loss the company has seen as a result of the two crashes, leading to its first annual loss in over two decades. ✖

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TRAINING

Nova Scotia court stays CVR ruling pending June appeal



A class-action lawsuit making its way through Nova Scotia court involves access to the cockpit voice recorder from the crash of Air Canada Flight 624 in March 2015 at Halifax Stanfield International Airport. RCMP Photo

◻ KEN POLE | SAFETY NEWS

A Nova Scotia Appeal Court judge has ruled that the Transportation Safety Board of Canada (TSB) does not have to hand over voice recordings or transcripts from Air Canada Flight 624, which crashed at Halifax Stanfield International Airport – at least not yet.

Flight 624 from Toronto, with a crew of five and 133 passengers on board, was on a non-precision approach at 12:30 a.m. March 29, 2015. The TSB report found that the Airbus A320 “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 no was fire but the Airbus was a write-off.

Twenty-five passengers required hospital treatment and three passengers filed a class-action lawsuit, seeking compensation for physical and/or psychological injury. Their lawyers had argued that the cockpit voice recorder (CVR) data was central to the case.

The TSB had countered that its governing legislation, the *Canadian Transportation Accident Investigation and Safety Board Act*, precludes it from releasing the data, which it used to compile its [accident report](#). Section 28 of the *Act* states, among other things, that “every on-board recording is privileged” and essentially prohibits its communication “in any legal, disciplinary or other proceedings.”

But late last year, Nova Scotia Supreme Court judge Patrick Duncan ordered the TSB to provide the recordings and any transcripts, ruling that the definition of “privilege” is limited. “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.”

The TSB challenged that order, seeking a stay pending a further appeal, which is scheduled for June 9. The stay was granted on Feb. 6 by Justice Carole Beaton of the appeal court. In her written reasons, which were published March 11, she explained that a primary consideration was whether the TSB would “suffer irreparable harm” if the motion was not stayed.

“Should the stay not be granted (assuming the appeal is ultimately successful); and, the appellant will suffer greater harm if the stay is not granted than the respondent if the stay is granted.”

She cited an affidavit by Jean Laporte, a retired chief operating officer of the TSB, to the effect that releasing the recordings before the appeal is heard and ruled upon could compromise future TSB investigations. Potential witnesses such as pilots might avoid having “certain conversations in the cockpit” because of the chance they could become public.

Laporte, who retired in September 2019, said the data are effectively already in the hands of the litigants “by virtue of the TSB’s report on the Flight 624 crash.”

Justice Beaton said Laporte felt that enabled the litigants “to reconstruct in detail both the flight and events in the cockpit, without need for the CVR.” ✂

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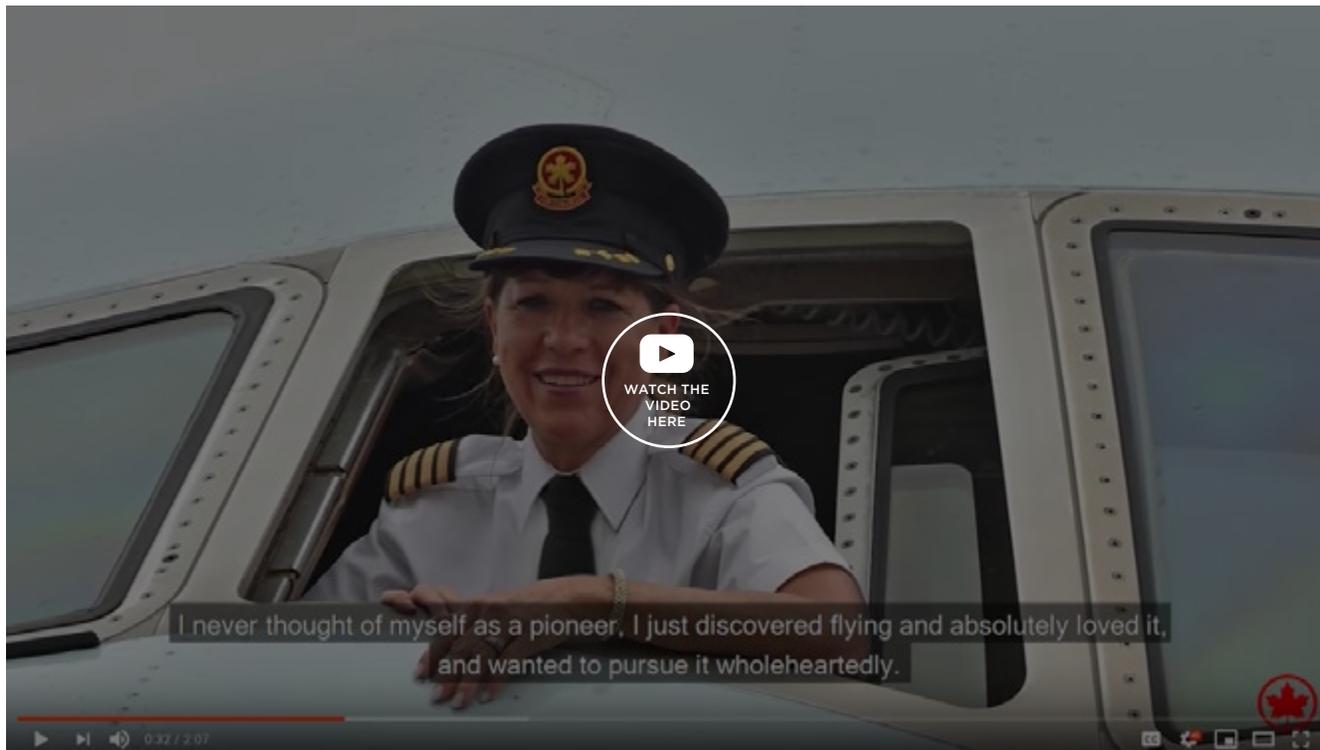
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Air Canada awards first Captain Judy Cameron Scholarships

◻ **ANDY CLINE** | INDUSTRY NEWS

Judy Cameron blazed a trail for women in aviation as Air Canada's first female pilot, hired by the airline in 1978 at 23 years of age.

Now, her achievements are being commemorated by Air Canada, which has established a scholarship in her name to assist young women pursuing aviation careers.

The first Captain Judy Cameron Scholarships were presented to four deserving recipients on Feb. 19, 2020, at the Air Canada Operations Centre in Brampton, Ont. The winners are all young women ranging in age from 18 to 26, and all are aspiring pilots studying in Ontario and Alberta. Urooj Ali, Rebecca Beylerian, Yasna Taieb and Olivia White will each receive \$5,000 towards their aviation studies. All four are currently working on, or have just achieved, their commercial pilot licences.

The winners were officially announced during Women of Aviation Worldwide Week, leading up to International Women's Day 2020 on March 8.

The scholarship program was unveiled last fall at the 2019 Elsie MacGill Awards Gala, held by the Northern Lights Aero Foundation (NLAF), which recognizes outstanding women in Canadian aviation and aerospace. Air Canada VP of Operations Murray Strom and the award's namesake, retired Capt Judy Cameron, made a joint announcement at the Sept. 28 gala.

JUDY CAMERON

Cameron was the NLAF's 2015 Flight Operations award recipient and is a current board member.

She retired from Air Canada as a Boeing 777 pilot in 2015 after 37 years with the airline. She was only the second woman to be hired as a pilot at a Canadian airline and accumulated more



Capt Judy Cameron retired from Air Canada as a Boeing 777 pilot in 2015 after 37 years with the airline. As Air Canada's first female pilot, Cameron accumulated more than 23,000 flying hours over her career. Brian Losito Photo

than 23,000 flying hours in her career. Her first flight inspired her to pursue a flying career, the path to which was fraught with challenges and obstacles.

She grew up as the only child of a single mother through the 1950s and 1960s. She was the first woman to graduate from Selkirk College's Aviation Technology program in 1975. Cameron has flown the Douglas DC-3, Twin Otter, Hawker Siddeley 748, DC-9, Lockheed L-1011, Airbus 320, and Boeing 767, becoming Air Canada's first Boeing 777 captain in 2010. After

a long and memorable life in aviation, Cameron feels incredibly honoured that Air Canada has created this scholarship in her name.

“When I was learning to fly in 1973, my single mother had limited resources, but she believed in me and encouraged me to pursue my dream. I had a wonderful career as an Air Canada pilot. This scholarship will help other women who might be held back for financial reasons, to pursue their dreams. This scholarship is the best thing that has happened to me in my whole career!”

The Captain Judy Cameron Scholarship recognizes and celebrates the achievements of accomplished women studying in aviation and aerospace. It makes significant financial assistance available to young women enrolled in post-secondary aviation flight or maintenance programs. Air Canada has partnered with NLAf and is committed to awarding \$20,000 per year for three

2017 at the age of 16, and became the highest-ranking and sole female cadet with a pilot’s licence. She is currently studying Geography and Aviation at the University of Waterloo and is working toward her commercial pilot licence at Waterloo Wellington Flight Centre. She is a speaker at various events, schools, and conferences raising the awareness of women in aviation. She started a program called Neptune’s Young Optimists, which allows every child from less fortunate communities an equal opportunity for a successful future. “My journey in aviation began at a young age, when I used to look to the sky every time I heard the roar of GENX engines,” said Ali. “I was always curious where the plane was coming from and where it was heading. I was young when I first learned about the lack of interest from women in aviation and other science, technology, engineering and math (STEM) careers. Since then, it has been my goal to inspire and motivate

on this role in Calgary. Beylerian studied Tourism and Recreation Management but decided she didn’t want a 9 to 5 type of job. She has been a Jazz flight attendant for four years, and is a flight attendant trainer and involved with hiring. She is involved with numerous aviation community organizations, including volunteering with Elevate Aviation, the Ninety-Nines and Women in Aviation, where she is the youngest president of the Alberta Rocky Mountain High Chapter in Calgary. She also volunteers with the Civil Aviation Search and Rescue Association (CASARA). She is currently pursuing a Bachelor of Commerce at the University of Calgary. She has been flight training part-time for three years and has just completed her commercial pilot licence at Springbank Air Training College. She is a mentee, using women aviators such as Robyn Hadfield as role models and mentors. As the youngest of six children, her



The 2020 scholarship winners celebrate with Capt Judy Cameron, centre. From left to right are Urooj Ali, Olivia White, Rebecca Beylerian and Yasna Taieb. Andy Cline Photo

years. The scholarship is open to young women pursuing aviation careers as pilots or aircraft maintenance engineers. A panel of five judges (two from Air Canada, two from NLAf, and another from elsewhere in the aviation industry) selected the four winners from a field of 113 applicants.

THE WINNERS

Urooj Ali joined the Royal Canadian Air Cadets at the age of 12. She successfully completed the Glider Pilot Scholarship in St. Jean, Que., in

other young girls to not only enjoy male-dominated industries, but to excel in them.”

Rebecca Beylerian joined Air Cadets at age 12, acquiring her glider pilot and private pilot licences. She has been living and breathing airplanes since then. She remains an Air Cadet Civilian Instructor and spent the summer of 2019 at the Cold Lake Cadet Training Centre as a Power Familiarization Officer/Supervisor, in charge of overseeing and flying 300 introductory flights. She is carrying

family’s resources were spread thin. Her brother is the only other family member involved in aviation; he is an engineer with Harbour Air’s ePlane project. She couldn’t afford to continue flight training, so the scholarship will help her along. Beylerian has learned to be patient. “Aviation is a stubborn passion. My first glider flight sealed my fate. I wanted to be a pilot. My inspiration is the freedom I feel in flight. As a Jazz Aviation employee, my goal is to transition from my current role into a pilot role within the

company. My 10-year goal is to be a pilot with Air Canada and represent Canadian aviation across the world. It's very cool to be able to help others in their careers."

Yasna Taieb is a first-generation Afghan-Canadian. She received flight training as an Air Cadet and subsequently became a Canadian Armed Forces reservist, training Air Cadets in ground school at two squadrons. She is currently a second-year aviation student at Waterloo Wellington Flight Centre and Conestoga

College. She is a Northern Lights mentee, and a member of the Ninety-Nines. Taieb is co-chair of the Abingdon Foundation Mentorship Program, mentoring women in all phases of life in STEM fields. Through this she wants to help break stereotypes, and help others go beyond traditional female roles. She is a member of the Canadian Women for Women in Afghanistan. "As an Afghan-Canadian female I am working to bring change to the lives of underrepresented females across Canada," she said. "I am committed to

organizations that promote females in STEM and the aviation industry and strive to become a successful airline pilot. I am so honoured to be a recipient of a scholarship as special as this one, on behalf of a company that I aim to work for!"

Olivia White was attracted to aviation at an early age by a Wii airplane game. At 15 years old, she drove by Spectrum Airways at the Burlington Airpark, where she was quick to start her private pilot training. She took a co-op program in high school and worked at Spectrum for her co-op term, and was later hired full-time to work on the desk. White is a Northern Lights mentee, a member of the Ninety-Nines and volunteers with Air Canada Rouge for the Girls Take Flight event in Oshawa. She is currently completing a bachelor's degree in Aeronautics Leadership at the University of Windsor and is working on her commercial pilot licence. She hopes to eventually work for Air Canada, but "I'll happily go wherever the wind takes me. I love flying. But almost as much as I love flying, I love training, continually learning and studying, being evaluated and working with people."

All of these young women are outstanding in their accomplishments and community involvement, and they look to Cameron as an example of what they can achieve if they work hard, persist and follow their dreams.

"We see diversity as an important strength for a global company like Air Canada," said Calin Rovinescu, president and CEO at Air Canada. "We actively advance diversity through several initiatives, and we are especially thrilled to champion the next generation of women in non-traditional aviation careers by announcing the winners of the Captain Judy Cameron Scholarship, named in honour of our trailblazing, accomplished first female pilot. Our message to young women is to follow your aviation dreams and know there are rewarding careers for all qualified people."

The Captain Judy Cameron Scholarship Awards will be jointly run by Air Canada and NLAF for at least the next three years. ✨

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Montreal group aims to turn industrial CO₂ into sustainable aviation fuel

► **BRIAN DUNN** | TECHNOLOGY NEWS

As pressure mounts to reduce greenhouse gas (GHG) emissions, the aviation sector will require a significant amount of low-carbon fuels over the next 30 years.

SAF+, a consortium based in Montreal's east end, is planning to develop a drop-in (ready to use as is), low-carbon sustainable aviation fuel (SAF) as an alternative to fossil jet fuel with over 80 per cent lower lifecycle emissions.

The group, which includes Air Transat and Aéroports de Montréal, aims to capture carbon dioxide (CO₂) from large industrial emitters (with emissions of over 50 metric tons of CO₂ per year) and transform it into SAF.

While most of the solutions already available in this field rely on biomass, agriculture by-products, or fats, oils and grease (known as FOG) as source material, SAF+ relies instead on captured CO₂ from large emitters.

This CO₂ would then be used to create SAF, a synthetic kerosene that is already widely used elsewhere in the world and has the same characteristics as regular fossil jet fuel.

"In addition, the production process uses hydrogen produced from 'green' hydroelectricity, instead of hydrogen produced from natural gas, which also

reduces emissions," noted Jean Paquin, who heads SAF+.

And while he concedes the synthetic fuel produced by SAF+ will produce as much GHG as conventional kerosene, the total GHG footprint will be reduced because SAF+ will have recaptured the molecules that would have otherwise been released into the atmosphere.

Paquin's consortium hopes to commercialize a sustainable fuel by 2025 or 2026, aided by a \$2 million federal grant to build a test plant in Montreal this summer to produce aircraft fuel from carbon dioxide emitted from ParaChem, a nearby chemical company.

SAF+ was one of four winners of the first phase of Natural Resources Canada's "The Sky's the Limit Challenge." This challenge is aimed at encouraging the creation of a clean aviation fuel supply chain in Canada. The aviation industry has set a target to reduce emissions by 50 per cent by 2050 compared to 2005 levels.

SAF+'s feedstock will come from ParaChem, which produces over 100,000 tonnes of CO₂ every year, noted Paquin, who comes from a wind and solar power background.

The project will consist of three phases. The first will be the construction of a demonstration plant to optimize the technology. The second

is a pre-commercial phase which will ramp up SAF production between 2022-2025. Finally, the commercial phase will expect to see the plant produce up to 30 million litres of SAF, beginning in 2025 or 2026.

Paquin estimates SAF+ will need close to \$400 million to reach the commercial production phase, but noted he has various investors and committed clients behind him.

And while SAF+'s first cost estimates indicate the removal of each ton of CO₂ at around \$400, it will likely be substantially reduced when the process is optimized.

"If we had this conversation five or six years ago, airlines wouldn't think about paying a premium," he said. "But Canadian airlines will only require between three to eight per cent SAF blend to reach their climate targets." By comparison, some European countries are mandating a 30 per cent blend by 2030.

While SAF+ is slow getting out of the gate, Paquin isn't worried his group will be left behind, since the demand for SAF will only increase.

"There is only about 30 million litres of SAF being produced today, and 3.5 billion litres expected to be produced by 2025, when the industry will require about 500 billion litres to meet the (ICAO) requirements." ✈



SAF+ aims to capture carbon dioxide (CO₂) from large industrial emitters and transform it into SAF. Ethan McArthur/Unsplash Photo

Bombardier names Eric Martel new CEO



Before Martel left Bombardier for Hydro-Quebec in 2015, he served as president of Bombardier's Business Aircraft Division. Bombardier Photo

BIZAV NEWS

Eric Martel will return to Bombardier as president and chief executive officer, and a member of the Bombardier board of directors, effective April 6, 2020.

Martel rejoins Bombardier from Hydro-Quebec, where he served as president and chief executive officer since July 2015. With revenues of approximately US\$10 billion, Hydro-Quebec is one of the largest producers of hydroelectricity in the world. Previously, Martel held a number of leadership positions at Bombardier, including president of the Business Aircraft Division and president of the Customer Services and Specialized Aircraft Division.

He holds a bachelor's degree in electrical engineering from Laval University and is a member of the Ordre des ingénieurs du Québec. In addition to his past experience with Bombardier, he has held leadership positions at Pratt & Whitney, Rolls-Royce, Procter & Gamble and Kraft Foods. He sits on the board of directors of the Global Sustainable Electricity Partnership and chairs the Energy Community of the World Economic Forum (Davos).

"I am very excited and honoured to be able to rejoin Bombardier as it begins an exciting new chapter. I have always

been passionate about Bombardier, its employees and products, and I look forward to building a highly successful, agile and focused company, capable of providing unmatched service to customers, world-class opportunities to employees and creating value for our shareholders," stated Martel.

With the five-year turnaround plan nearing completion, Bombardier said its board, including outgoing CEO Alain Bellemare, unanimously concluded that it was the right time for a new leader to take the helm.

"On behalf of the entire board, I would like to thank Alain for his leadership over the past five years," said Beaudoin. "He oversaw a large and complex transformation addressing underperforming assets, major program issues and balance sheet challenges while positioning Bombardier for success as a focused business aviation company. We are grateful for Alain's contributions to Bombardier and wish him the very best in his future endeavours." ✦

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DEALER OF

Bell developing fan-driven electric anti-torque system

► OLIVER JOHNSON
| HELICOPTER NEWS

Bell has revealed a groundbreaking new electric anti-torque system in development for its commercial helicopter line, one that promises enhancements to safety and operating cost, as well as a reduction in noise compared to an aircraft with a conventional tail rotor.

The electrically distributed anti-torque (EDAT) system is composed of four small fans within a tail rotor shroud in an offset two-by-two pattern. Each of the rotors contains four blades, and they are powered by four separate motors, with the electrical energy provided through

generators driven by the turbine engines.

“In a nutshell, we removed all of the conventional mechanical anti-torque components – which is gearboxes, driveshafts and tail rotor hub and blades – and replaced it with four electric motors and fans,” Eric Sinusas, program director of light aircraft at Bell, told *Skies*. “They are fixed-pitch blades and they’re changing rpm constantly.”

The system has been installed on a Bell 429 demonstrator aircraft at Bell’s facility in Mirabel, Que., and began flight testing on May 23, 2019. Since then, the program has completed about 25 flight hours, with the aircraft gradually expanding its flight envelope.

Bell is not ready to share any perfor-

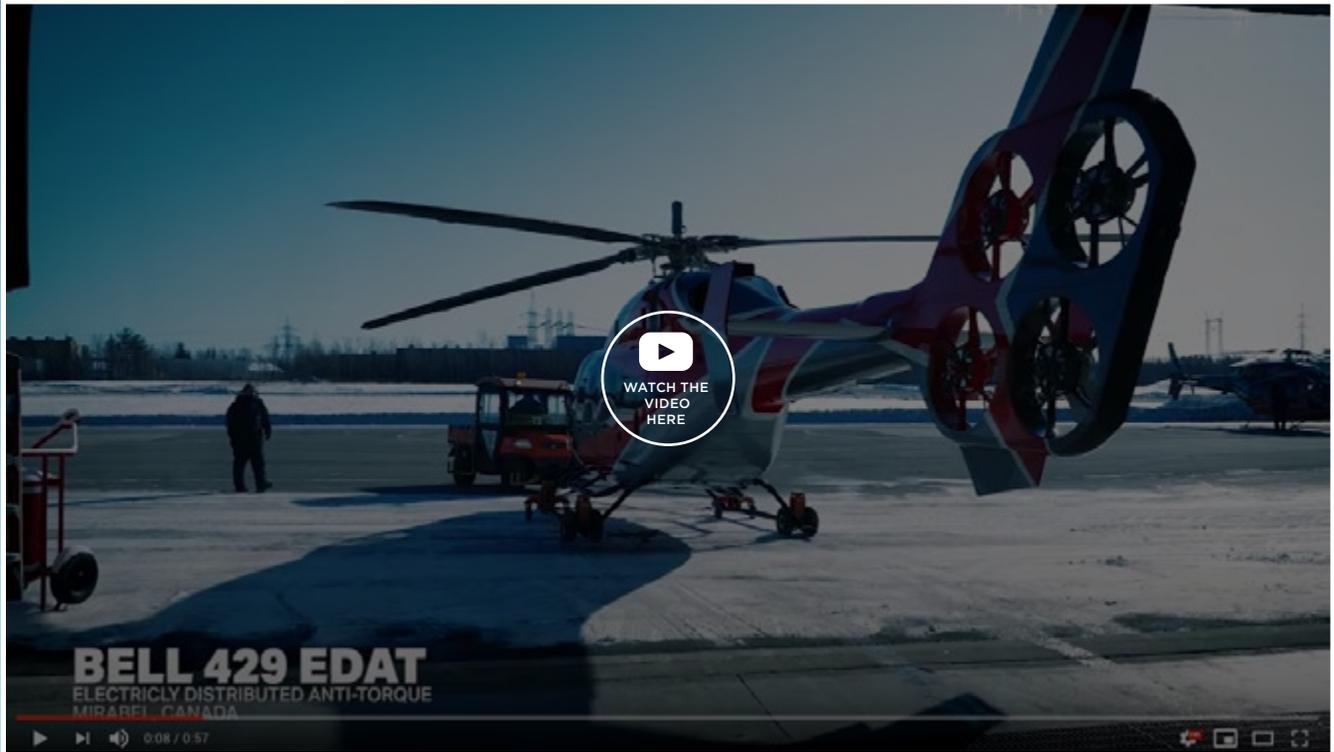
mance figures, but Sinusas said the feedback from the customers that have seen the system in action has been positive.

“This is the first time anyone in the world ever done this, so the first step was just to make sure that it actually works – and yes, it does work,” said Sinusas. “We’re still going to be optimizing it and refining it, but the product feedback in its current configuration has been very positive.”

The system’s anti-torque fans are controlled through pedals, as with yaw control in a traditional helicopter, but the link between the pedals and the motors is entirely electric “fly-by-wire” – all mechanical linkages and the control tubes of a conventional system have been



Bell has been flight testing its electrically distributed anti-torque system in Canada since May 2019. Bell Photo



removed. Other than the tail rotor and the control mechanisms, the demonstrator aircraft is unchanged to accommodate the system, using a conventional main rotor, engine and airframe.

Sinusas said the driving force behind the EDAT system's development was customer feedback.

"We were looking at what are the customers demanding for aircraft? . . . And safety is obviously always at the top of the list," he said. "This [system] certainly meets those [requirements] and it has some interesting features that conventional rotors don't with redundancy, and when the aircraft is on the ground, the electric fans are not rotating at all."

The redundancy is extensive, with the aircraft capable of still producing a level of anti-torque thrust even if three of the four fans become inoperable.

"What it provides – unlike any conventional helicopter out there today – is the ability to give the pilot some torque authority to get down safely," said Sinusas.

The next driver was reduced operating cost, and while Bell is not currently sharing any figures, Sinusas said removing conventional components such as lubricated gearboxes and greased bearings, and moving to a more simplified electrical system, should help keep those costs down.

Thirdly, the design promises a reduction in noise levels.

"[Noise] hasn't really been a top priority

for the helicopter industry for quite a while, but it's quickly becoming a very important parameter," said Sinusas.

The visual impact of the system is a blend of the familiar and the strange. It's not as radical an anti-torque rethink as the tailboom fan-driven system proposed in Bell's FCX-1 concept helicopter two years ago, or even MD's NOTAR, which does away with the need for any type of tail rotor, but the sight of four smaller tail rotors instead of one may take a little getting used to.

And while the shrouding around the rotors certainly looks heftier than the simple vertical fin of a traditional tail rotor, Bell says the footprint is similar to that of shrouded tail rotors produced by other manufacturers (think the Fenestron on Airbus's H145).

Sinusas said the focus of the program to date has been proof of concept rather than optimizing its performance, and the team is not working to a timeline for commercialization – at least not one that Bell is prepared to publicly disclose.

Both retrofit to existing products and incorporation into clean-sheet designs "would be an option" for the product when it does hit the market, said Sinusas, and he confirmed the technology is scalable to larger and smaller aircraft.

"It's obviously been a secret project – we haven't been public with it until now," he said. "So, it'll be interesting to see what feedback we do get." ❖

An almost two-hour flight was conducted on Feb. 21 by the Aerospace Engineering Test Establishment (AETE) to confirm upgraded systems in the Block IV CP-140 Aurora. Cpl Arthur Ark Photo



Upgraded Block IV Aurora undergoing flight testing

AETE will conduct over 50 hours of flight testing on the upgraded CP-140 Aurora throughout 2020. Here, an AETE pilot flies alongside the modified maritime patrol aircraft. Cpl Arthur Ark Photo



◻ **CHRIS THATCHER** | MILITARY NEWS

The newly upgraded CP-140 Aurora Block IV completed its first test flight in late February.

An almost two-hour flight from Halifax to Greenwood, N.S., was conducted on Feb. 21 by the Aerospace Engineering Test Establishment (AETE) to confirm upgraded systems in the Royal Canadian Air Force's (RCAF's) premier intelligence, surveillance and reconnaissance long-range patrol aircraft.

The flight was part of an initial assessment of the Block IV modifications to confirm the aircraft safe for flight, evaluate flight characteristics with the changes, and "identify possible sources of abnormal vibrations and aerodynamic noises," the

project office explained in an email.

The complex modifications are part of the Aurora Incremental Modernization Project (AIMP) and include beyond line-of-sight (BLOS) wideband satellite communications, Link 16 tactical data exchange network access, and infrared counter measures for self defence.

AETE will conduct over 50 hours of flight testing throughout 2020, including instrumented testing to measure flight characteristics and re-certify the flight and operational envelopes of the upgraded CP-140 maritime patrol aircraft.

"AETE's engineering flight testing allows us to rigorously test equipment and aircraft in all extremes," said the project office within the Assistant Deputy Minister Materiel group. The first

flight was supported by ADM Materiel, IMP Aerospace and Defence, and 415 Long Range Patrol Force Development Squadron at 14 Wing Greenwood.

The RCAF expects to declare initial operational capability of the Block IV-modified CP-140 in June.

The fourth block of upgrades are the final step in a program that has involved 23 individual projects to acquire, integrate and install new mission systems and sensors onto the fleet of 14 Auroras, a four-engine turboprop variant of the Lockheed Martin P-3 Orion.

Under AIMP, Block I in the early 2000s replaced high frequency radios and standardized several obsolete systems across the entire fleet. Block II upgraded navigation, flight instruments, communications management and radar systems, rewiring much of the aircraft for Block III, which delivered new mission system architecture, including an array of sensors and data management systems, as well as tactical displays.

At the same time, all 14 aircraft have been part of the Aurora Structural Life Extension Project (ASLEP) to replace the outer wings, the lower section of the centre wing, the horizontal stabilizers and other components subject to fatigue.

The changes are expected to add about 15,000 flight hours to the airframes and extend their service life until 2030.

The first Block IV aircraft will remain at 14 Wing to conduct on-ground testing and training in preparation for operational use of its expanded capabilities. ✦

NORAD intercepts Russian aircraft entering Air Defense Identification Zone



The Russian Tu-142 aircraft entered the ADIZ north of Alaska and remained within it for roughly four hours. NORAD Photo

MILITARY NEWS

Recently, North American Aerospace Defense Command (NORAD) aircraft intercepted a pair of Russian Tupolev Tu-142 maritime reconnaissance aircraft entering the Alaskan Air Defense Identification Zone (AADIZ).

The AADIZ is an area of international airspace that surrounds both Canada and the United States' sovereign airspace. When foreign military aircraft approach the AADIZ, they are typically identified and NORAD aircraft are scrambled to meet them in the air.

In this case, NORAD sent two RCAF CF-188 Hornets stationed at Cold Lake, Alta., along with a pair of U.S. Air Force F-22 Raptors, who were supported by a KC-135 Stratotanker and E-3 Sentry AWACS aircraft.

The NORAD aircraft intercepted the two Russian Tu-142s and escorted them — with one jet on each side of the Russians — for roughly four hours before the Tu-142s headed back to Russia.

The Russian aircraft came within approximately 50 nautical miles of the

Alaskan coast, though they did not enter Canada's or the United States' sovereign airspace.

"We're always aware of those aircraft and we will take a decision to intercept these aircraft and escort them just to make sure our presence is known and the ability for us to defend Canada and the United States remains," Maj Andrew Hennessy, a NORAD spokesman, told reporters.

When the Soviet Union disbanded in 1991, the Russians ceased these kinds of operations as it marked the end of the Cold War. However, they began to fly reconnaissance missions again in 2007, and these kinds of interception missions have become commonplace since then.

According to NORAD, this is the second time it's had to intercept Russian aircraft this year, coming off 2019 where there were six incidents. Since 2007, the annual range has varied from a high of 15 to zero.

"We continue to see repeated Russian military aviation activity in the Arctic and we will defend the U.S. and Canada



RCAF Photo

against these threats emanating from our northern approaches," said Gen Terrence J. O'Shaughnessy, NORAD commander. ✈

HAVE NEWS? ✪ If you would like to submit a press release or if you have a new product or service that you believe is newsworthy, please email our news editor at news@skiesmag.com.

A Sunwing Boeing 737-800 takes off from Vancouver International into a grey winter day.
Alvin Man Photo





An Airbus A320 neo makes a stop in Iqaluit for cold weather testing. Brian Tattuinee Photo





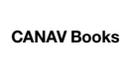
An RCAF CC-130H Hercules performs a steep descent to the Cold Lake runway after a Maple Flag mission. Derek Heyes Photo





A unique look at the underside of an Embraer Phenom 300 departing Kelowna. Ushabh Salaria Photo





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C E X P L O

With the mining industry slowing down in the Northwest Territories, Yellowknife-based Summit Air has made the strategic decision to diversify. Today, the company is venturing into non-traditional areas to pursue expansion through opportunity.

BY LISA GORDON



When Summit Air first certified the Avro RJ85 (shown here) for gravel operations, the company hoped the effort would be worthwhile. Today, Summit has the market cornered on all jet-based, fly-in fly-out work in the Western Arctic. The company now operates four Avros – two RJ85s with 90 seats and two RJ100s with 111 seats. Brian Tattuinee Photo

DRIVING



When Caroline Cochrane was elected premier of the Northwest Territories (NWT) on Oct. 24, 2019, she vowed to “make this next four years the most progressive government” the territory has ever seen.

Led by Cochrane, the 19th Assembly promptly released its 2019-2023 Mandate of the Government of the

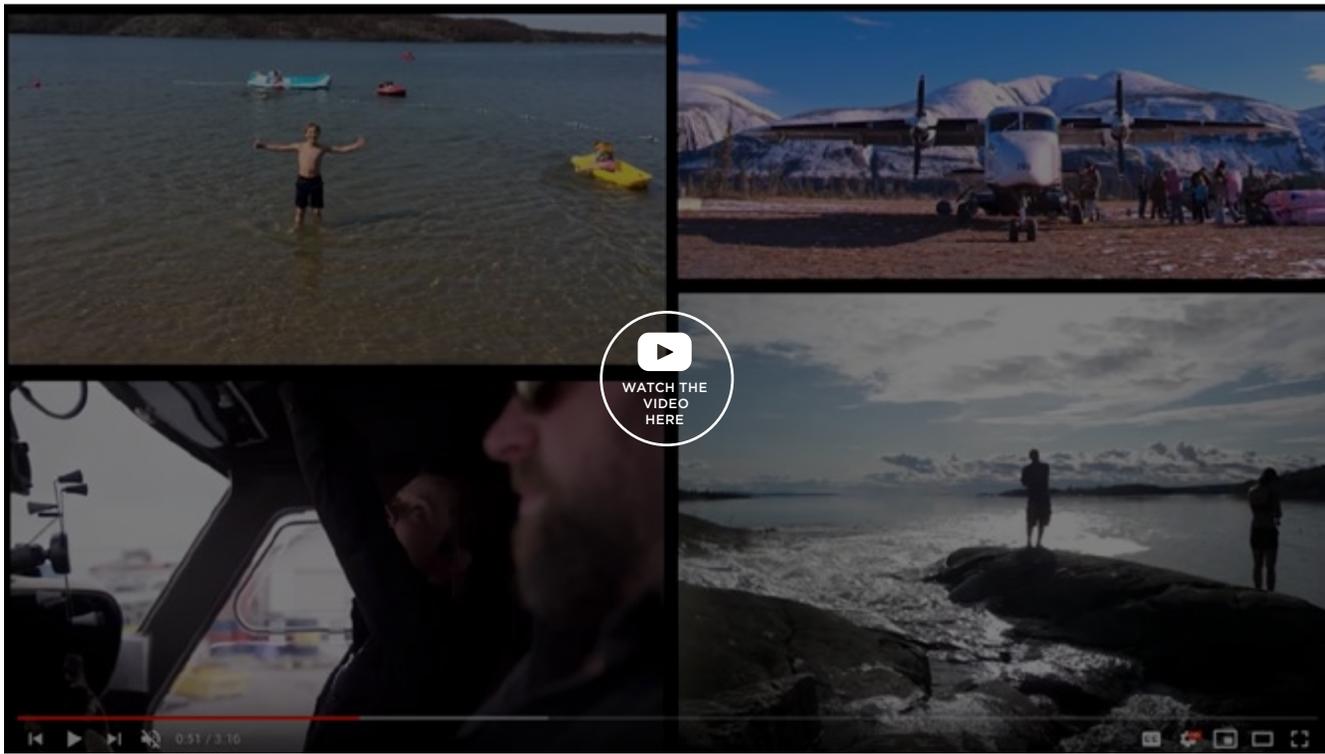
Northwest Territories, a wide-ranging document that promises to tackle important issues such as affordable housing, increased employment across the region, economic diversification, universal childcare and education.

The government also said it will be aiming to increase resource exploration and development in the NWT.

“Renewed exploration activity is

needed to restore levels of investment, partnership, employment, and growth in the NWT’s economy,” reads the mandate. It includes a promise to increase funding for mining incentive programs by 50 per cent over the next four years.

That is welcome news to the territory’s aviation industry, which has traditionally prospered by supporting mining and exploration activities.





In July 2015, Summit obtained its first ATR 72 turboprop aircraft. Today, it operates two configured for passengers and three for cargo. Stephen M. Fochuk Photo

In recent years that activity has slowed and there has been downward pressure on commodity prices. Companies such as Yellowknife-based Summit Air have been feeling the ripple effects. The reduction of a traditional revenue stream has led companies to adopt diversification by necessity, with many adjusting their fleets as well as their focus.

“It’s still a problem in the North,” said Myles Cane, Summit Air’s senior vice-president Operations. “Across the territories there is a big slowdown in exploration and that continues to drive change.”

For example, Summit’s last DHC-6 Twin Otter aircraft was sold in February of 2019. It marked the end of an era for the 20-year-old operation, which was purchased in 2009 by the Ledcor Group of Companies. (Ledcor also owns Summit Helicopters and operates the Vancouver Harbour Flight Centre.)

“The economics aren’t there,” said Cane. “That aircraft has been part of the DNA of this company for a long time. One of the Twin Otters, in fact, had operated in the NWT its entire life, starting with Wardair in 1971. It was a difficult decision and one we didn’t make in a rush.”

Selling the Twin Otters is just one example of how Summit Air is redefining its northern aviation offerings.

In July 2015, the company welcomed

its first ATR 72 aircraft, configured to carry 68 passengers. A second passenger aircraft was added later that year, followed by three ATR 72 freighters. In December 2016, Summit fielded its ATR 72 large cargo door freighter, a US\$2.3 million project that saw the aircraft undergo six months of refurbishment and conversion by IPR Conversions Ltd. of Toulouse, France.

“The ATR 72 delivers market leading economics for both freight and passengers given its favourable fuel burn and operating costs,” said Cane. “They are very busy. The [large cargo door freighter] can fit five 108 x 88-inch cookie sheet cargo pallets, allowing for a diversity of freight. It can be groceries, equipment, etc. The door opening measures 119 x 71 inches.”

Today, Summit Air’s fleet flies about 12,000 hours annually and includes 17 aircraft: two Short Skyvans, five Dornier 228s, one Dash 8-100, five ATR 72s (two in passenger configuration and three freighters, one of which has the large door), two Avro RJ85s and two Avro RJ100s.

The aircraft are spread between Summit Air headquarters in Yellowknife and its bases in Edmonton and Calgary, as well as satellite operations in Thompson, Man.; Mary River, Nunavut; Thunder Bay, Ont.; and Oxfordshire, U.K.



It took six months to reconfigure one of Summit’s ATR 72 aircraft with a large cargo door. The project cost US\$2.3 million and the aircraft took to the skies in December 2016. Stephen M. Fochuk Photo



Staffing is currently the biggest challenge for Summit. The company appeals to prospective employees’ sense of adventure when advertising its many opportunities. Stephen M. Fochuk Photo

Cane said the company has developed some solid partnerships with major grocery and retail distributors, as well as continuing to provide ACMI [aircraft, crew, maintenance and insurance] charter services to other air carriers. For example, Summit's 37-seat Dash 8-100 is currently contracted to perform scheduled and charter passenger service.

"There really is a diversification strategy," he explained. "We continue to support the local mines, but it's no secret that even with potential new mines on the horizon, they don't represent the same scale of business that we have

enjoyed over the past decade."

According to *North of 60 Mining News*, two of the NWT's three diamond mines are set to close sometime in the next decade. While the third is expected to yield diamonds well into the 2030s, the mining industry publication said the focus will necessarily shift to smaller (and less profitable) operations harvesting zinc, cobalt and rare earth elements.

The declining diamond output in the NWT is predicted to slow the territory's economy. Hence the Cochrane government's focus on not only encouraging mining exploration and

development, but also expanding the NWT economy and creating jobs.

Indeed, diversification is the name of the game for many companies in the territory today. In addition to new partnerships outside its traditional frame of business, Summit Air launched a new direct-to-consumer freight business serving the Mackenzie Valley last July. Twice a week, the company's freight division, Summit Air Cargo, transports goods from Yellowknife to four communities in the Sahtu Region: Norman Wells, Fort Good Hope, Deline and Tulita.



“Until that started, the general public typically wouldn’t interface with Summit unless they chartered an aircraft,” explained Cane. “But now, the public has the ability to ship packages on our flights. It’s a new piece of business for us, and it involves community interface. It’s been a good opportunity that has already proven successful for us since we launched last summer.

Summit Air is expanding within Canada, too, through its bases in Edmonton and Calgary. Cane reported the company is now serving a variety of energy sector clients.

‘Despite its diversification in recent years, Summit Air remains **attuned to the needs of its lifelong customers.**’



Most of Summit Air’s current Dornier 228s were obtained in 2013. The short takeoff and landing (STOL) twin turboprop can transport up to 19 passengers or various cargo loads. Stephen M. Fochuk Photo





Expansion at Summit Air has created job opportunities for more AMEs. The company is working to attract suitable candidates while also “growing its own” through apprenticeships. Stephen M. Fochuk Photo



Summit is well acclimated to northern weather and the challenges it presents, although newer-generation aircraft like the ATRs need to be treated more gently than legacy aircraft. Stephen M. Fochuk Photo



Employees and parts are just two things that cost more in the North. Stephen M. Fochuk Photo

“Since expanding our footprint in Alberta, our client base has diversified significantly and we are now doing regular charters across B.C. and Alberta in support of energy clients, as well as leisure-related weekend trips and tourism flights.”

ENTER THE AVROS

Perhaps no one jet airliner is as legendary in the Canadian North as the Boeing 737-200. First rolled out in 1967, the plane was unique because it boasted an optional gravel kit with nose gear deflector and engines that directed bleed air in front of the inlet to deter foreign object ingestion. By the early 2000s, most airlines had replaced the 737-200 with newer aircraft – but the older workhorses are always welcome in Canada’s North, in part because they can operate from unpaved airfields. The aircraft are also approved to fly in a combi configuration, with both passengers and cargo.

But at more than 50 years old, the 737-200 can’t fly forever. Many northern operators have begun considering the

Summit Air sold its last DHC-6 Twin Otter in February of 2019. It marked the end of an era for the 20-year-old operation. “That aircraft has been part of the DNA of this company for a long time,” said Myles Cane, Summit’s senior vice-president Operations. Brian Tattuinee Photo



venerable aircraft’s successor.

In 2014, Summit partnered with Dene-owned Det’on Cho Logistics and First Air to operate a four-engine Avro RJ85, mainly to fly staff from a diamond mine to Edmonton.

Cane said Summit, which shouldered the financial cost of certifying the RJ85 for gravel operations, “took a bit of a leap of faith.”

But the aircraft’s success is proof that the RJ85 makes both operational and financial sense in the North.

“It’s turned out to be a successful investment for the airline,” he continued. “Since we certified the RJ85 aircraft on gravel, we now perform work for all the mines in the NWT.

“When we first launched the RJ85, we were hopeful to get some of the work and we ended up with all the jet-based, fly-in fly-out work in the Western Arctic. It’s fuel efficient, very tough and rugged, and has proven to be operationally capable in inclement weather and harsh locations.”

Today, Summit operates four of them – two RJ85s with 90 seats and

two RJ100s with 111 seats. Luckily, Abbotsford, B.C.-based Conair now has an Avro RJ simulator, so Summit pilots no longer travel to Europe for initial and recurrent training. Additionally, Transport Canada has issued a common type rating for the RJ85 and RJ100, allowing for training efficiencies.

With an all-high-wing fleet, Summit Air incurs less gravel damage but it must still take precautions.

For its ATR fleet, the operator invested considerable resources in covering the turboprops’ bellies, tails and landing gear with three different types of cushioned 3M vinyl film, as well as rock deflectors behind the nose wheels. Cane said Summit is currently developing an external guard to cover the main landing gear.

“Truthfully, though, the biggest and best safeguard against gravel damage is the pilots – they know how to operate the aircraft without incurring propeller damage,” he explained. “How they handle the aircraft on the ground is critical. It’s the small airmanship

elements like not parking the aircraft downwind, not parking uphill or on soft ground. Try to keep the aircraft rolling all the time. Don’t come to a stop and turn the nosewheels . . . there is a long line indoctrination process for new pilots and they do a great job.”

COME FOR ADVENTURE

A Summit Air recruitment video encourages prospective pilots to “come for the adventure, stay for the career.”

Some pilots just love the North, said Cane, who added that these are usually more senior flight crew who appreciate the chance to be home every night. He himself began working as a pilot for Summit Air Charters in 2007, and he can’t imagine living or working anywhere else.

“The skill levels and the experience built in the Arctic are second to none. For some of us, we end up staying here because we love the environment so much.”

But he noted that entry level and early career pilots have more options now, and not everyone wants to go north.



Summit Air launched a new direct-to-consumer freight business serving the Mackenzie Valley last July. Its large cargo door ATR 72 freighter can fit five 108 x 88-inch cookie sheet cargo pallets, allowing for a diversity of freight. Stephen M. Fochuk Photo



Like other northern operators, Summit Air has felt the pinch of a tightening labour market, although Cane admitted the “trickle down” effect of the 737 Max grounding has slowed the hiring at the majors.

He reported that Summit seems to be meeting the staffing challenge with the help of parent company Ledcor, and credited the company’s efforts to attend pilot fairs and create videos that illustrate the job and the northern lifestyle.

Overall, he said the company employs about 65 pilots who tend to stay with Summit for an average of five to six years.

“We’re trying to appeal to their sense of adventure. It seems to me we’ve struck a chord.”

In the hangar, Summit Air is starting to see a shortage of aircraft maintenance engineers (AMEs).

Cane – who is also an AME – said it presents an opportunity for Summit to grow its own maintenance professionals from apprentices, just like in the “old days.”



Summit Air’s fleet is spread between its Yellowknife headquarters and its bases in Edmonton and Calgary, as well as satellite operations in Thompson, Man.; Mary River, Nunavut; Thunder Bay, Ont.; and Oxfordshire, U.K. Shown here is the company’s de Havilland Dash 8-100. Brian Tattuinee Photo

While Summit’s AME turnover is low, the company’s expansion has created openings, including at its Edmonton and Calgary bases where jet maintenance is performed.

“It’s been tough to fill positions lately because there’s a lot of opportunity out there. To fill the gap, we will be focusing our recruitment efforts on AMEs with videos and significantly more outreach.”

OPERATIONAL CHALLENGES

While staffing is the biggest hurdle for Summit at the moment, Cane also said higher costs in the North – both for employees considering relocation and company operations such as parts sourcing – is another challenge.

When it comes to the flying itself, Summit is a proponent of installing automated weather observing systems (AWOS) at all airports across the North.



“It’s not feasible to have all of these airports staffed 24/7, and AWOS systems have improved so much,” said Cane. “They are now quite reliable and hardware costs have come down. We’re of the opinion that AWOS should go everywhere and we should still have a human element in CARS stations for office hours.”

But while he feels better weather reporting is needed, Cane said Summit is well acclimated to northern weather and the challenges it presents.

“We’ve been able to adapt to that and our aircraft have good dispatch

reliability, although newer-generation aircraft like the ATRs are not as forgiving when ‘operating out of a snowbank,’” he said. “They need to be heated for longer and treated more gently from a ground handling perspective than legacy aircraft.”

One of the big challenges the weather does present is aircraft icing. Following the crash of a West Wind Aviation plane at Fond du Lac, Sask., in December 2017, the Transportation Safety Board of Canada pointed to a lack of deicing equipment at remote northern airports as a serious safety hazard.



Some pilots just love the North, said Summit Air’s Myles Cane, who began working as a pilot for Summit Air Charters in 2007. Stephen M. Fochuk Photo

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Cane agreed. While the mines are well equipped with deicing equipment, he said that's not true of some isolated Arctic settlements.

“As a charter operator that goes to dozens of different communities, the economics aren't there for us to put staff and equipment into every community,” he pointed out. “This is a problem across the North, and one we hope Transport Canada will assist with in coming up with solutions. We're not unique – all charter air carriers experience this.”

Finally, he fears Canada's new fatigue risk management regulations are very prescriptive and worries they will unintentionally contribute to the trend of declining experience in the cockpit. As companies across Canada are required to hire more pilots to comply with the regulations, they will be forced to draw upon staffing pools with less and less experience.

FOCUS ON PARTNERSHIPS

Despite its diversification in recent years, Summit Air remains attuned to the needs of what Cane called “lifelong customers.” He pointed to the company's success delivering customized aviation services to several Aboriginal partners, including the Haisla Nation near Kitimat, B.C.; the Baffin and Kitikmeot regions of Nunavut; and its largest partnership with Det'on Cho Corporation.

“A key strategy for us has been finding efficient solutions for our customers; that has been a strength of the business,” emphasized Cane. “You have to help them out with their problems and come up with solutions. We look for opportunities that fit our business model and our appetite for risk.”

With the NWT predicted to venture into unexplored economic territory in the coming years, Summit Air is well positioned for expansion through opportunity.

“We want to continue working with our partners to bring value to their groups and help grow their portfolios,” concluded Cane. “We're taking it to the next level.”



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.

THE FUTURE OF AEROSPACE AND AVIATION



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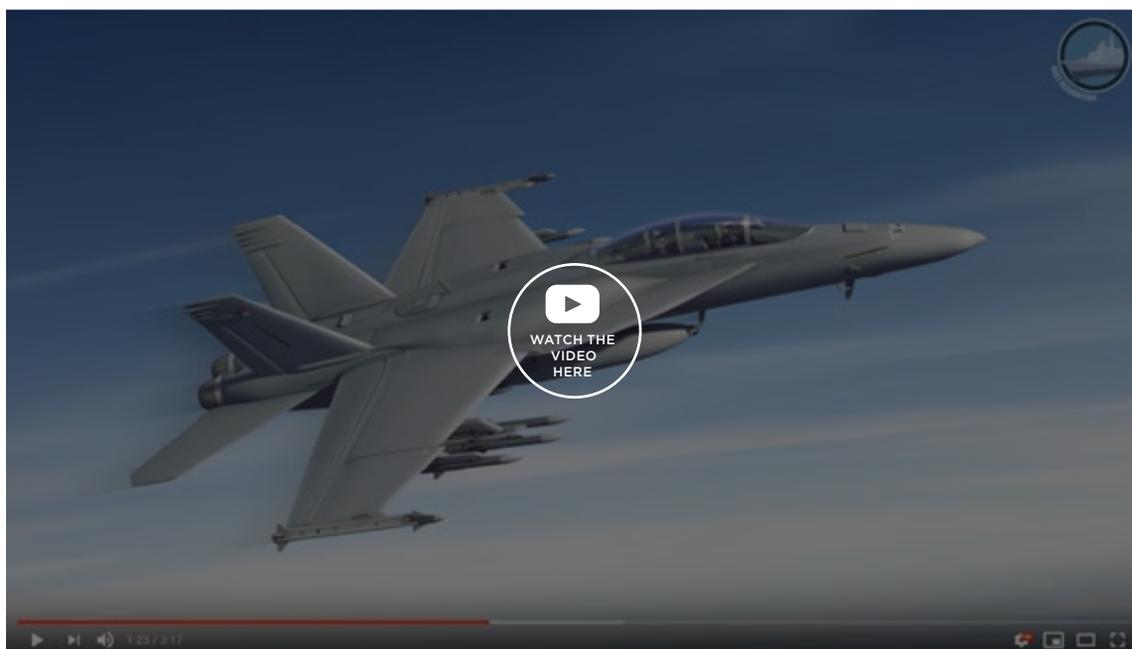
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Low-risk CAPABILITY

Boeing says its Block III Super Hornet offers Canada proven performance and predictable costing, along with a binding commitment for significant investment in Canadian content and a 'gradual handover' of intellectual property.

► **BY CHRIS THATCHER**



The Block III Super Hornet features conformal fuel tanks (behind the cockpit on the jet's "shoulders") that expand its standard combat air patrol mission range by about 20 per cent, or increase the loiter time by roughly 30 minutes. Boeing Image



Jim Barnes admits that when he arrived in Canada in 2012 to take up business development for Boeing Defense, Space & Security, long-term production of the F/A-18E/F Super Hornet was precarious. By his own estimate, the line that so far has delivered over 600 fighter jets since the mid-1990s appeared ordained to close by 2018 without new customers.

“Now, it is a completely different story because of the U.S. Navy’s commitment to Block III,” he said in a recent interview with *Skies*.

“They need advanced fighters on their carrier decks and the airplane they hoped would be joining that deck isn’t being delivered in a

timely manner, so it opened up the opportunity for the Block III.”

Under a multi-year procurement contract, the U.S. Navy will acquire 78 of the advanced aircraft through 2024. Moreover, it has begun a service life modification (SLM) program that will see all or most of its fleet of about 450 Block II Super Hornets upgraded with Block III systems through 2033. The first two were delivered in February.

Boeing will deliver the first Block III testbed aircraft to the U.S. Navy later this spring to begin carrier trials of the computing and networking systems, in advance of the first operational aircraft in early 2021.

“Right now, there is no planned retirement date for the Super Hornet,” noted Barnes, now the director of Fighter Programs in Canada. “It will be a mainstay on carrier decks for decades to come.”

Delays in rolling out Lockheed Martin’s F-35C Lightning II – ‘C’ for

carrier variant – undoubtedly spurred renewed interest in the Block III Super Hornet. But the aircraft has also benefited from a collaborative spiral approach to technology development that has ensured new systems are only introduced when they are combat ready. Many of the improved capabilities sought by the Navy for the Block III were first pioneered or trialled on the Block II.

Enhanced capabilities and healthy F/A-18E/F production and SLM lines in St. Louis, Mo., and San Antonio, Texas, are part of a package Boeing hopes will resonate with the Canadian government and Royal Canadian Air Force (RCAF) when they evaluate the contenders to replace Canada’s 30-year-old legacy F/A-18A/B Hornets.

When the request for proposals (RFP) finally closes on June 30 – it was recently extended from March 30 at the “request of industry,” according to



The Block III Super Hornet will have a 10,000-flight-hour airframe for U.S. Navy operations. Boeing says that bodes well for the RCAF, which does not operate in a corrosive salt water environment or from carrier decks or catapults. The CF-188 legacy Hornets (shown here) originally had a 6,000-hour airframe life but have successfully undergone various life extension programs over the years. Cpl Pierre Habib Photo

the government – Boeing will propose the equivalent of a U.S. Navy Block III aircraft with an instrumented landing system that was previously integrated on Australian and Kuwaiti variants.

The Super Hornet is among three candidates – the others are the Lockheed Martin F-35A Lightning II and Saab Gripen E – vying to replace the Air Force's remaining 76 CF-188 Hornets. The acquisition and sustainment project, known as the Future Fighter Capability Project (FFCP), for 88 advanced fighter jets is valued between \$15 billion and \$19 billion. The formal RFP was issued on July 23, 2019, and all three supplier teams (which include the aircraft manufacturer and representative government) had to submit preliminary security offers by Oct. 4, outlining how they intend to meet Canada's 5 Eyes and 2 Eyes security and interoperability requirements.

“The Super Hornet is a low risk program,” said Barnes. “We only integrate [new] technology when it is ready to reduce risk of schedule and cost, and outpace the threat. And what comes with that next-generation capability is predictable and affordable costs, not only for acquisition, but also for the [operational] lifecycle.”

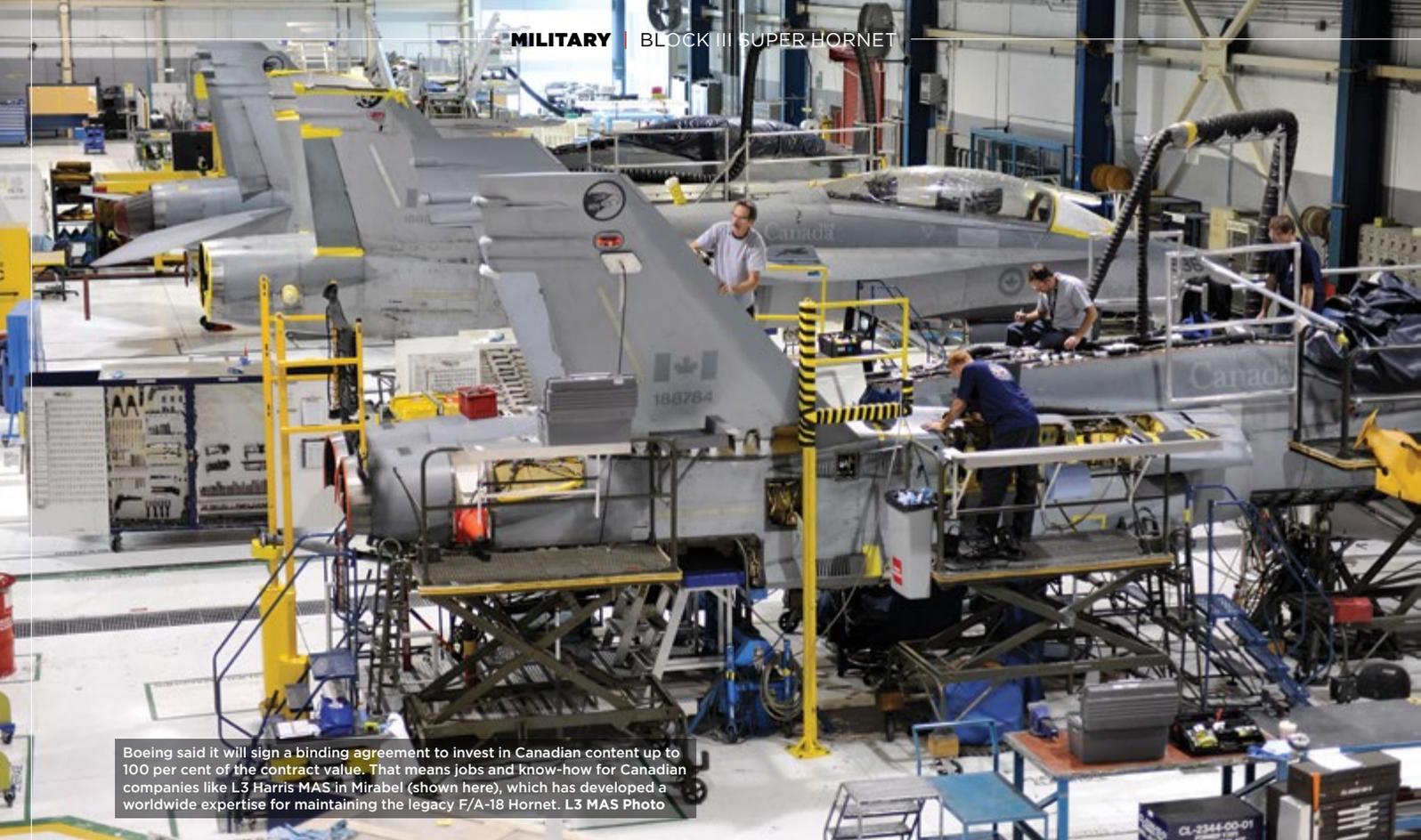
COST AND CAPABILITY

Comparing aircraft costs is always problematic. The process by which a fighter is acquired can significantly affect the final price, and Canada would buy the Super Hornet under a government-to-government foreign military sale, which can inflate the cost by as much as 30 per cent. But a multi-year procurement for the Block III in the U.S. president's budget for fiscal 2020 projected a cost of about US\$66 million per aircraft, and estimates in the past two years have suggested a price of US\$70 million.

“As part of its value proposition, **Boeing will also meet the specific requirements** around investment in small- and medium-sized businesses, innovation, skill development and long-term sustainment.”



The Super Hornet is a bigger airplane than its predecessor. It is more manoeuvrable and can fly a slower approach than the legacy fighter because of those bigger surface areas. U.S. Navy Photo



Boeing said it will sign a binding agreement to invest in Canadian content up to 100 per cent of the contract value. That means jobs and know-how for Canadian companies like L3 Harris MAS in Mirabel (shown here), which has developed a worldwide expertise for maintaining the legacy F/A-18 Hornet. L3 MAS Photo

“The current cost per flight hour for the Super Hornet is around **US\$18,000**, well below Lockheed Martin’s F-35A.”

“The cost for Canada will depend on how many aircraft they buy and when they are taking delivery, but that’s a great place to start,” said Barnes.

The more important figure for Boeing, though, is the operating cost. The current cost per flight hour for the Super Hornet is around US\$18,000, well below the F-35A, which Lockheed Martin officials recently told *Skies* is above US\$30,000 and striving to reach US\$25,000 by 2025.

“If you do the math on 88 airplanes flying for 30 years at about 250 hours per year, that is billions of dollars in savings over the life of that platform,” noted Barnes.

The Block III program will also extend the Super Hornet to a 10,000-flight-hour airframe for Navy operations. Given that the RCAF, through life extension programs, has managed to push the CF-188 well beyond its intended 6,000 flight hours, that increased airframe life bodes well for an air force that doesn’t operate in a highly corrosive saltwater environment, slam its jets down on short carrier decks or take off from catapults, noted Ricardo Traven, Boeing’s former F/A-18 Super Hornet chief test pilot and currently the lead



Engine reliability has come a long way, but Boeing’s former F/A-18 Super Hornet chief test pilot, Ricardo Traven, said vast distances and the unexpected still make the case for two engines. U.S. Navy Photo

test pilot for the 787 Dreamliner. “It is 10,000 [airframe hours] for the Navy; I really don’t know what it could be for an air force. It is one strong airframe.”

The Block III configuration introduces significant upgrades, including conformal fuel tanks (CFT), enhanced coatings to reduce radar signature, advanced mission computers and data links, and a single, customizable wide-area multi-function display. It also includes improvements originally planned for the Block II such as a centreline drop tank with a networked infrared search and track (IRST) sensor and satellite communications (SATCOM) system.

Many of these will be critical to meeting the RCAF's stated mission requirements, but Boeing is hoping to gain some credit for capabilities that are not specifically part of the RFP.

Side-by-side, the Super Hornet boasts a much larger airframe compared to the legacy Hornet. But that added wing span and extra flex means more fuel, weapons and electronics, and



The Super Hornet offers a unique feature: It can serve as its own tanker. A fifth jet can be added to a four-ship team to extend the legs of a mission. Here, an RCAF CF-188 Hornet refuels from a CC-150 Polaris tanker. LS Erica Seymour Photo



The rugged landing gear on the Super Hornet features two tires where most other fighters have one. It's a feature Boeing said will come in handy on wet and snowy runways. U.S. Navy Photo

“Boeing will propose **the equivalent of a U.S. Navy Block III aircraft**

with an instrumented landing system that was previously integrated on Australian and Kuwaiti variants.”

greater manoeuvrability than smaller competitors, said Traven, a former major in the RCAF from southern Ontario.

“You have a bigger airplane that is more manoeuvrable, and can fly slower than the legacy fighter on approach because of those big areas, which is important when coming into land on a short, snowy or wet runway in forward operation locations like Inuvik,” he said. “You don’t have to flare at all, you can plant the airplane on the first few metres of runway on touchdown. And the landing gear is very rugged. The Super Hornet has two nose gear tires – most others have one – and that counts on wet runways and snow.”

The conformal fuel tanks expand the Super Hornet’s standard combat air patrol mission range by about 20 per cent or increase the loiter time by roughly 30 minutes, said Barnes. A clean Super Hornet carries 14,000 pounds of fuel, the same as a legacy Hornet with two extra fuel tanks, noted Traven. “Take away the drag of the

pylon and tanks and you can see that the Super Hornet will go significantly farther on a clean airplane.”

At a time when the RCAF has limited strategic tanking and is poised to retire the tactical air-to-air refueling provided by the CC-130H Hercules, the Super Hornet offers a unique feature: It can serve as its own tanker. If tanking isn’t readily available, the possibility of adding a fifth jet to support a four-ship of fighters responding to a NORAD quick reaction alert mission could be “a game changer,” noted Traven.

As part of spiral technology development, the Block III replaces the previous two mission computers with a Distributed Targeting Processor-Networked (DTP-N), an onboard system that when combined with the Navy’s future Targeting Tactical Network Technology (TTNT) will allow data sharing at speeds and volume that greatly exceed current Link 16 tactical data exchange capabilities.

Multiple Block III Super Hornets with DTP-N and the longwaveIRST sensor integrated into the centreline nose tank “can solve targeting and the distance equation, which was almost impossible with a single ISRT,” said Traven of what he called an anti-stealth capability. “You can target stealth airplanes at very long range without the radar because you can process its location. First, you can locate it based on the heat signature, and you can process the distance and speed and tracking by having multiple sources talking to each other through this distributed processing targeting network. With the upgraded DTP-N, combined with TTNT, it is checkmate for the whole fifth-gen argument. The amount of information we can share is unbelievable.”

He emphasized that the U.S. military, not aircraft manufacturers, would establish the data protocols by which fighters communicate information and would not permit a closed network dictated by one type of aircraft.

Boeing has long disputed the stealth argument, maintaining the Super Hornet incorporates enough stealthy technology, including enhancements to the Block III, to perform the broad range of missions. Traven said the Navy has

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taken a pragmatic approach, asking for as much stealth as possible without sacrificing the capabilities that are important to its mission sets.

“That advanced processor, DTP-N, and the advanced data link, TTNT, and the advanced communication, the SATCOM, were all proven on the EA-18G Growler. That is the Super Hornet way of low-risk integration of advanced capabilities,” added Barnes.

Though the debate about one versus two engines has faded in recent years, Traven remains a believer in the twin

engine. Based on RCAF experience flying the NORAD mission deep into the Arctic and conducted missions across the North Atlantic, he said that distance and the unexpected remain factors that can trump reliability. While he doesn't dispute the dependability of next-generation single engines, even the best can't account for a wayward Canada goose.

“I need two engines because of all the unknowns, especially on approach to Inuvik when you see a [Canada] goose go by that can take out your engine, or the chunk of ice that goes down the intake on takeoff, or the hydraulic line that wasn't tightened exactly right. All of those things are never included in the engine reliability argument.”

Mission systems and aircraft performance will be paramount in any Air Force evaluation, but the ease of transition from the CF-188 to the Super Hornet may also earn Boeing points. In interviews with *Skies* at the U.S. Navy's Fleet Replacement Squadron and at the Center for Naval Aviation Technical Training Unit, both in Norfolk, Va., pilots and maintenance technicians described conversion programs from the F/A-18C to the E of about three months for pilots and four to six months for techs, depending on the systems.

“A lot of that training transfers one for one,” observed Traven, noting the similarity of most systems in the cockpit and throughout the aircraft.

Just as important, all the ground support equipment (GSE) and tooling is the same, meaning equipment at operating squadrons and forward bases would not need to be replaced. Both Traven and Barnes observed that while there was mention of infrastructure in the RFP, there was no discussion of the support systems and even runway lengths that might have to change with other aircraft. “I think that has been lost in this whole discussion,” said Traven.

“It is a big deal and I hope they are considering that in an appropriate manner,” added Barnes. “When you are already operating legacy Hornets, the requirement to get current maintainers and pilots up to speed on a Super Hornet is much less than it would be starting from scratch.”

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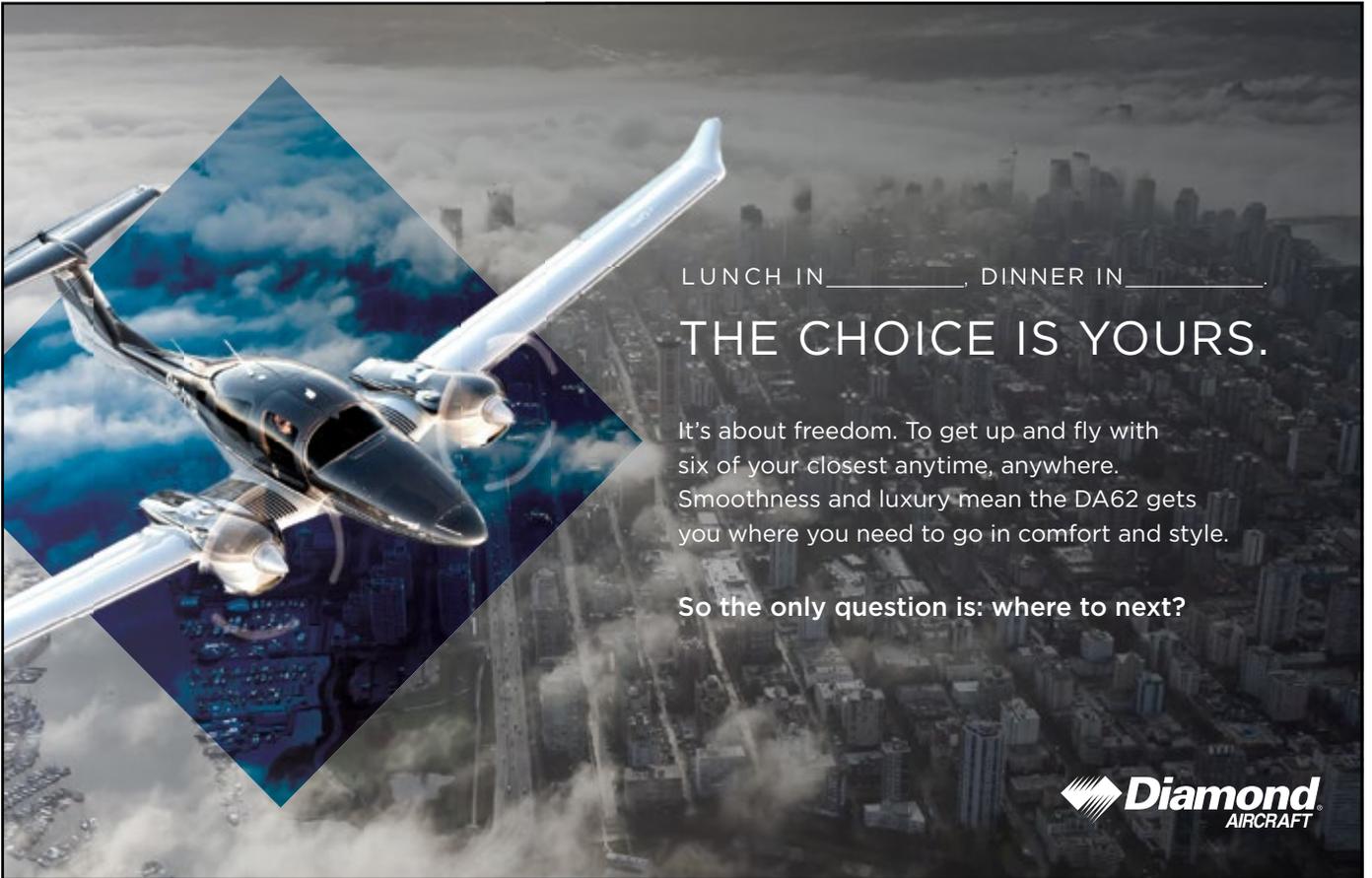


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VALUE PROPOSITION

As part of its bid, Boeing has reactivated the team that successfully delivered the CF-188 Hornet in the 1980s, including L3 Harris MAS, Peraton, CAE, Raytheon Canada and GE Canada.

“What we are trying to do is leverage the billions of dollars of investment the government has already made in the fighter support infrastructure and utilize that on the Super Hornet,” said Barnes.

Over the years after the CF-188 was acquired, companies like L3 Harris MAS in Mirabel, Que., developed detailed knowledge about every airframe in the fleet. Boeing is not proposing a wholesale transfer of Block III intellectual property (IP), but rather a gradual handover.

“As Canada got more familiar with the [legacy Hornet] platform, more intellectual property was exchanged,” said Barnes. “Our plan would be to do that same approach on the Super Hornet. We’ll do as much as we can on day one, but it will probably be an evolution over time. The Canadian companies certainly understand that.”

Mission system technologies would have to be part of a government-to-government negotiation, he added, but would likely be part of an incremental transfer over time.

The IP discussion is part of Boeing’s proposal to meet Industrial and Technological Benefits (ITB) obligations. The three bidders will have the option to

sign a binding ITB agreement and commit to investing in Canadian content up to 100 per cent of the contract value, or agree to a nonbinding economic benefit agreement. “We will sign the binding agreement,” said Roger Schallom, senior manager for International Strategic Partnerships.

As part of its value proposition, Boeing will also meet the specific requirements around investment in small- and medium-sized businesses, innovation, skill development and long-term sustainment. Fulfilling a 100 per cent Canadian content value obligation often means spending far more than the actual contract value, said Schallom. On a program valued over \$15 billion, manufacturing work packages could

The Block III Super Hornet has benefited from a collaborative spiral approach to technology development. New systems are only introduced when they are combat ready and many improved capabilities were first pioneered on the Block II variant. **Boeing Image**



translate into as much as \$30 billion in actual work for Canadian companies over the 25 years Boeing would have to fulfil its ITB commitment.

For example, Boeing's ITB obligation for the CH-147F Chinook helicopter program was about \$1.3 billion. "We are going to spend in purchase orders about \$2.6 billion of work in Canada," he added.

More important to companies that have supported the CF-188 would be the 30-plus years of guaranteed in-service support (ISS) contracts. "Those are the billions of dollars that could be left on the table if you go with the nonbinding solution," emphasized Barnes.

"You have to give your ISS companies credit for getting specific sustainment

percentages in the RFP," added Schallom. "They are wielding a pretty big hammer right now. If you go nonbinding, [that economic return] is a big question mark."

It could be argued Boeing Defense, Space & Security missed an opportunity to claim an edge in the FFCP when, in 2017, the Canadian government withdrew the planned purchase of 18 Super Hornets. The aircraft were being considered to fill an interim capability gap in the RCAF's ability to simultaneously conduct NORAD and NATO missions, but the purchase was cancelled over a trade dispute between Boeing Commercial and Bombardier's C Series airliner program.

But, with the Canadian fighter competition about to finally close, Boeing clearly believes it's well positioned with an advanced fighter jet that can meet all mission requirements well into the future, while returning significant economic benefits to Canadian industry for a predictable and affordable cost.

It's an offer Canada will have to weigh carefully. **✚**



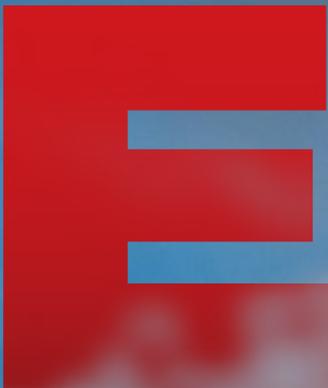
CHRIS THATCHER

Chris Thatcher is an aerospace, defence and technology writer, editor of *RCAF Today*, and a regular contributor to *Skies*.

SPECIALISTS IN

CAR





Fox Flight Air Ambulance has seen growth over two decades of operating global air ambulance flights. From the back of the plane to the front, the Toronto-based company's operations are strictly geared towards one goal: patient care.

► BY ROBERT WILLIAMSON



Since it was founded in 1996, Fox Flight's fleet has been upgraded from one Cessna Citation Eagle to three Lear 40XRs that are currently flying around the world. Nino Budas Photo



Flying an international air ambulance is no normal gig. Not surprisingly, the nature of global air medical transportation can provide for an unpredictable work experience. Destinations can be remote and the passengers are either banged-up or sick – but rarely ungrateful. This is the world in which Toronto-based Fox Flight Air Ambulance operates.

To the company's knowledge, it is one of roughly 22 outfits that operates an air medical transportation business on an international level – meaning Fox's pilots are among an exclusive club of aviators performing unique missions worldwide.

The operator's compliance with International Civil Aviation Organization (ICAO) regulations allows it to fly to places like Cusco, Peru; Funchal, Portugal (where the runway is built on a bridge); Keflavik, Iceland; and Punta Arenas, Chile.

And for international air ambulances, remote destinations can mean extraordinary missions.

Take the widely publicized case of Kristen Yaldor, a woman who was attacked by a hippopotamus in Zimbabwe on her 37th birthday in 2018.

After she was taken to South Africa for care, Fox Flight was contracted by her insurance company through a broker to fly her home to Florida, in tandem with a similar South African company.

"Her leg was a mess," recalled David Fox, Fox Flight's founder and president. The hippo had bit through Yaldor's leg, mangling it. Though most of Fox Flight's nurses work in major trauma centres throughout the Greater Toronto Area, this was something they'd never seen before. "I just remember the nurse and crew picking up the flight package that day and the main diagnosis was, literally, hippo bite."

"None of them were used to that," added Aaron Payne, vice-president and 14-year veteran with Fox Flight. "They saw that and were like, 'Sorry, what?!' "

The challenging destinations and intense missions call for pilots who can think quickly on their feet. That's one reason, Fox said, that pilots with northern-ops experience tend to do well with the company.

"We found a lot of the people who come off King Airs that are flying in the northern communities can do quite well," said Fox. "They tend to be able to handle the cold and problem solve . . . There's nothing repeated, it's always different."

The chance to see something new on every trip, along with a well-balanced 14-days-on, seven-off schedule, factor into why the global pilot shortage hasn't had much of an effect on Fox Flight's operations. According to Fox, the company hasn't had a problem recruiting new pilots to its operation – though Katrina Rankine, Fox Flight's chief pilot and director of operations, said the company's minimum threshold for pilot hours has dropped incrementally.

"We try to find first officers at around 1,500 hours, captains at around 2,500," she specified. "But a lot of the people that we do hire come recommended from other people in the industry or from people that are working here."

Fox's fleet flies 2,400 hours a year – with pilots flying roughly 800 hours each in that same time – and the hours put in by the nurses and physicians in the back of the plane are as mission critical as the work done in the cockpit. Fox himself knows this as well as anyone. Before starting the company in 1996, he flew as a nurse escort on commercial flights – working in the trenches and earning first-hand knowledge that's allowed his company to flourish over two decades of operations.



Fox Flight chose to increase its efficiency with the Lear 40XR, which offers a longer operational range and increased service ceiling. Nino Budas Photo



Fox Flight's main concern is passenger safety and comfort, which comes from founder David Fox's experience as a nurse escort. Stephen Ferrie Photo

Over the past two years, Fox Flight's growth has allowed the company to overhaul its fleet, upgrading from Learjet 35A and 36A aircraft to newer Bombardier Learjet 40XRs. This model is an upgraded version of the Learjet 40, with a Honeywell TFE731-20BR engine configuration that boosts maximum takeoff weight to 21,000 pounds, delivers faster cruise speeds, and provides better hot-and-high performance. The aircraft boasts a maximum range in the neighbourhood of 1,800 nautical miles. To Fox Flight's knowledge, it is the only company in the world using the 40XR as a medevac aircraft – something it learned after trying to source stretchers for the model's medevac conversion.

"I'd phoned around to everyone and nobody had ever installed any stretcher in a Lear 40[XR]," Fox said. "We're the first ones."

Being the first company to use this aircraft in an air medical configuration presented some challenges for Fox Flight, especially in the way of the stretcher system.

In the years before switching to the 40XRs, Fox Flight had adopted a dual-

tank oxygen system for the company's operations, because "it gives us long-haul oxygen." Due to the additional size of the dual-tank system, Fox said it took the company six months to find someone who could configure a stretcher system that would work in the Lear 40XR.

"Lear had pictures of them with a [stretcher] installation in a Lear 40," Fox remarked. "Turns out they had stuck one in there, took pictures and pulled it back out."

Fox's director of maintenance, Nick Fraser, had work to do. Fraser and his team of four got busy and configured a system that would allow Fox Flight to put a stretcher on a ramp at the door of the aircraft and slide it up to the bed. To make space for that manoeuvre in the 40XR's cabin, the existing cabinetry needed to be stripped and resized.

All of this re-configuration led to another hurdle: certification. The stretcher system Fox Flight installed had originally been certified for use in the Lear 45 but, according to Fox, the 40XR's fuselage is two feet shorter.

"You go to the company who has the structure and say, 'Oh, we're putting

"To Fox Flight's knowledge, it is

the only company in the world

using the Lear 40XR as a medevac aircraft."

it into a Lear 40XR,'” recalled Fox. “[They say] ‘well, that’s different than a 45.’ . . . It’s not, but it created some challenges for us.”

Fox’s team of in-house specialists made it work and since October 2019, Fox’s fleet of three Lear 40XRs have been flying medical missions around the globe.

Like the company’s maintenance and aircraft conversions, everything is done in-house. Pilots, medical staff, maintenance, dispatch and accounting are all provided through Fox Flight. This formula has allowed the company to supplement what it needs, when it needs it. Is a particular piece of medical equipment necessary for a specific mission? Fox Flight will go out and purchase it. Fox’s sole ownership of the company since its founding has allowed it to flourish without over-complicating operations.

The entire staff of 65 wears the same Fox Flight uniform, including Fox, to highlight the team’s equality. To keep things simple in the accounting department, the company charges a flat aircraft mileage rate that includes all services, rather than varying rates from mission to mission.

For Fox, the genesis of the company’s success boils down to one thing.

“We do great care,” he replied. “We’re a medical company that has airplanes . . . At the end of the day, it’s about the patient and we do a good job looking after the patient.”

THE FOX FAMILY

Before founding Fox Flight with his wife and fellow nurse, Rowena, Fox was working in the intensive care unit at Women’s College Hospital in downtown Toronto. In his spare time, he moonlighted as a nurse escort on commercial flights. The air medical transport business was still in its infancy at the time, and economics often allowed for people who got sick or injured on vacation to affordably stay where they were. According to Fox, it was more expensive to bring them back to Canada than it was for them to receive medical care in their current location.

“But then that all changed,” he explained. “Now, the cost of leaving somebody in these places is quite exorbitant compared to bringing them home.”

After some time, he switched his focus from a career in the hospital to a career in the air, opening shop at what was then called Toronto Island Airport (now Billy Bishop Toronto City) in 1996.

In the first six months of operation, Fox Flight welcomed six additional flight nurses. In the next year and a half, the company had its own medical staff escorting patients on commercial flights in North America, and began leasing another company’s aircraft for missions to Europe.

It was only a matter of time before the company needed its own wings. In 1998, Fox sat down with his chief financial officer and formed a plan to purchase a Citation 500 with an Eagle wing modification, and converted the plane for medical transfers.

At that time, the modifications were outsourced – Fox Flight didn’t begin in-house maintenance and conversion work until 2010 – and included things like customized cabinets and the addition of electrical sockets for medical equipment. On average, said Fox, an air medical conversion takes roughly two months to complete.



As the first company to use this aircraft in an air medical configuration, Fox Flight encountered some challenges. Specifically, the company had to design its own stretcher system that would fit through the door. Stephen Ferrie Photo



According to Nick Fraser, Fox Flight’s director of maintenance, medical conversions can typically take two months. Since 2010, Fox Flight has been doing them in-house. Stephen Ferrie Photo



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In the same year, due to the need for 24-hour operations and fewer weather restrictions, Fox Flight moved from the island airport to Toronto Pearson International.

In 2005, after growing operations across North America and into the Caribbean, Fox traded the Citation 500 Eagle for a Learjet 36A, boosting mission range from 1,214 nm (2,249 km) on the Citation to 2,857 nm (5,291 km) on the Lear. The next year, Fox Flight added a Learjet 35A. By 2014, the company's fleet had expanded to four with a pair of additional 35s.

Only four years later, the decision was made to upgrade to the Learjet 40XR.

"A lot of it came from looking at what was newer, what would be more effective – and from [the perspective of] our clients, the patients and the families," Fox explained. "Really, a lot of it came from a 'back of the airplane' decision."

THE 40XRS

If passenger comfort was the driving force behind modernizing its fleet, Fox Flight made a smart choice. The 40XR offers an additional five feet in cabin length compared to the 35s, while also offering a feature missing from the smaller jet – a lavatory.

"We take companions on our flights," said Fox. "If we're taking somebody [who's 70] off a cruise ship out of Rome, Italy, the chances are the companion is a 70-year-old spouse. To go from Rome to Keflavik [in Iceland] and across, they at least want access to a washroom. They want some room to put baggage and things."

At the front of the plane, the 40XR sacrifices just under 200 nm (370.4 kilometers) in range compared to the 35s, but its lighter frame gives it roughly 6,000 additional feet of service ceiling.

The 40XR's increase in hot-and-high performance compared to the 35s has allowed Fox Flight to land at previously unattainable locations such as El Alto International Airport in La Paz, Bolivia, the highest international airport in the world.

"With the 35s . . . [it's tough to] land above 8,000 feet," Fox remarked. El Alto International sits at 13,325 feet. "We could do it [easily and safely] in the 40XRs."

"It was just funny setting it up," Payne chimed in. "I remember we were speaking with the handlers [in La Paz] and they're like, 'Lears don't come here.'"



Fox Flight's operations moved from Billy Bishop Toronto City Airport to Toronto Pearson International Airport in 1998. Fox Flight Photo



As a one-stop shop, Fox Flight is proud to offer maintenance, staffing and dispatch services. Stephen Ferrie Photo



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“Through its 24-year operational history, Fox Flight has kept its clients at the **front and centre** of its operations.”

Fox continued, “It’s opened up different destinations, but it’s also sped things up dramatically for us . . . We can fuel and turn the airplane around in 20 to 30 minutes. Before, each wing needed to be refuelled.”

The 40XR has single point refuelling, which allows operators to fuel the entire aircraft from one point, where a series of pressurized valves carries the fuel throughout the aircraft. This is a dramatic difference from the 35s, in which fuel tanks on both wings needed to be topped up individually.

The upgrade has allowed Fox Flight to comfortably schedule tech stops at half the time that used to be required for the 35s. Back in the maintenance department, Fraser said the switch to

the newer aircraft has led to a lighter maintenance schedule with 3,500 hours between overhauls. By minimizing maintenance costs, Fox Flight’s overall operational expenditures have also decreased.

“Thirty years make a huge difference,” he said, referencing the age gap between the old 35s and the 2008 and 2009-built 40XRs. “There’s a lot more tools in terms of troubleshooting if there’s an issue.”

If the upgrade to the 40XR has improved life for cabin crew and the maintenance staff, how has it affected Fox Flight’s pilots?

“It’s basically the same,” said Rankine. “Though it is newer equipment than what the 30s had from the pilot’s perspective.”

“We went from gauges . . . to touch screens,” added Fox, referencing the planes’ Honeywell Primus 1000 avionics suite.

Something Fox Flight stressed was that the transition to the new aircraft should be as seamless as possible. To get its 11 pilots up to speed, the company sent its chief pilot, Rankine, to FlightSafety in Tucson, Ariz., to be trained and certified on the Lear 40XR. She then did the initial training with Fox Flight’s other pilots in Toronto, who subsequently went to Tucson two at a time to complete the training and get their rating while the others continued to pilot the older aircraft.

“GOT POUTINE?”

Still, newer jets and increased global operations haven’t jaded Fox Flight. Through its 24-year operational history, the company has kept its clients at the front and centre of its operations. Fox stressed that almost all of the carrier’s operational decisions have been based on client comfort.

Keeping things simple has been a mantra for the Fox team.

Payne described the operation as a “small, intimate company that does big things.”

“I’d say that’s our biggest seller,” he added. “Speaking with a lot of people, I think a lot of [them] are just impressed [by] how simple we are. It’s not over the top.”

That simplicity has allowed David Fox to cultivate and retain a family feeling at his company. On most days, he comes into the office with a box of fresh pastries from Etobicoke’s SanRemo Bakery, and is always close to his phone in case a deployed crew member needs to reach him.

Recall the hippo bite mission, for example. After Yaldor was flown to Tenerife in the Canary Islands by the South African air ambulance company, the Fox Flight crew met them there and took her up to the Azores and across to St. John’s, N.L.

After the long flight and intense mission, the crew, along with Yaldor and her Canadian husband, would be making one more stop at Toronto Pearson before heading to Florida.

“So, I get a phone call and they were making their tech stop in St. John’s,” said Fox. “One of the members of the flight crew was on the other line. He asked, ‘Can we get poutine for the flight?’”

Sure enough, Fox headed out to nearby Zet’s Restaurant, picked up poutine – and Tim Hortons coffee on the way back – and waited at Pearson to deliver it to the hungry passengers himself. It was just one more example of Fox Flight’s commitment to putting patients and passengers first. 🇨🇦

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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.

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CITATION TEAM CANADA



The Next Generation

The Diamond DA40 NG, powered by the fuel-sipping AE300 diesel engine and featuring the capable Garmin G1000 NXi avionics package, makes a powerful impression with flying schools and private pilots alike.

BY CONRAD HATCHER | PHOTOS BY ERIC DUMIGAN



Diamond Aircraft's DA40 NG combines the familiar DA40 airframe with the innovative Austro AE 300 diesel engine. **Diamond Photo**



The Diamond DA40 has been a favourite of owners and pilots since it was introduced in 1997. I first saw it in the early 2000s and remember being impressed by its striking design, highlighted by its seemingly impossible curves. In a sea of Cessna 172s, Piper PA28s and Beechcraft Musketeers, it

looked like a spaceship in comparison.

In 2005, the DA40 was offered with Garmin's G1000 avionics suite and for the first time the inside of the airplane was as revolutionary as its exterior. The Diamond DA40 NG ("Next Generation") continues in this spirit of evolution and showcases what's next for Diamond's popular four-seater.

I have extensive experience flying the Lycoming-powered version of the DA40 all over North America and appreciate its comfort and efficiency. I have also flown the Diamond DA42 twin diesel-powered aircraft, which allowed me to experience the wonders of diesel power. My recent flight with Trevor Mustard, aircraft sales manager for Diamond

The DA40 NG has a beefier ramp presence than its older Lycoming-powered cousin. The landing gear is obviously more substantial, and the tail of the airplane sits much higher.



Aircraft in London, Ont., was my first opportunity to fly the diesel-powered NG version of the DA40. It combines the airframe I am very familiar with and the innovative Austro AE 300 diesel engine. I was excited to see the changes that Diamond made when creating the NG.

The aircraft we flew for this article was destined for a large U.S. flight school that was undoubtedly attracted to the low fuel burn afforded by the extremely efficient diesel engine. The AE300 engine is rated at 168 horsepower, yet our test flight showed typical fuel burns of five to 5.5 gallons per hour – close to half the fuel burn of a conventional gasoline engine. Not only does it burn less fuel than its avgas-burning cousin, the diesel engine burns jet fuel – which is less expensive, available worldwide and is lead-free. A busy flight school could take advantage of those fuel savings and realize a payback in short order.

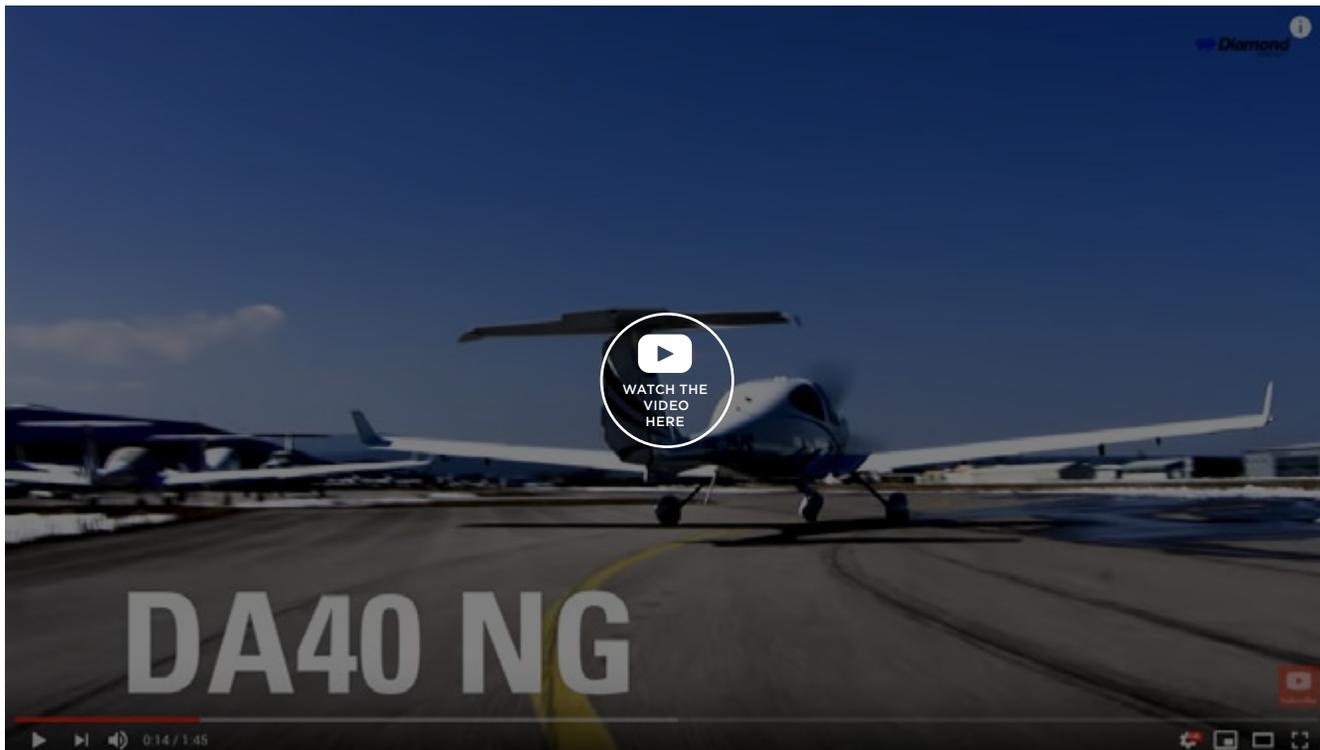
Although the diesel engine is the most obvious difference between the NG and the legacy DA40s, it is not the first thing

one notices when walking up to the airplane. The first feature that caught my attention was its yellow winglets. Before the NG, DA40s were mostly white, apart from the registration markings and some decorative striping. Basically, you could get one in any colour you wanted – as long as it was white. Mustard explained that Diamond is developing improved resins that allow more of the airplane to be different colours with fewer limitations. It makes me wonder if some day we might see a candy apple red DA40? Time will tell.

The other external feature that stands out is the airplane's stance on the ramp. The landing gear is obviously more substantial, and the tail of the airplane sits much higher than the older model. It looks like this landing gear can absorb whatever punishment even the most ham-fisted student pilot can inflict. The new gear was a necessity because the diesel engine is heavier, allowing Diamond to increase the maximum takeoff weight to 2,888 pounds (1,310 kilograms) up from

2,646 lb. (1,200 kg) for the DA40 XLT equipped with a Lycoming O-360 180 horsepower engine. The net result is that the useful load is about the same for both models at around 900 lb. (408.23 kg). The lower fuel burn of the diesel may allow for a little more loading flexibility, since a pilot would not have to carry as much fuel to fly the same trip.

Entry to the cockpit is the same as any DA40, which means you approach the aircraft from the front and step up onto the wing before standing in the cockpit and finally sitting down. The canopy swings forward to facilitate all this, making it simple to get in and out even when wearing bulky winter clothes. The seats are firm, but I have found them to be comfortable even on very long flying days. The automotive-style seat belts will be a welcome feature for anyone who is familiar with the need to hunt on the floor for one end of the belt, as is normal in many older airplanes. When equipped with the optional Amsafe "air bag" seat belts, an additional layer of safety is provided.



Skies test pilot Conrad Hatcher, right, discusses the DA40 NG with Diamond's aircraft sales manager Trevor Mustard.

“The AE300 engine is rated at 168 horsepower, yet our test flight showed typical fuel burns of five to 5.5 gallons per hour —

close to half the fuel burn of a conventional gasoline engine.”



The Austro AE300 engine utilizes a full authority digital engine control (FADEC) system to monitor and control engine and propeller functions.



Before the NG, DA40s were mostly white. Now, Diamond is developing improved resins that allow for different colours, such as these bright yellow winglets.

Once seated, the pilot is greeted with a logical, uncluttered cockpit complete with the latest “NXi” version of Garmin’s venerable G1000 avionics system. The displays are sharper and load faster than previous versions, especially compared to the 2005 model DA40 that I fly regularly. For those unfamiliar, the G1000 integrates the flight instruments, engine monitoring, navigation, and abnormal/emergency annunciators. Despite the large amount of information that can be displayed, it is done in a logical and effective manner that does not overwhelm or confuse the pilot.

Operation of the diesel engine is where most pilots who are accustomed to traditional aircraft piston engines will get the sense that something is different and new with this aircraft. There are no magnetos to check, no propeller to cycle, and no mixture control to adjust. Starting the engine is simple but very different from starting a legacy piston engine. The pilot basically engages the battery with the ignition key, follows the prompts on the annunciator panel indicating that the glow plugs are ready, and then engages the starter. The whole

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“The DA40 NG seems ideally suited to teaching basic ‘stick and rudder’ skills, while having **sufficiently capable avionics** and automation to teach someone to fly IFR in a glass cockpit.”



Garmin's G1000 NXi panel integrates the flight instruments, engine monitoring, navigation and abnormal/emergency annunciators.



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experience is like starting an automobile; with little effort the powerplant comes to life and provides smooth and relatively quiet power.

This engine utilizes a full authority digital engine control (FADEC) system to monitor and control engine and propeller functions. In this system, a computer known as an ECU or engine control unit is the “brains” of the system, taking over many of the functions traditionally delegated to the pilot. The ECU is so important that the Austro AE300 has two of them. The pre-flight engine check involves pressing the “ECU Test” button to ensure that all ECU functions are working on both units prior to takeoff. If one unit fails, the other unit will automatically pick up the slack and the system will provide the pilot with an annunciator warning. It almost feels like cheating!

While in flight, the pilot only has to deal with a single lever to set the power while the fuel flow is displayed in real time and maintained with digital precision. Want to set 60 per cent power? Push the throttle lever forward until the engine load metre says “60%.” That’s it. There is no hard-to-interpret performance chart. No leaning. No guessing. The pilot will have accurate fuel consumption and range information and the ability to fly the airplane “by the book” with confidence. It is also important to remember that this engine is both liquid-cooled and turbocharged. Pilots are required to ensure that the engine coolant has warmed to the “green” before the ECU test is conducted and takeoff is attempted. My experience with this engine suggests that this will be an issue on cold days when there is a big gap

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“It looks like this more substantial landing gear **can absorb whatever punishment** even the most ham-fisted student pilot can inflict.”

between flights, but the heat is otherwise maintained efficiently. During a busy training day, it is unlikely that much waiting time will be required. The fact that it is turbocharged is not immediately evident to the pilot as there is no manifold pressure gauge or other indication of the presence of a turbocharger. The engine can maintain the requested power to a much higher altitude, indicated by the “load” indicator. In a non-turbocharged or normally aspirated engine, the power would start to decline somewhere in the 6,000 to 7,000-foot range and be indicated by a loss of manifold pressure.

The pilot operating handbook indicates that the NG will require about 200 feet more runway at its maximum takeoff weight when compared to its avgas-powered cousin. This is due to the

higher maximum weight for the airplane and the lower horsepower rating for the engine. I doubt that most pilots would notice much difference when comparing the two aircraft. However, I believe they would have no problem noticing the reduction in fuel consumption.

The airplane is easy to handle on the ground and through the takeoff roll, requiring only a smooth application of power and a gentle tug on the stick. There is no propeller control to manage after takeoff and all that is required is that the pilot reduce the power to 90 per cent for the duration of the climb. Once established in cruise, the airplane offers the wonderful visibility and pleasing handling that has made it a favourite. The flight test airplane seemed slightly “stiffer” in pitch than I expected for a

While in flight, the pilot only has to deal with a single lever to set the power while the fuel flow is displayed in real time and maintained with digital precision. **Diamond Photo**



DA40, which could be attributed to the heavier engine out in front. With that said, the handling of the airplane is still superb. Landings on the newer, taller landing gear are easy and approved in a crosswind up to 25 knots. That is significantly more than most light airplanes and it was indeed not difficult to keep the airplane going straight down the runway.

With the test flight behind me, I got to thinking about the target market for this airplane. This particular example was destined for a large flying school focused on training new pilots to feed into the parent airline. The DA40 NG seems ideally suited to teaching basic “stick and rudder” skills, while having sufficiently capable avionics and automation to teach someone to fly IFR in a glass cockpit that most closely represents the type of

cockpit displays found in the airliners they will pilot in the future.

While it is an excellent training platform, I think the DA40 NG would also be an excellent choice for a newly minted owner-pilot with the budget to purchase a new airplane. As a flight instructor, I am often asked by new pilots for advice on what to buy. For several years, I have recommended a DA40 to those pilots looking for a first airplane and who have the budget to make the purchase. It’s an efficient touring airplane with great avionics and a stellar safety record. New pilots can learn the necessary skills and gain the experience to allow them to move on to a higher performance aircraft or, in some cases, it can serve as someone’s “forever” airplane.

Which one would I pick? There is no

bad choice between a DA40 NG and its Lycoming-powered cousin. Some people may argue that it would take years to save enough in fuel to justify the premium price that the diesel commands. Others will be attracted to the NG by the “cool” factor or practical concerns like the availability of avgas. Me? I just want a red one! 🇺🇸



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.

Otter Devotion

Planes & Parts Ltd. owner Bob Ambrose has been flying Twin Otters for more than 50 years. His Alberta-based company has ferried countless examples of the type to operators around the world.

► BY KEN POLE | PHOTOS COURTESY BOB AMBROSE

It would be fair to say that Bob Ambrose could be called “Mr. Twin Otter.”

But first, a bit of history.

Almost immediately after de Havilland Canada flew its new DHC-6 twin turboprop for the first time in May 1965, it was clear the company had a winner on its hands. The DHC-6 Twin Otter was an upmarket move from the sturdy and still capable 1950s-vintage DHC-3 single-engine Otter, itself an evolution of the slightly older DHC-2 Beaver.

The ensuing 55 years have proven the wisdom of its design. Hundreds of legacy Twin Otters are still flying around the world, and the type has been given a new lease on life by Victoria, B.C.-based Viking Air Ltd., which

recently celebrated the 10th anniversary of the first flight of its next-generation Series 400 Twin Otter.

Viking launched the Series 400 program in 2007 after acquiring type certificates for the entire de Havilland Canada line, from the venerable DHC-1 Chipmunk trainer to the DHC-7, better known as the Dash 7 commuter platform.

While the Series 400 continues to sell into the global market, there’s no shortage of demand for the heritage versions. It’s a market Ambrose knows well, having logged more than 10,000 hours in Twin Otters out of a career total of 28,000 hours. As an airline transport-rated pilot and president of Planes & Parts Ltd., based in Strathmore, Alta., his relationship with



CAPTION



Bob Ambrose helps fuel a Twin Otter that he and co-pilot John Tipoukidis ferried from Tahiti to Guadeloupe in 2011. John Tipoukidis Photo



Twin Otters began not too long after de Havilland's maiden flight.

"I flew No. 2 for about 1,500 hours."

Having earned his private pilot licence through Air Cadets in 1963 at the Calgary Flying Club, Ambrose was hired by the now-defunct Great Northern Airways (GNA) in 1966, spending most of that Yukon winter as a "swamper" on a Douglas DC-3. A commercial licence and float endorsement saw him flying forestry patrol out of Whitehorse in a Piper PA-18 Super Cub.

Twin-engine and instrument ratings led Ambrose to the cockpits of Cessna 180 Skywagons, Beavers and Piper PA-23 Apaches for Airwest out of Vancouver, before GNA hired him back to the North again.

"I jumped at it," he told *Skies* in an interview from Puerto Vallarta, Mexico, where he now spends most of his winters while still managing Planes & Parts remotely. "Coast flying was not for a boy from the Prairies!"

By early 1969, he had progressed from the Beaver to the Otter and then had his first

flight in a Twin Otter that May. "Within days, I was on my way to the Arctic Islands and was turned loose on arrival."

Nowadays, Planes & Parts – found online at www.worldwideferry.com – specializes in global delivery of Twin Otters, including the new Vikings, as well as Beech turboprops. Ambrose's high-hour contract pilots also have extensive experience in piston-engine twins as well as single-engine Pilatus PC-6 Porter and Cessna 208 Caravan turboprops.

Ambrose said he set up the company – which has roots going back to 1986 – when he purchased it around 1993. He had just finished a stint as chief pilot with Calgary-based Kenn Borek Air, where his work included ferry flights to the Maldives, an increasingly popular tourist destination in the Indian Ocean. Those were pre-Internet days and the flights involved a lot of paperwork and fax messages. "You'd send somebody off and rely on them to phone in once a while about their location. Now, everybody wants to know every half hour."

That experience sowed the seeds for Planes & Parts, where Twin Otters represent 80 to 90 per cent of its business. The company's website indicates that all deliveries are done at "reasonable cost." Asked how that's determined, because there are surely extras that arise during a delivery, Ambrose said "everything is up front" so there are no issues. "We provide an all-in price that covers everything except aircraft breakdown, which is then at the expense of the customer."

The company's trusted reputation is due in no small measure to the crews Ambrose recruits. Dev Salkeld is a typical example. He was the former chief pilot and operations manager for Coulson Flying Tankers, where he also captained its Lockheed Martin C-130 Hercules and Martin Mars waterbombers.

Logging more than 27,000 hours – including "Twin Otter time from way back when," as Ambrose put it – Salkeld evidently could fly just about anything, including his vintage Stinson 10 Voyager and Chinese Nanchang CJ-6 as well as



Asked what characteristics suit pilots for ferry work, Ambrose said they tend to be **looking for adventure.”**



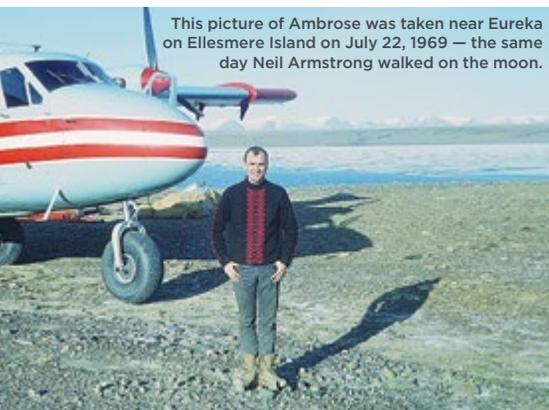
Bob Ambrose at the controls during an early morning departure from Honolulu, Hawaii to Majuro, Marshall Islands.



A ferry pilot must be ready for anything, including bad weather in Goose Bay, N.L., en route to Sri Lanka.



A Twin Otter with full ferry tanks containing an additional 1,000 U.S. gallons can fly for 18 hours. Here, Ambrose investigates a fuel leak in Easter Island.



This picture of Ambrose was taken near Eureka on Ellesmere Island on July 22, 1969 — the same day Neil Armstrong walked on the moon.

various Boeing and Airbus models, to name just a few.

Last November, Salkeld was involved in delivering two new Viking Series 400s for Calgary-based Avmax Group Inc. to Chad in north-central Africa. Ambrose suggested Salkeld would be a good source of DHC-6 anecdotes but, sadly, the 67-year-old Saskatchewan native died later that very day after a brief fight with cancer. He was “a really good guy,” said Ambrose.

Asked what characteristics suit pilots for ferry work, Ambrose said they tend to be “looking for adventure” and he generally has no trouble finding people he trusts. Retirees are his preferred option.

“Sometimes a customer will tell us to be ready on a certain day and then we’ll find out it’s not going to be ready then, so I’m supposed to adapt to that. I do have some airline guys who may have some down time and they’ll call me. If they book the time off and then it doesn’t happen on the specified date, they can’t go.”

In one case he recounted, a start-up carrier in the Maldives was taking delivery of seven aircraft purchased

from several Canadian companies. But the new airline had difficulty getting its operating certificate.

“The Maldives wouldn’t even let them bring in the airplanes,” which had all been painted in their new livery. In the end, Ambrose managed to pull it all together and complete the deliveries.

“It just comes in lumps, so there was no use trying to have a crew available,” he said. “I’ve pretty well always been able to come up with guys.” Having his own full-time crews isn’t practicable, given the sometimes cyclical nature of the business. There was “a real lull” last year when, beginning in March and except for some small jobs, “we didn’t put [ferry] tanks in an aircraft until September.”

A Twin Otter with full ferry tanks containing an additional 1,000 U.S. gallons can fly for 18 hours. Ambrose recalled flying some 2,100 nautical miles with a co-pilot to Lima, Peru, from Easter Island in the remote Eastern Pacific. Another time, he and a flight engineer flew to St. Maarten in the Caribbean from Cape Verde, some 2,300 nautical miles away off the coast of West Africa.

“I never put a ding in a Twin Otter and never hurt anybody.”

He admitted ruefully that while he did have a couple of minor “crashes” years ago, including a gear-up landing in a de Havilland DHC-4 Caribou, “I never put a ding in a Twin Otter and never hurt anybody.” And although he has never had any “real personal emergencies,” he recalled being five hours out of Hawaii in a DHC-6 on the way to the Marshall Islands in the South Pacific when a fuel control issue necessitated a return to Honolulu.

One of his more challenging personal deliveries involved getting a DHC-6 owned by North Cariboo Air in B.C. from Minnesota to Peru, where it would support oil exploration work. It was a “straight floats” aircraft (i.e. no wheels), but despite misgivings about not being able to land on a runway, Ambrose agreed to do it in roughly six-hour legs via Louisiana, Belize and Panama.

The first two legs went smoothly but the base in Belize had no jet fuel, only diesel, which Ambrose knew from his Arctic experience burned just fine in a Pratt & Whitney Canada turbine.

But on approach to Panama, air traffic

control cleared them into the port city of Balboa. There, the local marine police accused them of landing in a prohibited area – the canal shipping lane – even though there wasn’t a ship in sight.

The next morning, Ambrose was told not only that he had come very close to going to jail for landing there, but also that he should not be fuelling up from drums ferried out by boat. That was eventually resolved and after further “negotiations” with the port authority, he took off for Iquitos, crossing the Andes near Cali, Colombia.

“Other than the little problem in Panama, this trip turned out to be a lot easier than I was expecting,” Ambrose wrote in a log he shared with *Skies*. “Don’t know if I will ever get clearance to land in Panama again though.”

Two days later he was off to Kenya, one of countless deliveries that has kept Planes & Parts in business.

One of Ambrose’s many fans is Andy Cook, business development manager at Rocky Mountain Aircraft (RMA), based at Calgary Springbank Airport. Founded in 1982, family-owned RMA has between 20 and 25 of its Twin Otters leased out at any given time for operations ranging from the tropics to the Arctic.

“A long time ago, we would try to do or organize ferries ourselves,” Cook told *Skies*, explaining that this would often involve the use of RMA’s own ferry tanks. “Then we had a problem – either they wound up in the wrong place or we were unable to get them back. That

became quite expensive.”

He also recalled “nightmare trips” with pilots who were essentially strangers. “We had some interesting phone calls at three o’clock in the morning . . . This is one of the advantages of dealing with Bob; his pilots keep us up to date with what’s going on and if there are particular difficulties, they’ll ask for help. But they tend to be very self-sufficient about what they do.”

A recent ferry involved a low-time Twin Otter being returned from Nigeria via Algeria, Majorca, Wales, Iceland and Iqaluit. A critical bleed-air heat mixing valve malfunctioned, likely due to the fact that the aircraft had been idle for some time, and Cook’s personal contacts couldn’t supply a replacement.

Ambrose had a contact in Switzerland who did have one, but before it could be shipped, “Bob’s guy figured out a fix and so we did not get held up. Having pilots who can think on the run is really helpful and that’s what Bob specializes in.”

So, are Ambrose and his pilots RMA’s “go-to” guys?

“I think you’ll find that they’re most people’s go-to guys,” replied Cook. “When we’re dealing with new customers, we’ll always recommend them.”



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.

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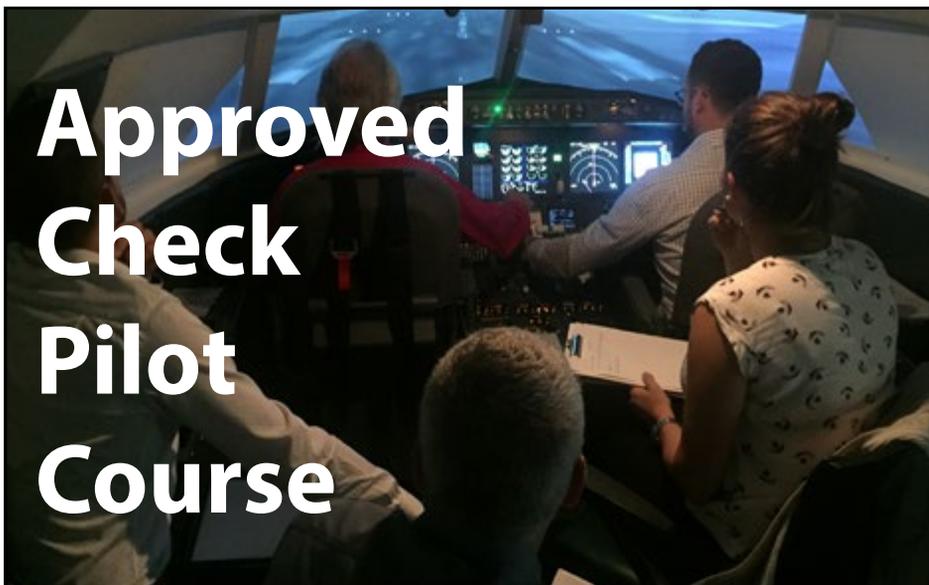
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Modernization through expansion

ERIK NIELSEN WHITEHORSE INTERNATIONAL AIRPORT (YXY)



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.

Whitehorse, capital city of the Yukon, is currently home to roughly 32,000 people, making it Canada's largest northern city.

Along with the local population, the Yukon government has reported a 25 per cent increase in tourism on a yearly basis since 2015, making one of its main points of entry, Erik Nielsen Whitehorse International Airport, the "aviation gateway to the Yukon" according to assistant airport manager Brittane Stewart.

The uptick in passenger traffic has led the territorial government, which owns and operates all 28 airports and aerodromes in the Yukon, to complete a number of improvement projects in recent years.

Currently, the airport is in negotiations with a new food services provider and while the site is the only airport north of the 60th parallel to operate passenger jetways, last year it replaced one that had been onsite since 1984. This came a year after it added a special assistance line to a screening area and main

the site. Erik Nielsen is enveloped by a large gulch to the north, a significant variation in gradients to the south, clay cliffs immediately to the east and the territory's main highway directly beside it to the west.

"We're constrained by those four points and there's not a lot of wiggle room on any of those ends," said Stewart.

Mix those surroundings with punishing permafrost conditions and a shortened construction window in the perpetually dark winter months, and it's no surprise that northern ops call for



YXY Photo

"Tourism plays a vital role here," she remarked. "Travellers from around the globe come to our city to explore its vastness and natural beauty."

In recent years, the numbers back that up. In 2019, the airport saw a total of 45,837 aircraft movements, up 3,000 from the previous year. As for the passengers on those aircraft, 2019 saw over 412,000 people fly into Whitehorse in what Stewart called a "record year." That's up from 390,000 in 2018 and, going back further, up 32 per cent in the last five years.

"We're proud of our airport and the growth that we continue to see year-over-year as a result of air arrivals," said Stewart.

boarding section that was expanded in 2017. The airport is also in the midst of modernizing its baggage system.

While operations inside the airport terminal have expanded to meet passenger growth, northern operations outside, on the grounds, present their own challenges – though Stewart believes the airport is well equipped to handle these hurdles.

"We're northerners and any operations north of 60 have their own challenges," Stewart explained. "But I think with those challenges come some opportunities to find innovative ways to solve northern problems."

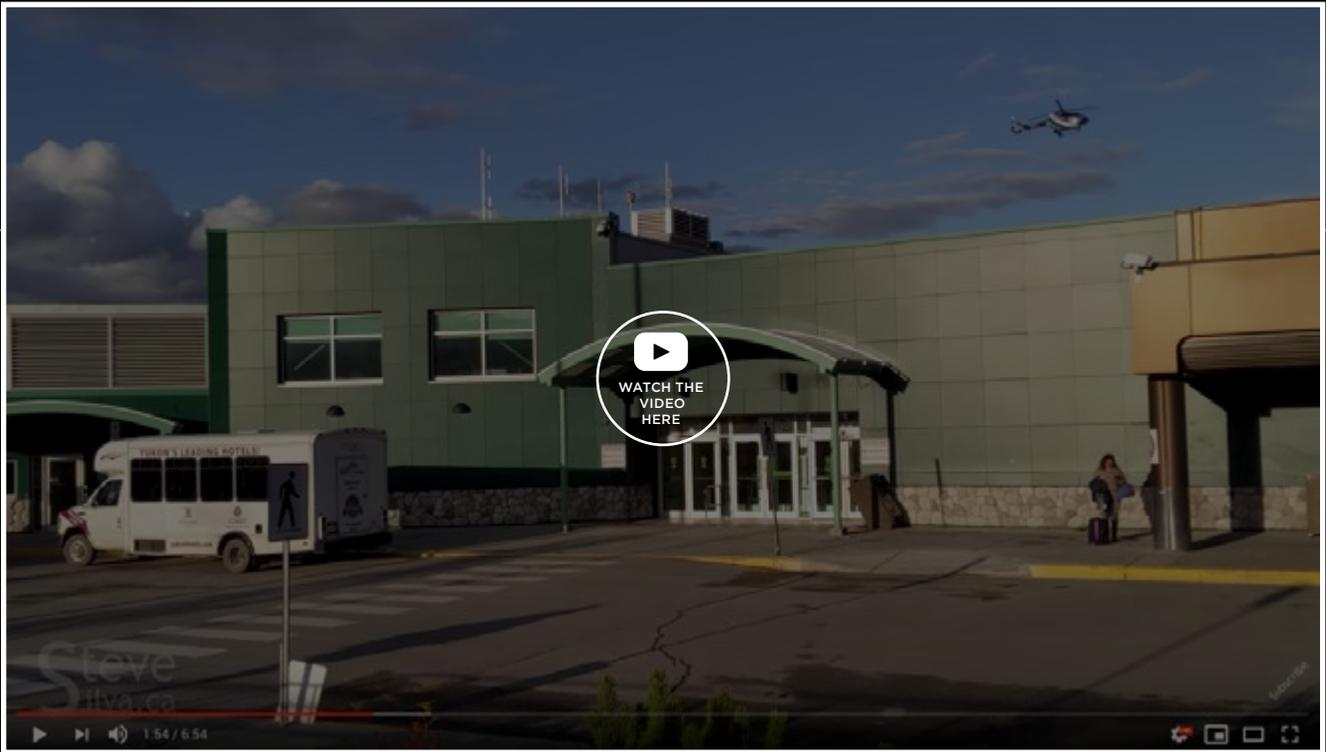
One test for the airport is the "rough and unforgiving" terrain surrounding

innovative solutions.

One such solution the airport explored came in the form of drones. The unmanned aircraft that have proven to be a pest for other sites are being used to survey the airport's land in Whitehorse.

"We used drones here to analyze the paint markings and identify potential obstacle limitations, surface hazards and to survey the overall drainage on the airport site," explained Stewart.

While the drones provided "nearly instant feedback" she said, the larger data files the airport received later, after the survey had been completed, have led to a number of projects to improve safety on the grounds.



YXY Photo

“We’ll be installing some LED runway guard lights this summer . . . and that information will [also] be used to do a full surface water management plan for us here at the airport as well,” said Stewart. “That data was critical in helping us to make improvements right away and it’ll also allow us to keep making improvements throughout the year.”

Along with the increasing tourist traffic, these modernization efforts have come in order to cater to the diverse aircraft flying into the region. According to Stewart, the airport has to accommodate planes of all shapes and sizes.

“They range from bush pilots to personal aircraft to higher-equipped aircraft, large commercial and

international wide-bodies, rotary,” she said. “We get all sorts of requests and needs that we have to help meet ... We’re committed to providing a safe and secure experience for all passengers travelling through our airport.”

Along with the maintenance requirements to accommodate the varying aircraft, Rodan Air Maintenance is stationed on the airport’s grounds for any quick-fix or maintenance service required. If fuel is needed, North of 60 Petro has keylock petroleum depots onsite.

For those looking to charter or rent an aircraft for either business or leisure, there are a number of companies available, either onsite or nearby. 🇨🇦

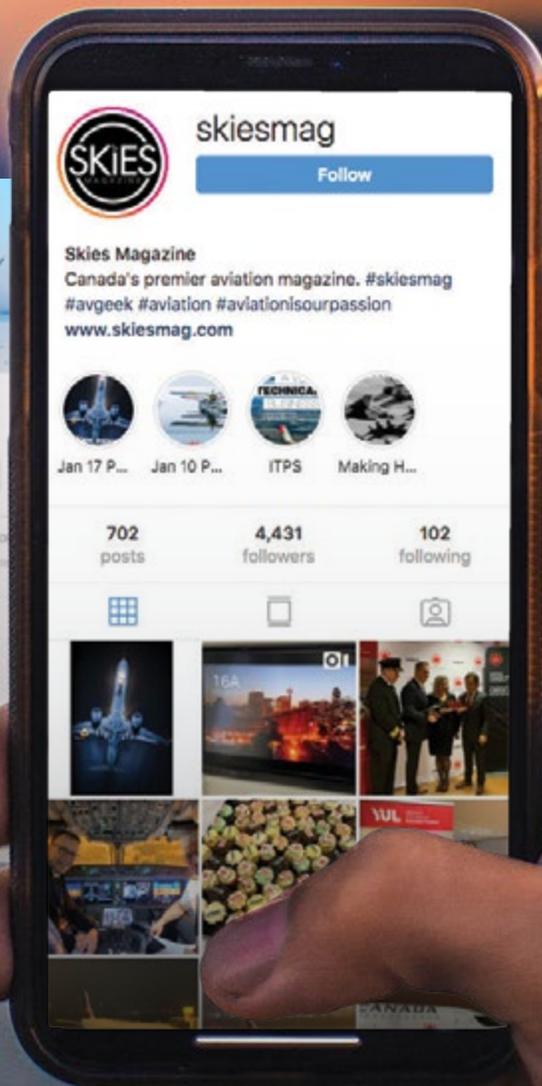
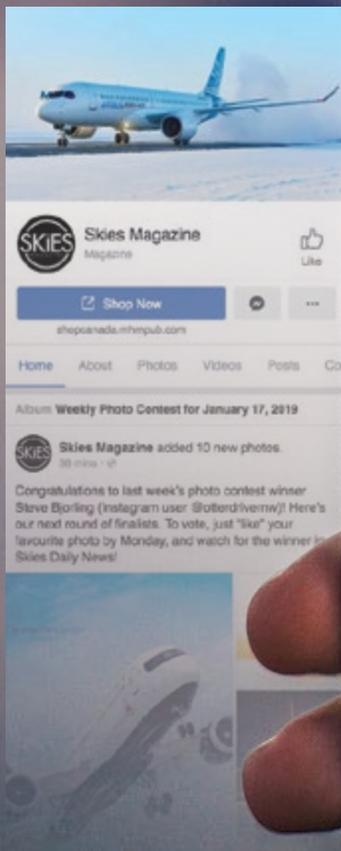


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JOHN MONTGOMERY
John is the founder and president of Professional Flight Centre in Delta, B.C., which was established in 1986. A 12,000-hour ATPL pilot and multi IFR instructor, he also specializes in ground school and seminar instruction. John can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

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5. Is a local altimeter setting available at CYEV on a 24/7 basis?
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?

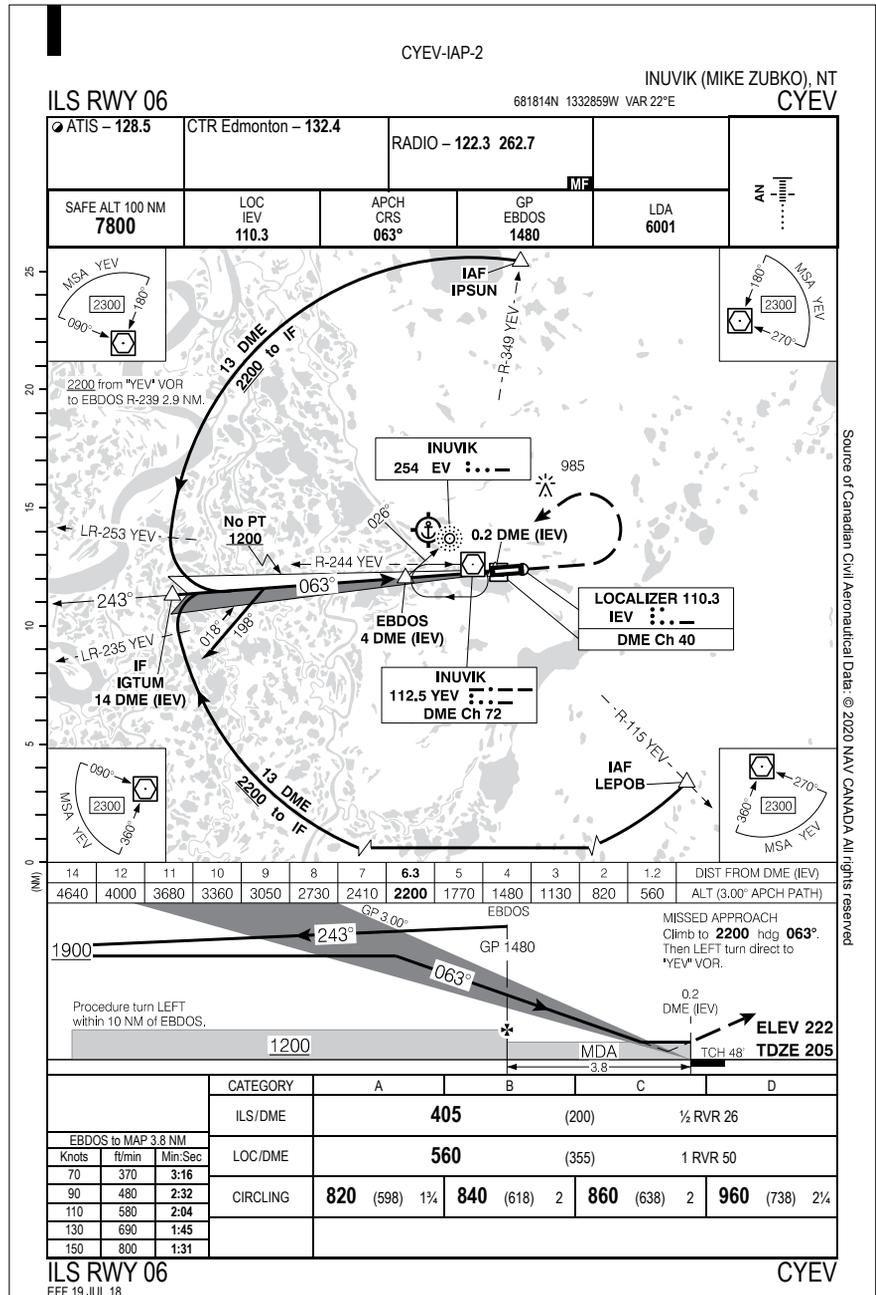


CHART NOT TO BE USED FOR NAVIGATION PURPOSES



Rob Erdos Photo

Meet Heath Moffatt:

Aviation photographer

BY LISA GORDON

From the time he got an A on a Grade 4 photography project, Heath Moffatt was hooked.

The old Kodak Brownie he used to take pictures of trains for that school assignment is long gone, but his fascination with creating images has never faltered.

Born in Montreal, Moffatt took an introductory CEGEP photography class but went on to dabble in a number of industries, working at an aluminum siding factory and as an entry-level corporate clerk, before realizing he “wasn’t getting anywhere.”

A good friend pointed out that he always had his Nikon FG camera in tow. Why not consider a career in photography?

Moffatt enrolled in a three-year commercial photography class at the Dawson Institute of Photography. Black and white film opened up a whole new realm of possibilities. For the first time, he could shoot and process his own film. He bought an enlarger and was excited to set up his own darkroom instead of waiting to use the school’s facility.

During this time, Moffatt was a voracious researcher, finding photography magazines at the library and poring over them for ideas and techniques that would make his own work stand out.

In the spring of 1992, he decided to try his luck on the West Coast, moving to Victoria, B.C., and finding work with a local photographer, covering the 1994 Commonwealth Games and shooting for the provincial and federal government and other commercial clients.

“Then the dot-com bubble burst and lots of people were getting laid off,” said Moffatt. “I found myself without a job, so I moved on to a commercial lab in Vancouver that needed a digital production assistant.”

There, Moffatt honed his Photoshop skills and made invaluable photographer contacts. The lab catered to the motion picture industry and he was involved in special projects for short movies and major motion pictures.

Digital photography was slowly coming online, but Moffatt maintains the best thing he got out of that lab was an intro-

duction to his wife, Loretta, who worked there as a darkroom technician.

“I can honestly say that we met in the darkroom and things developed,” he joked.

When the lab restructured, Moffatt returned to Victoria, where he enrolled in a government program promoting self-employment.

“I developed a business plan and maintained close contact with some of the clients I’d had while working in Victoria. As they say, you start out with one customer and it built from there.”

Heath Moffatt Photography was launched in 2000, and its founder hasn’t looked back since.

Growing up watching TV’s “Black Sheep Squadron,” Moffatt had always been fascinated with aviation and was a regular attendee at the St. Hubert airshow. He had seen the photography work of *Skies* publisher Mike Reyno, who at the time was just launching *Vertical* magazine in 2002. Moffatt reached out, saying he was available for West Coast assignments.

In the midst of his commercial work came an invitation he couldn’t refuse: A heli-logging shoot at Port Alberni, B.C.-based Coulson Aviation with Mike Reyno. The memory of that assignment remains crystal clear nearly 20 years later.

Following the main shoot, they returned to base where they saw the Martin Mars waterbomber bathed in a majestic light on Sproat Lake. “The lighting and conditions were perfect. We did a couple of circuits around it and got low, shot it into the sun, played with the angles. It was just perfect.”

The right lighting has always been critical to creating an unforgettable shot, Moffatt believes.

“I’ve always been a very visual person; I love the mechanical component of photography and creative vision with light. I never tire of setting up the camera, setting up the lights. I’ve never been a fan of letting the available light dictate my shoot.”

When Moffatt arrives on the job, he brings his “tool box” and enthusiasm in spades. Whether it’s a commercial real estate shoot or an assignment at Vancouver International Airport, his love for photogra-

phy shines as bright as his strobe lights.

These days, the tools of his trade include Canon digital SLR cameras and a variety of lighting gear. Typically, he works with a wide angle lens on aviation shoots to showcase an aircraft in its operating environment.

Such was the case in 2016 when he joined Reyno at CFB Comox, where the pair did an extended shoot with the crew of a Royal Canadian Air Force CH-149 Cormorant search and rescue (SAR) helicopter.

“We went out to showcase the working environment the SAR crews are tasked with covering,” explained Moffatt. “We went up to this glacier plateau and we had the time of our lives! We were two kids in a candy store. That is one of my fondest memories (see photo).”

“At the end of the day, I took a picture of a SAR tech on a hoist at twilight, lighting up the underside of the helicopter and the SAR tech with the strobes. I was so happy. That image sums up the beauty of where they work.”

While aviation shoots don’t come along every day, Moffatt is happy doing any job as long as it involves a camera in his hand.

Taking a page from his father’s book, he prides himself on putting the customer first.

“My dad always thought of others before himself. I put that into my business. It’s my core value; I always try not to turn down a job.”

Most of all, Moffatt goes the extra mile to make sure his work stands out. His dedication shines through in his photography, which is regularly showcased in *Skies* as well as its sister publications, *Vertical* and *Vertical Valor*.

“I always try something a bit different to come up with some unique results,” concluded Moffatt. “I draw inspiration from my photographer colleagues and what they’re doing. It’s about the magic of bringing the tools out in the field and creating something different, bringing something unique to the table. And I love doing it.”

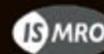


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