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Our thanks to photographer **Simon Blakesley** for sharing this fantastic shot of Skyservice Business Aviation's Dassault Falcon 900EX in a sunset climb out of Whitehorse International Airport.

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Our Publications



THE TEAM

GROUP PUBLISHER | MIKE REYNO
mike@mhmpub.com

GROUP PUBLISHER | LINDA REYNO
linda@mhmpub.com

ASSOCIATE PUBLISHER | DEREK KAST
derek@mhmpub.com

EDITOR-IN-CHIEF | LISA GORDON
lisa@mhmpub.com

ASSISTANT EDITOR | BEN FORREST
ben@mhmpub.com

JUNIOR EDITOR | SARAH GRANDY
sarah@mhmpub.com

SALES & MARKETING DIRECTOR | TIM MUISE
tim@mhmpub.com

PRODUCTION MANAGER | JEN COLVEN
jen@mhmpub.com

GRAPHIC DESIGNER | KAYTLYN WISMAYER
kaytlyn@mhmpub.com

SR. WEBMASTER | CHRISTOPHER ZIMMERMANN
christopher@mhmpub.com

WEBMASTER | SHAWN PIETERS
shawnp@mhmpub.com

THE TALENT

CONTRIBUTORS

LEROY COOK, ROBERT ERDOS, BRENT JANG, TONY KERN, ANTHONY MACKAY, JOHN MONTGOMERY, KEN POLE, JIM QUICK, HOWARD SLUTSKEN, JANE STANBURY, CHRIS THATCHER

PHOTOGRAPHERS

JIM BARRETT, SIMON BLAKESLEY, GALEN BURROWS, PATRICK CARDINAL, ANDY CLINE, PETE CLINE, EDUARDO DA FORNO, ERIC DUMIGAN, MICHAEL DURNING, STEPHEN M. FOCHUK, KEN FOWLER, PETER HANDLEY, LYLE JANSMA, BRIAN LOSITO, JOSH MCCULLOCH, SCOTT MCGEACHY, SCOTT MERRIMAN, JAY PIGGOT, JASON PINEAU, MIKE REYNO, STUART SANDERS, DAVID G. SHULTZ, BRIAN TATTUINEE, JEAN MARIE URLACHER

SUBSCRIPTIONS

subscriptions@skiesmag.com

CONTACT US

PHONE: 1.866.834.1114

FAX: 519.748.2537

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Speak to a TBM expert:

Keystone Aviation (Western Canada) Brian R. Jones
Tel: (801) 550-8444 email: bjones@keystoneaviation.com

Columbia Aircraft Sales (Eastern Canada) Ken Dono
Tel: (647) 784-6187 email: kdono@columbiaaircraftsales.com

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TBM
930



Leadership in aerospace certification

BY JIM QUICK

Canadian aerospace companies will soon get help with the time-consuming, high-cost process of testing and certifying flight hardware.

Marinvent, an aerospace R&D test and evaluation company in Saint-Bruno, Que., has created Cert Center Canada, the country's first independent research, development, flight test and certification centre.

This initiative addresses a major problem for the aerospace industry: getting flight hardware to market quickly. Timely certification is a necessity in a highly competitive international market.

Cert Center Canada is well-positioned to help customers get products certified faster due to Marinvent's many years of working with Transport Canada and meeting the regulator's high compliance standards.

The centre will supply services to civil and military markets. If the demand exists, Cert Center Canada may expand into new areas such as supporting approvals of space systems hardware.

As well as doing testing and certification, Cert Center Canada will become a site for aerospace companies to do research and development. The centre can provide an environment for consortiums and incubators, Canadian and foreign investment in aerospace, and federal government Industrial and Technological Benefits opportunities.

Cert Center Canada's innovative approach to supporting the industry's testing and certification needs are a welcome addition to the Canadian industry. Improved training and access to certification resources such as those provided by Cert Center Canada will help the aerospace industry maintain its competitive advantage in an international marketplace, improve the industry's ability to capture new business, and add to the country's economic growth.

Aerospace already contributes significantly to the Canadian economy. Each year, the industry adds \$28 billion in GDP to the national economy, invests \$1.9 billion into R&D, and is responsible for employing 211,000 Canadians in all regions of the country. These important benefits rely heavily on our certification

system, which is widely regarded as one of the best in the world, alongside those in the United States and Europe.

Civil aviation certification is a lengthy, expensive process that requires multi-discipline expertise and strong knowledge of regulatory requirements, both national and international. As the industry continues to expand to meet global demand, ensuring that the certification process meets industry needs in a timely and effective manner will be essential to our continued competitiveness.

Cert Center Canada's innovative approach leverages our existing strengths and allows for increased efficiency when it comes to avoiding certification bottlenecks and bringing aerospace products to market quickly. This complements the excellent work that Transport Canada already does and ensures that our competitive advantage in this area is further enhanced.

It also has important implications for our industry's contributions to the Innovation Agenda. As the government seeks to make Canada a world technology leader, aerospace can lead the way—but only if we retain our position of global certification leadership.

Chrystia Freeland, formerly the Minister of International Trade, summed this up well in her comment at Marinvent's announcement last July:

"Canada's aerospace sector is an important driver of the Canadian economy. Innovation can strengthen companies, help them grow and export. This new certification centre will not only save our aerospace companies time and money and make them more competitive globally, but it will create high-quality employment for the middle class at home."

Cert Center Canada will provide the services needed to help companies of all sizes innovate and get their products to market faster. The end result will be a vibrant aerospace industry that continues to create highly-skilled jobs and contribute to our economy and communities far into the future. 

Jim Quick is the president and CEO of the Aerospace Industries Association of Canada (AIAC).

“

This initiative addresses a major problem for the aerospace industry: getting flight hardware to market quickly.”

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GARDN: Rooted and sprouting

BY KEN POLE

That's not a typo. GARDN is the Green Aviation Research and Development Network, a national initiative launched in 2009 with funding from the federal government and an alphabet soup of aerospace interests through the Business-Led Networks of Centres of Excellence program.

The network's purpose is to accelerate the transfer of ideas from the laboratory into solutions needed by the private sector. While GARDN's mandate is national, it is part of a global push to reduce commercial aviation's environmental skyprint, which currently represents two per cent of the world's anthropogenic carbon dioxide

(CO₂) emissions. Those emissions currently are projected to increase by up to four per cent annually.

As GARDN's executive director and "head gardnr" since the get-go, Sylvain Kofsky helps airlines to meet an energy efficiency target set by the Air Transport Action Group (ATAG). From a 2008 baseline of 39.47 litres per 100 revenue tonne-kilometres (RTK), ATAG wants CO₂ emissions stabilized by 2020 before halving them by 2050.

Can it be done? ATAG's funding members include the Airports Council International, the International Air Transport Association and the Civil Air

Navigation Services Organisation as well as major carriers and aircraft and engine manufacturers. So it has clout, which suggests its goal is practicable as long as governments cooperate.

Results so far are promising. Canadian carriers' fuel consumption in 2015, for example, was 35.46 litres/100RTK. Comprised of 32.79 international and 42.17 domestic, that was 0.8 per cent better than 2014, and a 10.1 per cent improvement in just seven years. Much is due to the industry's response to International Civil Aviation Organization standards.

This affords GARDN an opportunity to continue its leading role in reducing the environmental effects of air travel, but Kofsky said "the only difficulty is convincing the Canadian government that what we are doing will help its clean-tech strategy."

The issue is that GARDN helps to develop technologies for aircraft which won't necessarily fly in Canada, so while global emissions are affected, there may be no domestic effect. "When we try to get funds in Canada to support us, they're looking at their own CO₂ total and how to reduce it."

Consider the Bombardier C Series, powered by Pratt & Whitney Canada turbofans. Kofsky said that because they are being ordered mainly for export, the C Series will have "a huge impact" on global emissions but only a relatively small effect on Canadian emissions. It should be noted that the other players in this intensely competitive industry face some of the same challenges, but that's cold comfort.

GARDN's latest report highlights gains from fleet renewals and upgrades as well as operational efficiencies through improved traffic management technologies, including performance-based navigation and advanced surveillance. There are more gains to be had through alternative fuels, airport ground operations and infrastructure, and more effective domestic regulations and international coordination.

The focus of the 39th ICAO assembly in Montreal was on "a global market-based measure for international aviation" and, coupled with a two-day alternative fuels seminar in February, it illustrates the commitment of governments and industry.

However, could that commitment waiver in Canada? The original seed money through the network was renewed in 2014 but as it's currently structured, the network's rules state that it cannot be renewed twice.

It strikes me that those rules need to be revisited, especially with a government that professes to be hooked on innovation. With its mandate up for renewal in 2019, GARDN warrants continued support. So dig in at gardn.org and join the discussion. As a telegenic frog once sang, "It ain't easy being green," but it can and is being done. ■



LEGACY® 500
BY EMBRAER



LEGACY 500: YOU FEEL AT HOME

"The first experience I had with the Legacy 500 was when I got a call to come to the airport to view it. It was a beautiful, beautiful sight.

I remember vividly flying back from Brazil when we went down to pick up the Legacy 500. Just being with the family on the plane, being able to enjoy the aircraft and to be able to hear each other and interact with each other without the roar of the aircraft all around us...it was a very, very memorable trip for all of us.

What I like most about the aircraft as a passenger is the low cabin noise and the low-altitude pressurization. Both of those are key for me. They really make a difference while traveling. The cabin welcomes you as you get on the aircraft. You feel at home. It's very comfortable. The design is very sleek.

My father and my brother are both pilots, so the Legacy 500 took on special meaning for them in terms of the avionics, fly-by-wire and HUD system. Safety is first for us and the Legacy 500 avionics help in that regard. We have a relatively short runway and we usually fly a full payload. The Legacy 500 performs well in both aspects.

The sales team at Embraer was outstanding. They did a tremendous job for us. Really, they made us feel special. And with that, they helped us to own a very special airplane. We can't be more grateful for that."



- Nathan Grindstaff, Board Member, Mastercorp
Watch Nathan's story and request more information at
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Rethink Convention.

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Incivility? Not here. Not now. Not ever.

BY TONY KERN

I guess it's been happening for a while now: Increased polarization on nearly every issue.

We have a new generation coming on board that communicates differently. They're joining an industry poised to grow, but simultaneously suffering brand damage from everything from cell phone videos to Facebook hate pages and negative blogs from customers and employees.

Everyone seems to be taking sides on everything. Labour versus management, young versus old, my company versus yours—and don't even get me started on political issues!

A *Harvard Business Review* article from 2013 tells part of the story.

"Many managers would say that incivility is wrong, but not all recognize that it has tangible costs. Targets of incivility often punish their offenders and the organization, although most hide or bury their feelings and don't necessarily think of their actions as

revenge. Through a poll of 800 managers and employees in 17 industries, we learned just how people's reactions play out. Among workers who've been on the receiving end of incivility:

- 48% intentionally decreased their work effort;
- 47% intentionally decreased the time spent at work;
- 38% intentionally decreased the quality of their work;
- 80% lost work time worrying about the incident;
- 63% lost work time avoiding the offender;
- 66% said that their performance declined;
- 78% said that their commitment to the organization declined;
- 12% said that they left their job because of the uncivil treatment; and
- 25% admitted to taking their frustration out on customers."

“

Let's keep the incivility we encounter online, in lines, and on the street out of our industry.”

For decades, the world has looked to the aviation industry to demonstrate improvements in quality and safety. Perhaps now we can offer leadership in another area—civil discourse.

Aviation professionals, in my experience, are uncommonly collegial. We share “war stories” and lessons learned. We help each other through tough times. We encourage and mentor new hires. We treat our customers with dignity and respect. In short, I've never met a pilot I didn't feel I already knew.

Let's keep the incivility we encounter online, in lines, and on the street out of our industry. Here are just a few reminders for simple but effective human interaction:

ESTABLISH A HUMAN CONNECTION FIRST.

People approach each other with their guard up because they don't know what to expect from you. First names are a great place to start, beginning with your own. Something as simple as answering the phone with “Hello, this is Tony,” can humanize any difficult discussion from the start.

RESPECT THEIR PERSPECTIVE AND POSITION.

One of the core beliefs of true professionals is that there are no insignificant people, and there are no insignificant problems. Regardless if you are talking to the CEO of a mega-corporation or an intern with a question, take them and their problem seriously. Don't fake it, mean it.

MAKE A GOOD FIRST AND FINAL IMPRESSION.

There is a rule of thumb among professional speakers that if you start strong and finish strong, you can get away with a few things that are less than perfect in the middle. The same is true with any interaction that might include disagreements.

ABOVE ALL, BE FRIENDLY.

No matter how good a professional you are, you can't solve every problem for everyone. People will overlook a lot if they are convinced you are someone they can work with and enjoy interacting with. It's been said many times that people don't care how much you know until they know how much you care.

Let's prevent the incivility that is sweeping the world from infecting our great industry. Let's show the world once again why they should look to aviation for answers to tough questions. 



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OPPOSITE:

30 years and still going strong! Air Transat painted one of its Airbus A330s in a commemorative 30th anniversary paint scheme. Photographer **Patrick Cardinal** caught the aircraft on takeoff from Montreal's Pierre Elliott Trudeau Airport.

ABOVE:

Photographer **Brian Tattuinee** sent us this fantastic shot of the Pilatus PC-24 jet on short final to Iqaluit on Feb. 1. The PC-24, which is slated for certification later this year, was in Iqaluit to continue its cold weather testing program.

LEFT:

An Airbus H130 and AS350 B2 operated by Blackcomb Helicopters arrive on the south side of the Vancouver International Airport to pick up some lucky guests travelling to Whistler in style.

Scott McGeachy Photo



Patrick Cardinal Photo

Air Canada REBRANDS

AS IT MARKS ITS 80TH ANNIVERSARY, THE AIRLINE UNVEILS A DISTINCTIVE NEW LIVERY, STYLISH UNIFORMS AND PREMIUM ON-BOARD PRODUCTS.

BY ANDY CLINE



Air Canada revealed its long-awaited new livery during three simultaneous events in Montreal, Toronto and Vancouver on Feb. 9, 2017.

Designed by international design firm Winkreative—headed by Canadian entrepreneur Tyler Brûlé—the new black, white and red livery is truly reminiscent of several of the airline’s previous looks.

The black titles and cockpit window mask bring back memories of Air Canada’s very first livery after it was rebranded from Trans-Canada Air Lines in 1965.

The only colour on the upper part of the aircraft is the classic original red Air Canada maple leaf logo, reincarnated after more than 20 years. The black tail harkens

back to the second-last Air Canada colour scheme presented in 1993, while a large red maple leaf rondelle adorns the belly and is clearly visible from the ground.

The simplicity of the basic black, white and red colour scheme not only makes it distinctive, but easy to clean, maintain and refinish. It was designed with much input from Benjamin Smith, Air Canada president of Passenger Airlines, himself an avid aviation enthusiast. He has always been a big fan of the original Air Canada livery, and even remembers his first flight number in 1975.

The new look, although not specifically “retro,” has enough elements of the legacy liveries to be considered a nod to the past, and the airline’s 80th anniversary this year played a large part in the roll-out of the design. The original plan was for it to be introduced when the new Boeing 737 MAX deliveries commence later in 2017. However, a bigger splash was desired, thus the Feb. 9 events were planned.

Along with the new livery, Air Canada also unveiled its new corporate branding and associated employee uniforms, along with featured samples from a new menu and wine list. The airline’s new charcoal

▶ Watch the video [here!](#)

Patrick Cardinal Photo



Although not specifically “retro,” the new look embodies several elements of legacy liveries. **Patrick Cardinal Photo**



The airline’s crisp and clean branding includes new uniforms. **Andy Cline Photo**

grey and black employee uniforms with red accents and accessories were produced by Canadian designer Christopher Bates.

Award-winning culinary partner, British Columbia-based chef David Hawksworth, and world renowned Quebec-based sommelier, Véronique Rivest, answered media queries at the Toronto event. Both are actively involved in developing Air Canada’s premium menu choices.

The new branding is touted by the airline as the debut of a modernized image and the evolution of an iconic Canadian brand. It complements the new uniforms and improved cabin features, which showcase Canadian talent and premium on-board products.

THE PAINTING

One Boeing 787-8 and two Airbus A321s were painted in secrecy at Dean Baldwin Painting at Grissom Air Force Base in Peru, Ind., starting in January. Air Canada plans to repaint the entire 300-strong fleet of mainline and regional aircraft in the new colours within four years, with priority going to the widebody Boeing 777 and 787 Dreamliner fleets which will be completed within 18 months.

In an elaborate effort to conceal the new colour scheme before the official unveiling, the first three aircraft were brought into their respective cities under the cover of darkness on Feb. 7. White film had been applied over the fuselage logos and titles, and “decoy” Star Alliance decals were on each tail. This caused much confusion amongst the aviation enthusiast community; however, it was not unfeasible that this would be part of the new design since Air Canada is one of the nine founding airlines that formed the alliance in 1997.

The Star Alliance decals were later removed for proper unveiling of the new Air Canada livery, to reveal the black tail and the classic red Air Canada rondelle logo.

The airline’s 80th anniversary in 2017 marks a huge milestone. Founded as Trans-Canada Air Lines in 1937, it is one of the oldest airlines in the world.

Air Canada has celebrated milestone anniversaries in the past by painting aircraft in its fleet with commemorative colour schemes. This new livery is a testament to the airline’s long and rich heritage, featuring elements of several previous designs.

“Air Canada’s new livery signals a pivotal inflection point in our 80-year history,” said Air Canada’s Smith at the event in

Toronto, where the airline’s largest hub is located. “On the occasion of Canada’s 150th anniversary year, with our new livery, new uniforms for our employees, the award-winning international cabin standard introduced with the launch of our Boeing 787 aircraft, and enhanced onboard offerings, the future Air Canada represents the strength of our nation and the future-looking spirit of our airline.

“On behalf of our 30,000 employees worldwide, it is a privilege to fly Canada’s flag, and we are proud to showcase some of the best of this nation’s talent as we continue to expand Air Canada’s horizons to fly to more than 200 destinations on six continents.”



Toronto-based Andy Cline is a long-time aviation photographer and journalist, with more than 30 years of published work behind him. Military aviation in his home town of North Bay, Ont., was his inspiration, and he currently covers aircraft of any kind both on the ground and in the air.

ABBOTSFORD, HAMILTON AIRPORTS POISED FOR GROWTH

BY BRENT JANG



Besides NewLeaf, other firms providing service out of Hamilton include WestJet, Air Canada, Air Transat and Sunwing Travel Group. **YHM Photo**



Last year, Abbotsford International Airport welcomed 530,643 passengers. **Josh McCulloch Photo**

Abbotsford and Hamilton play relatively minor roles in the airport industry when compared with much larger terminals in their respective regions. But as the population surges in Metro Vancouver and the Greater Toronto Area, airports in Abbotsford and Hamilton are positioned to experience strong passenger growth.

Parm Sidhu, general manager at Abbotsford International Airport, said his primary target market remains British Columbia residents who live reasonably close to Abbotsford, including travellers from communities such as Surrey, Langley and Chilliwack.

It can take 60 minutes to drive from downtown Vancouver to Abbotsford during non-peak times, though it's closer to 90 minutes during rush hour.

"As the population grows in the Lower Fraser Valley and if you're going within Canada, you're a hop and skip away from our airport," said Sidhu, who notes that the Abbotsford terminal had a record year for passenger traffic in 2016.

The arrival of NewLeaf Travel Co. in Abbotsford and John C. Munro Hamilton International Airport last July provided a boost to each market. NewLeaf is a ticket reseller that hires Flair Airlines Ltd. to operate flights.

NewLeaf is a small startup with access to only three planes operating and two backups, but its emergence has already spurred Air Canada and WestJet Airlines Ltd. to take notice.

In January, for instance, WestJet launched service between Winnipeg and Hamilton. The Consumers' Association of Canada issued a travel alert in February, claiming that NewLeaf has made "arbitrary cancellations and alterations." But Jim Young, chief executive officer at NewLeaf, believes the stars are finally lining up for Abbotsford and Hamilton to play increasingly important roles in their respective aviation markets.

Moncton, N.B., and Kelowna, B.C., are also part of NewLeaf's current winter network, though they have been excluded from the schedule from May 1 to mid-September. Year-round destinations on the ultra low-cost carrier's route map are Abbotsford, Hamilton, Edmonton, Winnipeg and Halifax.

"If NewLeaf is stimulating the low end of the market so to speak—those customers who won't fly because the price is too high—what happens is there is a knock-on effect for the other carriers. You may choose to decide to fly with us one-way and go back with somebody else," said Young in an interview.

Vancouver International Airport handled 22.3 million passengers last year, dwarfing the 530,643 people who went through Abbotsford.

Toronto's Pearson International Airport is handling more than 100 times the number of passengers who pass through Hamilton's terminal.

In 2016, Pearson processed more than 44 million passengers, up from 41 million the previous year.

Hamilton's traffic grew last year, compared with the nearly 313,000 air travellers who used the Ontario airport in 2015.

"Hamilton is an ideal market for an ultra low-cost carrier like NewLeaf. The local population base is already one million people, which wasn't being served adequately," said Hamilton airport president Vijay Bathija. "Lower fares are definitely attracting new travellers, and that is part of the growth that Hamilton has seen."

Besides NewLeaf, other firms providing service out of Hamilton include WestJet, Air Canada, Air Transat and Sunwing Travel Group.

NewLeaf, WestJet and Island Express Air fly out of Abbotsford, while Air Canada Rouge provides seasonal summer service between Abbotsford and Pearson airport.

Hamilton and Abbotsford have seen their share of passenger ups and downs over the years.

WestJet added Hamilton to its route network in 2000. But the Calgary-based carrier shifted its eastern hub from Hamilton to Pearson in 2004, sharply reducing its Hamilton presence. At its peak, the Hamilton airport handled more than one million passengers in 2003.

Air Canada, through its Jazz affiliate, withdrew from Hamilton in 2008. Last May, however, Air Canada returned to the Ontario city by offering flights between Hamilton and Montreal.

Abbotsford saw Jetsgo Corp. arrive in 2004, but the discounter folded in March 2005.

Young said Canada's aviation history is littered with carriers who tried, but failed, to carve a niche with lower fares.

Discount carriers in Europe and the United States have the advantage of greater population density and shorter stage lengths for flights than in Canada, he said.

"For Canada, you've got a long thin line of geography that goes out all the way from Victoria to St. John's. So you have to find ways in which to schedule your aircraft in a more efficient way," said Young, adding that NewLeaf crews go back to their home base the same day.

Vancouver Airport Authority CEO Craig Richmond said the Abbotsford terminal is well positioned to thrive, even though Vancouver International Airport, also known as YVR, remains dominant in the region.

"We're going to add another million people in the Lower Mainland in the next 20 years, and a lot of those will be out towards Abbotsford. They will naturally grow, but we still have a lot of room to grow at YVR," said Richmond. "We wish Abbotsford all the best."

There are important differences today versus 2002, when Jetsgo launched flights—only to last less than three years, industry observers say. Fifteen years ago, Air Canada and WestJet still offered bundled fares that included seat selection and free bags. But consumers now have much greater access to comparing ticket prices online themselves and deciding whether it is worthwhile flying from Abbotsford instead of YVR and Hamilton instead of Pearson. 



Brent Jang, a business reporter at The Globe and Mail, is the winner of two National Newspaper Awards and has been a National Magazine Award nominee. He boarded test flights for the Airbus A380 in 2007 and Boeing 787 Dreamliner in 2012.

In 2015, Israel Aerospace Industries (IAI) and its ELTA subsidiary unveiled plans for a new maritime patrol aircraft based on a Bombardier Global 5000 platform. IAI/Bombardier Image

▶ Watch the video [here!](#)



Missionized SOLUTIONS

BOMBARDIER EXPLORES WAYS TO ADAPT ITS PLATFORMS FOR A VARIETY OF SPECIAL APPLICATIONS.

BY CHRIS THATCHER

Sometime in the late 2020s, the Royal Canadian Air Force (RCAF) will launch the formal process to find a replacement for the CP-140 Aurora, a long-range maritime patrol aircraft that in recent years has transformed from a formidable submarine hunter to a powerful overland intelligence, surveillance, reconnaissance (ISR) and targeting platform.

Under a four-phased upgrade program known as the Aurora Incremental Modernization Project, the fleet of 14 Lockheed Martin aircraft has acquired extensive new mission computers and sensor systems to gather intelligence and targeting information and share that data, including streaming video, with other aircraft, ground or naval forces, and operational headquarters well beyond line-of-sight.

It's a capability of which the RCAF is justly proud—officers have called it “world-class” in recent public presentations and interviews. As of mid-February, two Auroras had conducted 719 reconnaissance missions over Iraq and Syria on Operation Impact.

But even with new mission systems and

structural upgrades, the CP-140 is expected to reach the end of its service life by the mid 2030s. The air force has laid out the broad strokes of a program expected to exceed \$1.5 billion for a multi-mission aircraft that would deliver a long-range manned aircraft with C4 (command, control, communications and computers) and ISR systems capable of “fully integrating with other ISR assets” that will undoubtedly attract significant industry interest.

RCAF commander LGen Mike Hood, however, has made no secret of his preference. In appearances before government committees and in an interview with *Skies*, he has argued persuasively for a Canadian-built aircraft such as the Bombardier C Series or Q400 and urged his team “to imagine how we continue to develop world-leading [anti-submarine warfare] capability...[in] a Canadian platform.”

The RCAF is not alone in its interest to modify a Bombardier commercial aircraft for military purposes. In recent years, the Montreal-based company has signed a spate of deals with large international manufacturers to convert its business and passenger jets.

At Aero India in February 2015, Israel Aerospace Industries (IAI) and its subsidiary ELTA unveiled a maritime patrol, anti-submarine and anti-surface warfare aircraft based on a Global 5000 business jet, configured with ELTA's ELI-3360 mission system and lightweight anti-submarine torpedoes and anti-ship missiles. The two companies previously modified and weaponized a Q400 turboprop.

In June 2015, Lockheed Martin and Raytheon teamed with Bombardier to offer the Global platform for the United States Air Force's Joint Surveillance Target Attack Radar System (JSTARS) program, which is retiring its fleet of E-8C aircraft built on the Boeing 707 platform. Bombardier's Global 6000 was previously selected by the USAF for its Battlefield Airborne Communications Node program, an airborne communications relay system.

More recently, at the Singapore Airshow in February 2016, Saab and Bombardier expanded their partnership, offering Saab's Swordfish maritime mission system on either a Global 6000 or Q400. The former would be armed with Saab's RBS-15 anti-ship missile



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and a lightweight torpedo, while the latter would carry just the torpedo. Four months earlier at the Dubai Airshow in November 2015, the two companies announced that the United Arab Emirates would be the launch customer for a Global 6000-based multirole airborne early warning (AEW) surveillance platform known as GlobalEye.

Partnerships are just part of the business development picture. Bombardier has also struck out on its own with the venerable Challenger business jet, promoting it as a multirole special mission aircraft for surveillance, medical evacuation, weather research, aerial photography, VIP transport or search and rescue.

Bombardier recently delivered two specialized Challenger 605 aircraft to the Hong Kong Government Flying Service for search and rescue. And at the 2016 Farnborough Airshow, the company revealed a Q400 Multi-Role for firefighting as well as cargo and passenger transport, which can also carry weapons if required.

(Others have shown interest in modifying the Challenger. At the 2012 Farnborough Airshow, Boeing unveiled a maritime surveillance demonstration aircraft based on the 605 or 650 platform, fitted with much of the same mission systems as the larger Boeing P-8A Poseidon, a 737 airframe, but without the weapons.)

While there is no question special mission aircraft represent a burgeoning market as countries, especially in the Asia-Pacific, seek to monitor their maritime approaches, finding the “sweet spot” of aircraft size, capability, payload, and lifecycle costs is a constant balancing act that often requires a certain amount of compromise, said

Stephane Villeneuve, Bombardier’s vice president for specialized aircraft.

That will be true for the RCAF as it analyzes the best option to replace the CP-140, a variant of Lockheed Martin’s P-3 Orion currently in service with 22 operators in 17 countries, according to GlobalSecurity.org.

“The market is not so much a straight replacement for CP-140 or P-3, it’s more about replacing P-3s in general around the world with various types of solutions,” Villeneuve told *Skies* in a recent interview. “There are no straight replacements. Boeing will argue that a P-8 replaces a P-3...but a lot of countries don’t want to spend that type of money for this aircraft, so you have a lot of different players that have come up with various solutions to replace P-3s.”

If multirole is the aim for most customers, then mission systems are the primary driver, more so than the platform itself. But certain aircraft performance criteria such as endurance are still “key discriminators,” he said.

“People want to do as much as possible with one aircraft. Everyone says that, but it really is a strong driving factor behind the decisions people make now. [But] there is not one platform that is adequately suited to everything. What we see now is a customer with a very long list of requirements and they try to find the best compromise with one platform that will allow them to do (almost) everything.”

Adding weapon systems requires substantial structural changes, but adopting common or modular mission systems for a baseline platform has been one way to manage costs and ensure versatility, a strat-

egy Villeneuve said more companies are promoting. “We are starting to see a shift: people are starting to look at commercial platforms as the common baseline.”

With aircraft for every segment of the market, Bombardier is also leveraging the knowledge that comes from numerous customized modifications, such as where best to mount sensors.

“It sounds obvious but typically that is not what has happened,” Villeneuve explained. “We tend to look at it from a single program basis and then start from scratch. We are trying to move away from that, with some fairly good successes. [Y]ou can find a lot of commonalities between different missions.”

The shift to a commercial platform with most of its necessary certification obviously speeds up the procurement process—in the case of the Challenger Multi-Role, “you get the capability on your tarmac within two years—but the common baseline also means “you buy into a support network that has been established for hundreds of aircraft,” he observed. “It saves you a lot of money up front.”

Bombardier is still at the show-and-tell stage with the RCAF, highlighting the various options it could propose. But the company is hoping its development work with various prime integrators will help the air force identify an ideal solution.

“It’s probably not going to be a straight replacement of aircraft, so [we are] looking at how we could link up their future needs with the potential platforms we could offer,” Villeneuve said. “Is it a matter of developing the C Series for that mission? Or looking at what is already on the Global aircraft that has been proposed by various integrators? Or does a Q400 become a straight replacement? Or could you have a mixed capability? We want to show the breadth of capability we can provide.”

Whatever the RCAF eventually decides to do for its multi-mission aircraft, having the Canadian military as a customer “is crucial,” he said. “When you develop something like that...the first question [potential customers] will ask is, ‘Has your government bought it?’ A home-grown solution for the RCAF gives us the strength to go to the export market. It gives us the credibility.”



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

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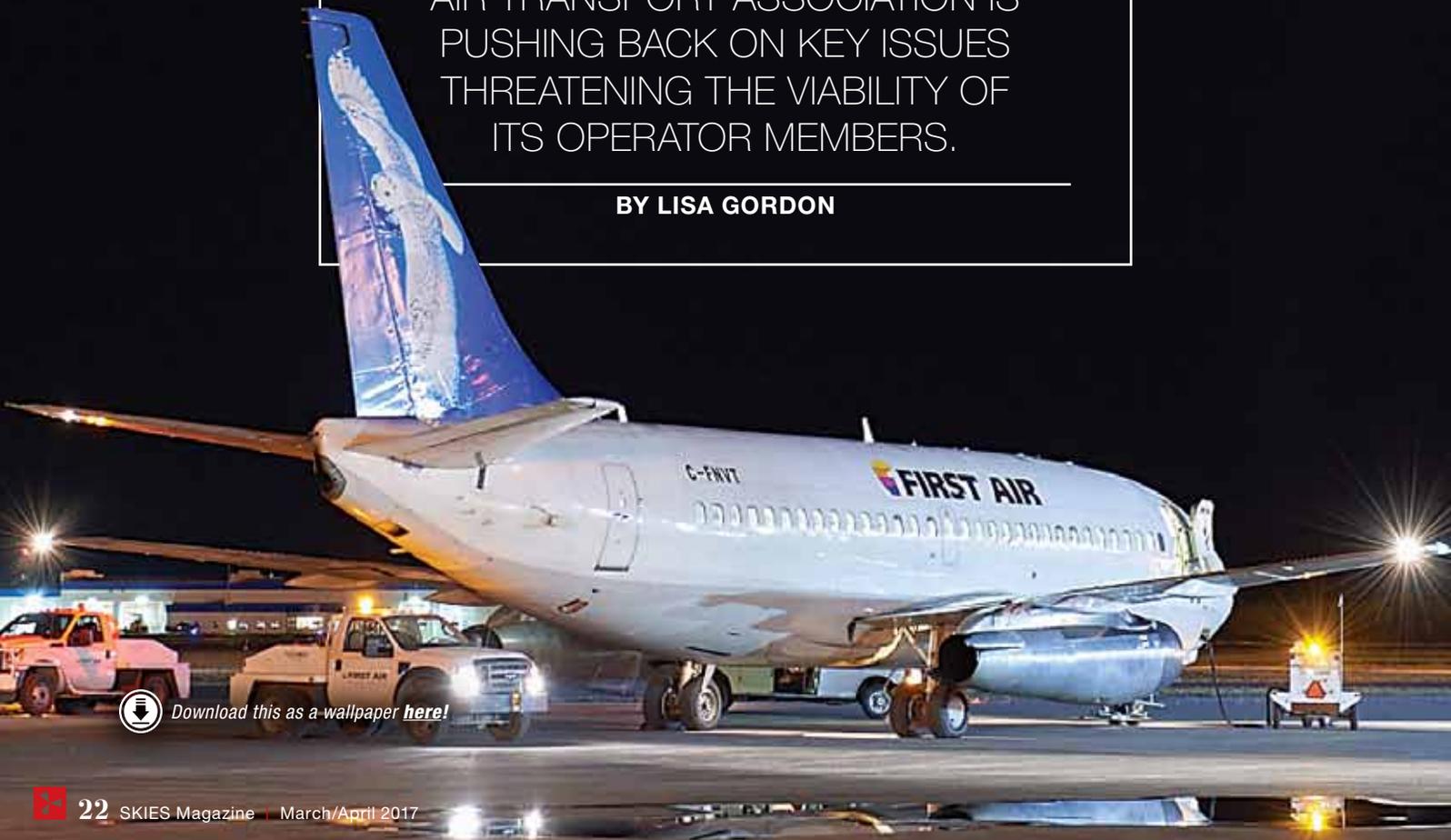
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Northern REALITY



AS IT PREPARES FOR ITS 41ST ANNUAL CONFERENCE, THE NORTHERN AIR TRANSPORT ASSOCIATION IS PUSHING BACK ON KEY ISSUES THREATENING THE VIABILITY OF ITS OPERATOR MEMBERS.

BY LISA GORDON



Download this as a wallpaper [here!](#)

As northern air operators and industry stakeholders prepare to converge on Yellowknife for NATA 41, the 41st annual meeting of the Northern Air Transport Association to be held April 24 to 26, many of them will be transiting through the city's airport. It's a facility which is coincidentally a hot topic with many northern operators right now.

That's because Yellowknife Airport (YZF), owned by the Northwest Territories government, recently made headlines with its plan to begin charging an airport improvement fee (AIF) in February 2017. The implementation of the fee—which could add \$10 to \$20 to each passenger's ticket price—was subsequently delayed to July of this year because members of the legislative assembly needed more time to review the proposed legislation.

The territorial government has unveiled big plans for YZF, saying the new fee will be used to add parking spaces; expand the post-security waiting area and introduce restaurants and other services for travellers; provide more power outlets and

dedicated Wi-Fi; and help to streamline security, among other improvements.

There's just one problem. The airlines that fly into Yellowknife—and many of the people aboard them—don't want any part of such a fee.

In addition to increasing ticket costs, the proposed bill would also allow the airport to hike landing and terminal fees for air operators using the facility. And who will end up swallowing these added fees? The travelling public, according to NATA's executive director, Glenn Priestley.

"It's all about supportive infrastructure in the North," he told *Skies*. "You can't expect [taxes from] a population the size of Kingston [Ont.] to support the aviation infrastructure of an area that is 40 per cent of the size of Canada. These fee increases will be passed on completely to the customer. We're pushing back hard on this because the same problem could happen in Iqaluit, for example.

"Our issue with that is that there is no concern for maintaining something as part of the Canadian national infrastructure. From our perspective, we look at the people of the North, and we think cheaper

OPPOSITE:

Northern airport improvement fees will simply be passed along to passengers, according to NATA. Instead, the association would like to see the federal government assume responsibility for implementing a safe, modern national transportation system.

Stephen M. Fochuk Photo

BELOW:

NATA executive director Glenn Priestley pointed out that modern cockpit technology can't be used in Northern Canada because the region's airports lack supportive navigational aids and/or approach lighting.

Stephen M. Fochuk Photo





TOP:
Nolinor is one of the companies operating the aging Boeing 737-200, often called the workhorse of the North. It is one of the only jets able to land and take off from gravel runways. **Stephen M. Fochuk Photo**

ABOVE LEFT:
In the hopes of venturing outside military sales, the Airbus C295 embarked on a northern tour in the summer of 2016 to demonstrate its capabilities to civilian operators. **Michael Durning Photo**

ABOVE RIGHT:
Great Slave Helicopters, a division of Discovery Air, celebrated its 32nd anniversary in 2016. Headquartered in Yellowknife, it has bases across the North. **Stephen M. Fochuk Photo**

air travel is better for everybody.”

That’s not to say that NATA doesn’t support infrastructure improvements in the North. Indeed, it considers them a priority.

Priestley said a comprehensive northern infrastructure funding strategy has long been a NATA hot button issue. In fact, a northern airports system is as important to the future development of the North as the national railway was to Confederation, notes a resolution drafted by the association.

As such, NATA says the responsibility falls squarely upon the federal government to maintain a safe, modern national transportation system from coast to coast to coast.

In a November 2016 speech welcomed by northern air operators, Transport Minister Marc Garneau acknowledged that the transportation infrastructure in the North remains basic, even “antiquated” in some cases. He pledged to work with northern governments and communities to assess infrastructure priorities.

As Priestley said, “Much of the technology on board upgraded aircraft cannot be used [in the North] because we don’t have the proper supporting nav aids or approach lighting.”

Runways, too, are in need of attention. Of the 100 or so total airports in Canada’s three northern territories, only 10 of them have a paved runway. With gravel-certified aircraft getting older and new certifications being rare, along with the constant damage planes incur from gravel landings, NATA is keen to explore alternative runway surfacing solutions.

Options include a program developed by Midwest Industrial Supply that involves a liquid application to preserve and stabilize a runway’s fines (small particulate matter that comprises the structure of a gravel runway). Another possible alternative is an aluminum plank system manufactured by another company, Faun Trackway.

A consortium of these companies and other stakeholders, including government agencies, airlines and airport operators, has been formed and NATA is facilitating an alternative runway surfaces workshop, to be held at NATA 41 on April 26. The group's end goal is to establish a test centre in Cambridge Bay, Nunavut.

"This type of materials testing seems to fit well with the High Arctic Research Centre being planned for Cambridge Bay, and that is also an airport that requires a runway that can receive modern jet aircraft," explained Priestley.

Runway length is also an issue in the North, where NATA opposes the idea of proposed mandatory runway end safety areas (RESAs). These are cleared zones at the ends of a runway that "catch" aircraft in the event of a runway overrun.

RESA construction in the north, where aircraft generally land at slower speeds on mostly gravel runways, would be cost prohibitive and funds would be better directed toward improved approach aids, according to the association.

In the North, where air travel is a way of life, the costs of infrastructure updates often pile on top of an already higher cost of living. Priestley said NATA members believe lower airfares will improve the quality of life for northern residents, as well as encourage tourism to the northern territories.

IT'S DIFFERENT UP HERE

While NATA and its 39 members are certainly concerned about northern aviation infrastructure, the No. 1 issue on the association radar remains Transport Canada's plan to implement

"very prescriptive flight and duty time regulations that will not improve safety."

NATA has joined other Canadian industry associations to protest what the coalition calls a "one-size-fits-all" approach to regulating flight and duty times. Instead of taking the realities of Canada's various air operations into account, they say the regulations seem to be geared exclusively to the benefit of large international airlines. Of course, they operate under vastly different circumstances from northern and remote operators, Priestley pointed out.

"Nine aviation associations in Canada have come together and have written a letter to the Minister, and now we're starting a political activity to get the Minister to realize the bureaucracy is pushing through something the industry doesn't accept," he said.

"We don't think they've done the consultation as well as they should have. They haven't listened to the northern operators. We have solutions in place and we have fatigue management systems and for whatever reason they weren't considered."

While Priestley acknowledged that fatigue is a factor in the North, where pilots fly "long, lonely routes," he also emphasized it's nothing new and that NATA members have already spent years addressing the issue.

"We've built some million-dollar staff rest houses in places like Iqaluit, but it seems the regulator just doesn't want to know about it and what has been done in the North."

Ironically, NATA says that in their current form, the new rules for flight and duty times will actually reduce a pilot's competency because they will be flying less often. This will result in a reduced skill level, explained Priestley. "That's particularly worrisome when it comes to

"Between outdated facilities, inferior infrastructure, a harsh climate and stiff competition for a limited market, northern operators have their work cut out for them.

”

With roots dating back to 1978, Air Inuit serves Quebec's northernmost communities by providing air transport services across the Nunavik territory.
Patrick Cardinal Photo





The pilot shortage is real in the North. Efforts are underway to develop “homegrown” aviators who are familiar with northern operations. **Jason Pineau Photo**

flying in the mountains or flying at night into airports with few navigational aids.”

He said the association has asked Minister Garneau to put the flight and duty time process on pause so the regulator will have more time to familiarize itself with the unique operating requirements of the various aviation segments in Canada.

PILOTS NEEDED

The pilot shortage is real, particularly in the Canadian North, where it can be harder to attract and retain pilots who typically want to return to more southerly climates.

By requiring industry to have more pilots to meet new flight and duty time requirements, Transport Canada will only serve to exacerbate the problem, claims NATA.

“We’re struggling to build our own pilots in the North because we can’t get enough anymore,” said Priestley, noting that Whitehorse-based association member Alkan Air has established a college-level flight training program designed to produce graduates with customized northern operations skills.

“We’re pushing back,” said Priestley. “We’re proud of what we want to do to make a good system better.”

Now that he’s been in the executive director’s seat for a year, he reiterates that NATA’s goal is to be known as a solid, serious consultative body.

Planes incur damage from gravel landings, and gravel-certified aircraft are getting older. NATA is exploring alternative runway surfacing solutions in the North, where only 10 out of 100 airports have a paved runway. **Michael Durning Photo**



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Protective liquid applications and aluminum planking systems are among the options being discussed to improve northern runway surfaces. **Jason Pineau Photo**



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“We want to work with the regulator and all the various stakeholders,” he said. “We want to be a thinking organization; we want to provide our members with the right tools. We’ve created tools for the flight and duty pushback—we want to send messages to the regulator that what the operators are doing now is quite effective in the type of flying they’re doing. We’re doing a lot of this right, and we’re willing to work with them to make a good system better.”

Between outdated facilities, inferior infrastructure, a harsh climate and stiff competition for a limited market, northern operators have their work cut out for them.

“In the north, it is just so darn hard,” concluded Priestley. “Everyone is trying their best. We need government investment in infrastructure to get the North as independent as possible. Good infrastructure will encourage tourism and exploration and independence.”



Lisa Gordon is editor-in-chief of Skies magazine. Prior to joining MHM Publishing in 2011, Lisa worked in association publishing for more than a decade, overseeing the production of custom-crafted trade magazines. Lisa is a graduate of the Ryerson University Journalism program.

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BY CAPT ANTHONY MACKAY





Nav Canada operates three flight inspection aircraft consisting of two Bombardier CRJ-200s (shown here) and one Dash 8-100. On any given day, two of them are normally airborne and sometimes all three.
Stuart Sanders Photo

 [Watch the video here!](#)

For most people, the sight of an aircraft descending and making numerous gear-up approaches to a runway is unusual and may suggest that the flight is in distress. But for Nav Canada's flight inspection crew, this is simply a routine operation that ensures the accuracy and safety of the country's navigational aids (nav aids) and instrument approach procedures.

Nav Canada operates three flight inspection aircraft consisting of two Bombardier CRJ-200s and one Dash 8-100. These aircraft are crewed by specially trained pilots, technical flight inspectors (operating the onboard flight calibration instruments), and additional technical flight inspectors working on the ground to adjust the nav aids if issues are found.

The aircraft are equipped with technology to measure, analyze and calibrate the electronic signals emanating from such nav aids as instrument landing systems (ILS), VHF omnidirectional range (VOR) and non-directional beacons (NDBs) at more than 130 airports.

Additionally, the aircraft calibrate surveillance systems such as radar and automatic dependent surveillance – broadcast (ADS-B) and troubleshoot communications issues with VHF/UHF and HF radios. The aircraft also flight check all instrument approach procedures based on global navigation satellite systems (GNSS).

An ILS is a precision approach system that provides navigational guidance signals and information on a cockpit display to guide pilots accurately to the point of landing in periods of reduced visibility. This information is especially necessary in inclement weather with low ceilings, snow, fog or rain, when pilots have poor visibility. The ILS data transmitted to the cockpit provides lateral and vertical guidance.

VORs, while being replaced with GNSS navigation, continue to provide highways in the sky for older aircraft navigating across the country.

Each ILS and VOR in Canada receives two annual inspections to ensure the accuracy and integrity of the signal. If a navigation aid experiences a failure or requires repair, it must be inspected again prior to being returned to service.

A typical ILS test at an airport will take about one to 1.5 hours and consists of the pilots making repeated approaches to a runway at varying combinations of height, speed and direction. No two approaches are the same. Each approach tests the ILS signal in a different way and it is up to the technologist to inform the pilot of what type of approach is required next or any manoeuvre that requires repetition.

Technical flight inspectors operate the onboard flight calibration instruments, while additional inspectors work on the ground to adjust the nav aids if issues are discovered. **Nav Canada Photo**

Your car's GPS may be precise enough to guide you around town, but the flight inspection crew is able to test and calibrate an airport's ILS using precise differential GPS that is accurate to within one centimetre!

The pilots' knowledge of approach procedures and requirements allows them to properly evaluate current procedures and best practices for a particular airport.

On any given day, there are normally two flight inspection aircraft airborne and sometimes all three are operational for eight to 12 hours at a time. Depending on the complexity of the task, each aircraft will complete up to 10 different daily inspections.

The flight inspection aircraft and crew operate out of two bases, Kelowna, B.C., and Ottawa, with a series of tasks strung together into a four-to-six-day mission. A typical day will see the aircraft depart airport X, fly one

to two hours of inspection, land, pick up the ground crew and travel to the next airport, possibly inspecting airways, air routes or en route navigation aids along the way.

The process is repeated until the crew duty day limit, weather, or high traffic volumes end the day. A team of dispatchers at the Ottawa base keeps a close eye on the weather, operational restrictions and ATC requirements to shift the aircraft and crew around the country as required, keeping the operation moving as efficiently as possible.

There is no doubt that the unusual flight patterns of these three planes attract a lot of attention, interest and concern. Radio stations and other news outlets often receive calls from citizens reporting what they think is an aircraft in trouble. That's understandable. If you see a plane making multiple low passes over a runway with its wheels up, one could easily





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ABOVE:
A typical ILS test at an airport will take about one to 1.5 hours and consists of the pilots making repeated approaches to a runway at varying combinations of height, speed and direction. **Eric Dumigan Photo**

RIGHT:
Onboard technology measures, analyzes and calibrates the electronic signals emanating from navigational aids. **Nav Canada Photo**

OPPOSITE:
Nav Canada flight inspection pilots Jim Manton, left, and Nick Cobbett. **Nav Canada Photo**

assume that plane can't land because of malfunctioning landing gear. Our flight inspection aircraft are popular with plane spotters and self-described "avgeeks" from all over Canada. Social media has been a facilitator of this phenomenon. Seldom does a day go by when a photo or video doesn't appear on Twitter, Instagram, Tumblr, Facebook or myriad other platforms. Some of our followers even like to tweet photos of the flight tracks from Flightradar24.

One of our pilots summed up the job well: "The flying is unique, challenging, and requires a lot of teamwork. For me, the best part of the job is the low level operations and being able to put the CRJ into manoeuvres that most pilots never get to do."

So the next time you see a blue and white plane banking hard, going in circles, swiftly changing altitudes and approaching the runway without landing, don't be alarmed. It's just Nav Canada's flight operations team making sure our nav aids are accurate and safe. ✚

Capt MacKay is director of flight operations with Nav Canada. He is a former airline pilot who has been with the air navigation service provider for 11 years.





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HELP FROM *Above*



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North Shore Rescue used to average 90 to 100 calls annually, but since 2013 that number has risen drastically. In 2016, there were 132 calls for help. **Pete Cline Photo**



THE PARTNERSHIP BETWEEN NORTH SHORE RESCUE AND TALON HELICOPTERS HAS SAVED COUNTLESS OUTDOOR ENTHUSIASTS WHO HAVE BEEN HURT OR STRANDED IN THE MOUNTAINOUS TERRAIN SURROUNDING VANCOUVER.

BY HOWARD SLUTSKEN

Tune into the TV news in Vancouver, and one might see a story about a hapless hiker who's lost in the local mountains, or a senseless snowboarder who rode out-of-bounds into a ravine. Invariably, to get the story, the reporter interviews one of the back-country rescue specialists at North Shore Rescue (NSR), with a bright yellow helicopter belonging to Vancouver-based Talon Helicopters hovering in the background.

If the rescue is successful, the video might show people dangling on a long-line below Talon's TwinStar helicopter as they drop gently into a parking lot. Sometimes, though, the rescue becomes a recovery mission. And in the 20-year relationship between NSR and Talon, rescue specialists and pilots have seen their share of both.

Helicopters weren't always part of NSR's resources, according to team leader Mike Danks. Interestingly, the all-volunteer organization was originally established in 1965 as an urban search and rescue (SAR) team that would have assisted Civil Defence in Vancouver, had the Cold War become hot. Fortunately, the team was never called upon to fulfil its original mandate, and the focus shifted to providing SAR services in the North Shore Mountains overlooking Vancouver.

"They didn't use aircraft [then] like we do today," said Danks. "Sometimes, they'd be out for days searching for people, and then hiking them out in a stretcher, over land, in some pretty extreme circumstances."

A second-generation member of NSR, Danks has been on the team for 20 years. "My dad was a member of NSR back in the '70s. I always went out for training with them, and I'd be the dummy in the stretcher," he remembered with a chuckle.

The training and time commitment expected of NSR members is substantial. Even before being considered for the rigorous two-year

“The majority of NSR’s rescue calls come in about an hour before sunset, when people in distress begin to panic. That’s when air assets become invaluable, and could make the difference between life and death.

”

NSR doesn’t charge any fee for rescues. Fundraising, donations, grants and sponsors cover its operating costs. Expenses related to specific rescues, such as helicopter flight time, are covered by Emergency Management BC. **Scott Merriman Photo**

Member-in-Training program, applicants must have a high level of physical fitness and extensive local back-country knowledge and skills, including hiking, snow-shoeing, and climbing. A five-year commitment is expected, and since volunteers could be called for a rescue mission at any time, they must have an understanding with their employer.

NSR doesn’t charge any fee for rescues, and covers its operating expenses through fundraising, donations, sponsorships and government grants. Costs related to specific rescues, such as helicopter flight time, are covered by Emergency Management BC, a provincial government agency.

“We’re typically busier in the summer with medical rescues,” said Danks. “Our yearly average has been 90 to 100 calls, but since 2013 that number has drastically risen. In 2016, we had 132 calls. It’s almost become a trendy thing to do. If you go

hiking in the local mountains on a beautiful day, it’s not uncommon to see hundreds of people in the back-country.”

But some of those people are not even remotely prepared for the outdoors. Danks said he’s seen so-called hikers out in business suits and dress shoes, and women wearing high heels. Common sense seems to elude other would-be enthusiasts, with the vast majority of calls coming from hikers who hadn’t considered that having a flashlight after dark is a good idea.

“A group of nine people hiked for a couple of hours to St. Mark’s Summit, which has gorgeous sunset views,” recalled Danks. “They enjoyed a beautiful sunset, and then figured out that nobody had a flashlight! They had a cell signal, so we put a crew in, brought them some lights, and hiked them out.”

The majority of NSR’s rescue calls come in about an hour before sunset, when people



in distress begin to panic. That's when air assets become invaluable, and could make the difference between life and death.

"We could spend 24 hours searching for somebody on the ground, or we could spend 30 minutes in the air. People realized how efficient and effective a tool [a helicopter] was for patient care and reducing the amount of manpower required to do these technical rescues," said Danks. "That really started with Tim Jones, who recognized the efficiency of the aircraft, and how it could reduce the amount of searching."

Jones was a larger-than-life personality who dedicated his life to SAR, and was NSR's team leader until his unexpected death in January 2014. He worked tirelessly to ensure NSR's success, and his accomplishments were recently recognized when the second peak of Mount Seymour was renamed "Tim Jones Peak" in his honour.

Jones developed a close relationship with

Talon Helicopters' founder and president, Peter Murray, when Murray began flying SAR missions for Canadian Helicopters at Vancouver International Airport (YVR) in 1991.

Murray went on to launch Talon in 1997. "I had no plans to start a business. I'm an unintentional business person, and an unintentional entrepreneur—it really was out of necessity. I just wanted to fly helicopters, and this was how I could do it," he told *Skies*.

Talon's first helicopter was a Bell JetRanger III, which stayed in the fleet for over a decade. The current lineup includes three Airbus Helicopters—two AS350 B2 AStars and one AS355 F2MAX TwinStar. As well, Talon owns a Bell 206 L4 LongRanger, which it operates for CTV News Vancouver.

And why *that* particular shade of yellow for Talon's helicopters?

"It was a rainy day in downtown

CLOCKWISE FROM TOP LEFT:

Talon maintains an on-call rotation for its pilots, and works to ensure that one of its three Airbus helicopters is available to scramble for rescue missions. **Jay Piggott Photo**

The training and time commitment expected of North Shore Rescue members is substantial. **Boost Systems Photo**

Talon has adopted the quick-connect dual-hook Human External Cargo (HEC) kit from Boost Human External Cargo Systems, which can lift up to five people. **Boost Systems Photo**

Helicopters are an effective tool for search and rescue work. "We could spend 24 hours searching for somebody on the ground, or we could spend 30 minutes in the air." **Boost Systems Photo**

HOW TO GET RESCUED



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A crew is inserted into the field using the Boost Human External Cargo system.
Boost Systems Photo

Vancouver, and we saw a sports car with that yellow in an alley—and it was glowing,” laughed Murray. “I said it would be perfect for the helicopter, with high visibility, so we colour-matched it!”

Talon maintains an on-call rotation for its pilots, and works to ensure that one of its three Airbus helicopters is available to scramble for rescue missions. With twin engines and redundant systems, the TwinStar is the primary rescue machine, with the AStars available to support missions.

“Our helicopters suit our needs for mountain rescue work,” said chief pilot Kelsey Wheeler. “Talon has been built on mountain rescue and long-lining, flown by mountain pilots. A bigger, medium heli-

copter just wouldn't suit the work we do.”

The helicopters are used primarily to transport NSR team members and resources on rescue missions. In situations where the machine can't land, Talon's pilots are trained to perform Class D external-load long-line operations.

Talon has adopted the quick-connect dual-hook Human External Cargo (HEC) kit from Boost Human External Cargo Systems, which can lift five people, or up to 1,100 pounds, on a long-line beneath the helicopter. “It doubles the capacity of our old system,” said Wheeler.

Pilots joining Talon can't expect to qualify for long-line missions until they have over a year's worth of experience with



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SAR transport flights, and gain extensive knowledge of the local terrain. And even then, some Class D rescues can induce a high level of “pucker factor” for pilots.

“There was a rescue, and when we found the subject we wondered, ‘How did he get there?’” recalled Wheeler. “He was perched on a very small ledge. He had fallen and slid, and if he took one more step, he was dead. I had to figure out how to get the NSR guys in, and we used a 250-foot long-line.”

Knowledge of the North Shore Mountains and back-country extends to a deep understanding of the weather, and the microclimates that exist around the region.

“We look at the weather differently. It might be socked in at YVR, but you go up Indian Arm and the cloud layer is lifting. You can’t see it from YVR. You don’t know unless you go,” said Murray. When the forecast for YVR is poor, Talon will pre-position a helicopter on the North Shore for quick response.

Over the years, both NSR and Talon have received many awards and accolades for their work, not to mention heartfelt thanks from the people they have rescued. Danks recalls one challenging rescue in 2008 that led to NSR’s Tim Jones and Gord Ferguson, along with Talon’s Peter

Murray, being awarded an RCMP Special Officer-in-Charge Commendation.

“A man was hiking and took a significant fall, about 150 feet, sliding down an ice slope, banging into trees,” said Danks.

“They were fortunate to have a cell signal, and his hiking partner was able to make a phone call right at twilight. They didn’t know where they were, but they described what they saw, and Tim Jones said, ‘You’re at Theta Lake.’”

Peter Murray lifted off from YVR just minutes before sunset. “We’ve got one chance, and the layer was high enough, but we were 30 feet above the treetops,” said Murray. “We could see, and it was safe. We saw the guy on the slope, and there was one little tree sticking up in the featureless bowl at the bottom.”

Murray quickly dropped the team off, and returned to YVR. But the weather closed in for the next two days, forcing the NSR team to dig a snow cave for shelter, while treating the hiker’s injuries. After dealing with heavy snowfall and avalanches, the weather cleared barely enough for Murray to return.

“I sort of poked around and couldn’t get into the valley,” recalled Murray. “For me, it’s simple, I don’t actually feel any pressure to do anything but what’s safe. If I

can’t get in here, I’ll go over there! Then the cloud lifted, and I went in, but I went out again just to confirm I could get out right away.”

“Peter pulled off a miracle,” said Danks. “The team threw the injured hiker into the backseat and we were out of there. This flight saved the man’s life.”

Saving lives is what North Shore Rescue and Talon Helicopters keep training for, week in and week out, all year long. And the most welcome sight that a stranded hiker could ever see is one of Talon’s bright yellow helicopters hovering overhead, with the team from NSR on a long-line, dropping in to help. 



Howard Slutskien’s lifelong passion for aviation began when he was a kid, watching TCA Super Connies, Viscounts, and early jets at Montreal’s Dorval Airport. He’s based in Vancouver, B.C., so when Howard isn’t writing, he’s probably plane-spotting at YVR, PAE, BFI or SEA.

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FLIGHT PATH TO SUCCESS

STUDENTS ARE THE BIG WINNERS AS AVIATION SCHOOLS PARTNER WITH INDUSTRY TO OFFER NEW PILOTS A CLEARLY DEFINED CAREER TRACK.

BY LISA GORDON

It was foggy and unseasonably warm on Feb. 23, 2017, as a Sunwing Boeing 737-800 landed at the Region of Waterloo International Airport and taxied up to the terminal.

Inside the building, a large group of people was eagerly anticipating the plane's

arrival. On hand were representatives from the University of Waterloo (UW), Waterloo Wellington Flight Centre (WWFC), airport staff and members of the media—all there to celebrate four brand new Sunwing first officers who are among the first direct-entry cadets the leisure airline has ever hired.

As First Officer Chelsea Anne Edwards descended the airstairs to the wet tarmac, she was joined by three of her fellow graduates from the four-year aviation program offered by the University of Waterloo (UW) and Waterloo Wellington Flight Centre (WWFC). Founded in 2007, the program—which leads to an Honours Bachelor of



A celebration on the tarmac at the Region of Waterloo International Airport on Feb. 23 included, from left to right, Waterloo Wellington Flight Centre General Manager Bob Connors, newly-minted Sunwing First Officers Cameron Fuchs, Chelsea Anne Edwards, Siobhan O'Hanlon and Spencer Leckie, and Dr. Ian McKenzie, Director of Aviation, Faculties of Science and Environment, University of Waterloo. **Mike Reyno Photo**



One of the earliest pilot cadet programs was debuted by Jazz Aviation in 2007. Dubbed the Jazz Award, it offered interviews and simulator evaluations to top-ranking students at Canadian aviation colleges and universities. **Jazz Aviation Photo**



Former Jazz Cadet Erin Grant graduated from Seneca College in 2013 and transitioned first to Jazz and then recently to Air Canada, where she will be a first officer with Rouge on the Boeing 767. **Jazz Aviation Photo**



Industry representatives agree that the calibre of graduates coming out of structured Canadian aviation programs is very good, and they are generally quite successful adapting to a new operational culture. **Jazz Aviation Photo**



In 2008, Air Georgian established a mentorship program with Seneca College, an institution that many of its managers also attended. **Michael Durning Photo**

Environmental Studies in Geography and Aviation or to an Honours Bachelor of Science in Science and Aviation—has produced six graduating classes whose members are now flying across the world.

It's safe to say, however, that the class of 2016 represents a major milestone for the program. It's the first time its graduates have been offered direct-entry co-pilot positions with Sunwing Airlines. Edwards—together with Cameron Fuchs, Spencer Leckie and Siobhan O'Hanlon, all aged 23—found themselves going from graduation to the right seat of a 737 in just one year.

Two of the new first officers, Edwards and Fuchs, told *Skies* that the transition from WWFC aircraft to the right seat of a Boeing 737 was akin to drinking from the proverbial fire hose.

"It was busy, but we were well prepared from the Flight Centre and the training at Sunwing is first class. It all went well, but there were certainly challenges," said Fuchs.

Edwards agreed. "It was the hardest thing I've ever done," she said. "Still, when I get in the plane, I just can't believe it. I never thought this would happen, never! I thought I'd be working in Yellowknife. It's unreal. I love working here."

NEW REALITY

To quote Bob Dylan, the times they are a-changing. No longer do aviation program grads face years of flight instructing or toiling in the Canadian bush before an airline will even consider them for a first officer position. In fact, Sunwing took on the four UW/WWFC graduates—plus two more from Seneca College—with most of them in the

neighbourhood of 250 hours total flight time.

At the event on Feb. 23, the airline confirmed the program's success and announced its plans to take on a new crop of cadets from both post-secondary programs beginning in July 2017.

Partnerships between academia and industry are becoming increasingly common in the Canadian flight training landscape.

"Attracting high calibre graduates to join our flight team is essential to our growth and success as an airline," said Capt John Hudson, Sunwing's manager of standards. "We were extremely pleased with the performance of the cadets that graduated from the program this summer, and hired four of them as first officers upon completion of their studies. We expect to hire similar numbers of graduates next year."

Hudson, who is a graduate of both UW and Seneca's aviation program, said that over a year ago Sunwing noticed the experience level of its pilot pool was dropping. "We were brainstorming as to how we could invest in the future. We wanted to explore non-traditional ways of recruiting pilots and began initial exploration of a cadet program."

While the UW and Seneca programs are structured very differently, Hudson said Sunwing deliberately chose to work with the two schools to keep all options on the table.

"We plan to open it up down the road to other schools. We want to make sure there's an academic portion combined with a flying portion, and we want to work with existing programs that have a track record," he explained.

He said Sunwing put the onus on the schools to become familiar with the air-

line's unique seasonal operating model and present students who they felt would be the best fit.

"We fly into some fairly challenging airfields in the Caribbean, Mexico and Europe. This coming summer, we have a fairly large percentage of our fleet operating in Europe for about six months. People have to realize our pilots go overseas for part of the time. For a young, ambitious person those are attractive features; for some others, maybe not."

FORGING A PATH

One of the earliest pilot cadet programs was debuted by Jazz Aviation in 2007. Dubbed the Jazz Award, it offered interviews and simulator evaluations to top-ranking students at Canadian aviation colleges and universities.

"We saw there was an opportunity for Jazz to be involved with the aviation colleges across the country," said Capt Cal Purves, director of flight operations at Jazz. "Most of the management pilots in our organization had that type of background and we saw a good opportunity to partner with schools that developed future professional pilots."

Today, the Jazz Award has been rebranded as the Jazz Aviation Pathways Program (Jazz APP) and expanded to include eight schools and three industry partners from across the country.

Purves said Jazz looks to partner with schools that share the airline's vision of safety as a core value.

"They must have quality programs for training and oversight of the pilots," he said.



Jazz Aviation hired close to 25 pilots through its Jazz Aviation Pathways Program in 2016, representing about eight per cent of last year's total hires. **Brian Losito Photo**

“We spend a lot of time, six to 10 months, working with a school to ensure their quality checks meet our expectations. And the fit for the school must also be good.”

The airline hired close to 25 pilots through the Jazz APP program in 2016, representing about eight per cent of last year’s total hires. Purves said they perform very well on the job.

“Because we’re partnering with these colleges at the grass roots level on training and industry best practices, the calibre of students coming out of the programs is very good. In fact, candidates that come out of a structured college or university program are generally very successful and adapt to our culture and operation quickly.”

In addition to schools, the Jazz APP currently has three industry partners: the Air Cadet League of Canada, Seneca College and Wasaya Airways.

Of the partnership with Air Cadets, Purves said Jazz aims to encourage aviation careers at the high school level.

“One way to do that is to reach back to that Grade 10 age group and provide them with information to help them get started. Some of our pilots will go and make presentations to squadrons and we are also a sponsor of the powered flight programs.”

For Seneca grads who went on to become



Newly-hired Sunwing first officers say their intense training at Waterloo Wellington Flight Centre served them well in the transition to the right seat of the airline’s Boeing 737s. **Mike Reyno Photo**



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flight instructors at the college, the new Instructor Pathway program allows them a chance to land a job with the airline.

As for the partnership with Wasaya, Purves said Jazz has a long history of hiring pilots from the smaller operator “and there is a good successful relationship there.” In addition, the two operations have Air Line Pilots Association International (ALPA) unions, so they share a similar vision and structure.

A year after Jazz rolled out its first partnership initiative, Air Georgian began accepting Seneca College students into its mentorship program in 2008.

“Over the years, we have hired many graduates from the Seneca program,” reported Capt Andre Daryanani, chief pilot on the Beech B1900D at Air Georgian and a Seneca College aviation program alumnus.

“Through the years, some of our managers in key positions throughout our operation have been Seneca grads; we are very familiar with the program. In 2008, it became apparent that we would be faced with far fewer available pilots coming into the industry. To better prepare ourselves and to take a proactive stance, we visited Seneca. We looked at their program and their documentation. We discovered the high quality of pilots being trained were a direct result of a strong, well rounded and robust program.”

Air Georgian, which currently employs 225 pilots for its fleet of Beech 1900D and CRJ 100/200 aircraft, has hired about 25 grads—most from Seneca—since the beginning of its mentorship program. Over the years, they’ve also hired students from Sault College, Ottawa Aviation, Mount Royal and BCIT.

“Seneca begins by contacting us and forwarding resumes of graduates that

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FAR LEFT: Sunwing's Capt John Hudson and First Officer Chelsea Anne Edwards flew one of the airline's Boeing 737-800s into Waterloo Airport on Feb. 23. Edwards is one of six direct-entry cadets hired by Sunwing last year. **WWFC Photo**

LEFT: Sunwing's unique seasonal operating model calls for pilot candidates who are prepared to live overseas for part of the year. **Galen Burrows Photo**

stand out, those whom they strongly recommend," explained Daryanani. "We want to take their highest performers from the program and bring them onto our Beech 1900D as first officers with as little as 250 hours of flying time."

The new recruits are given the same training as other candidates. However, to counter the lack of experience and ensure a high level of safety, there are additional training requirements. For example, they must complete 60 hours of line indoctrination training versus 40 hours for a "normal" hire with 1,500 hours of experience.

"Through the years we have become more and more experienced with transitioning these young pilots and moulding them into fine airline first officers," said Daryanani. "Even though we have proven time and time again that these pilots pose no additional risk we are continuously evaluating and adapting to mitigate any new risks that may arise. The risks one would normally expect to see are greatly reduced due to their high level of performance."

He said the graduates typically perform well above standard through first officer training, including groundschool, simulator and line indoctrination. The same level of commitment is evident when they progress to captain.

"Some as young as 23 and 24 years old are sitting in command of a multi-crew aircraft for the first time," said Daryanani. "Understandably, this great responsibility is usually accompanied with more questions. To counter the higher level of risk, we manage and coach them more closely during the first few months after their promotion. We have yet to see this cause a safety issue or have an impact on our operational performance."

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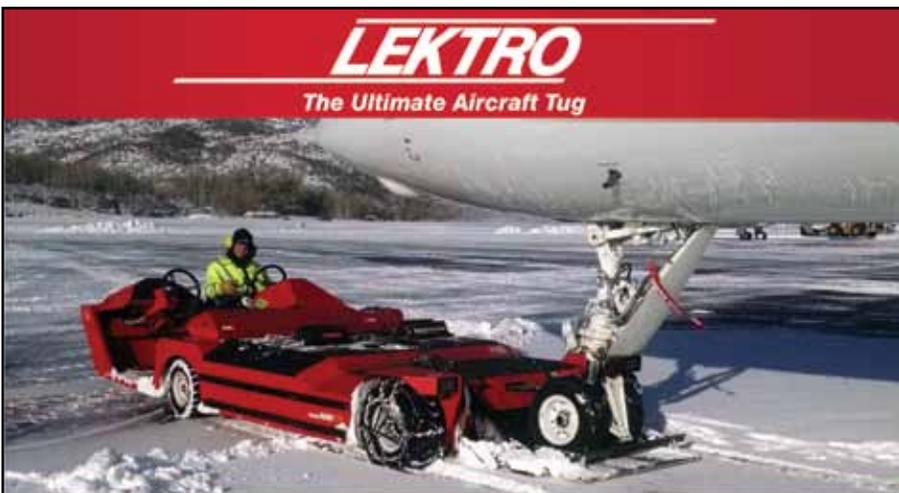
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shortage is a reality, Daryanani said it depends where you rank in the operator pecking order.

“There are continuous reports of a looming pilot shortage. But in reality, it depends on the operator. I don’t necessarily think the major airline carriers are seeing a shortage. But as we progress down to the regional and smaller carriers, this shortage becomes more apparent.”

Air Georgian recently hired several direct-entry captains for the CRJs it operates for Air Canada Express. Chief operating officer Julie Mailhot said finding them wasn’t easy. “With 14 CRJs

and three spares, we didn’t have enough upgradeable first officers. We needed five captains per aircraft.”

She said that from Air Georgian’s perspective, there is certainly the potential for a serious pilot shortage. That’s why it’s so important to have established, collaborative relationships with schools that value industry feedback on how they can develop better pilots.

“Partnering with schools that have quality programs is a fruitful and valuable commitment. Industry needs to put in the time or we’re going to have a real problem,” concluded Mailhot.

SIGN OF THE TIMES

Lynne McMullen, director of business development at Seneca’s School of Aviation, told *Skies* that these partnerships are a sign of things to come.

She said the well-known aviation program recognized in 2001 that the industry was beginning to prefer pilot candidates with a post-secondary degree. It transformed its former three-year advanced flight training program to a degree program, developing a jet transition course along the way.

In cooperation with Jazz Aviation, the college launched the Jazz/Seneca Cadet Program which is exclusive to Seneca grads. In 2012, a more focused direct entry program was developed, with the first cadets joining Jazz in 2013.

“We brought in active industry pilots, a Frasca CRJ200 sim, and offered industry-level training,” she said. “In the school of aviation, we have a strong safety department and SMS program and over the last few years we’ve also developed a separate quality assurance program.”

In partnership with Frasca, Seneca developed fixed-base simulation devices that meet the training needs outlined by industry. “Four partner companies reviewed the simulator curriculum just last week,” McMullen said in a recent interview. “The goal is to make our students industry ready.”

The Seneca program is accredited by the Aviation Accreditation Board International (AABI), a factor which McMullen said is vital to the school’s efforts to foster continuous improvement.

She said Jazz has broken the ice by establishing an industry partnership with Wasaya Airways. “We’ve said this needs to happen for a long time, where we create pathways where you find your way through another tier airline and get some experience,” said McMullen, adding that historically there has been a “strong connection” between Seneca grads and northern airlines.

McMullen agrees with Air Georgian’s Daryanani that smaller carriers are starting to feel the ripple effects of a pilot shortage.

“I think it’s coming. There’s a large retirement coming from Air Canada and it will start soon,” she commented. “Everyone seems to be saying we’re on the cusp of a shortage finding its way up to the larger carriers.”

That makes industry partnerships and program advisory committees even more important, ensuring that aviation schools are in tune with “real world” operations and turning out graduates with relevant skills.

“Ultimately, what will happen is greater collaboration through the industry,” said McMullen. “Schools are moving to partner with industry to move students along on a defined career path and they will choose the program with the pathway option that’s right for them, depending on their ultimate goal.”

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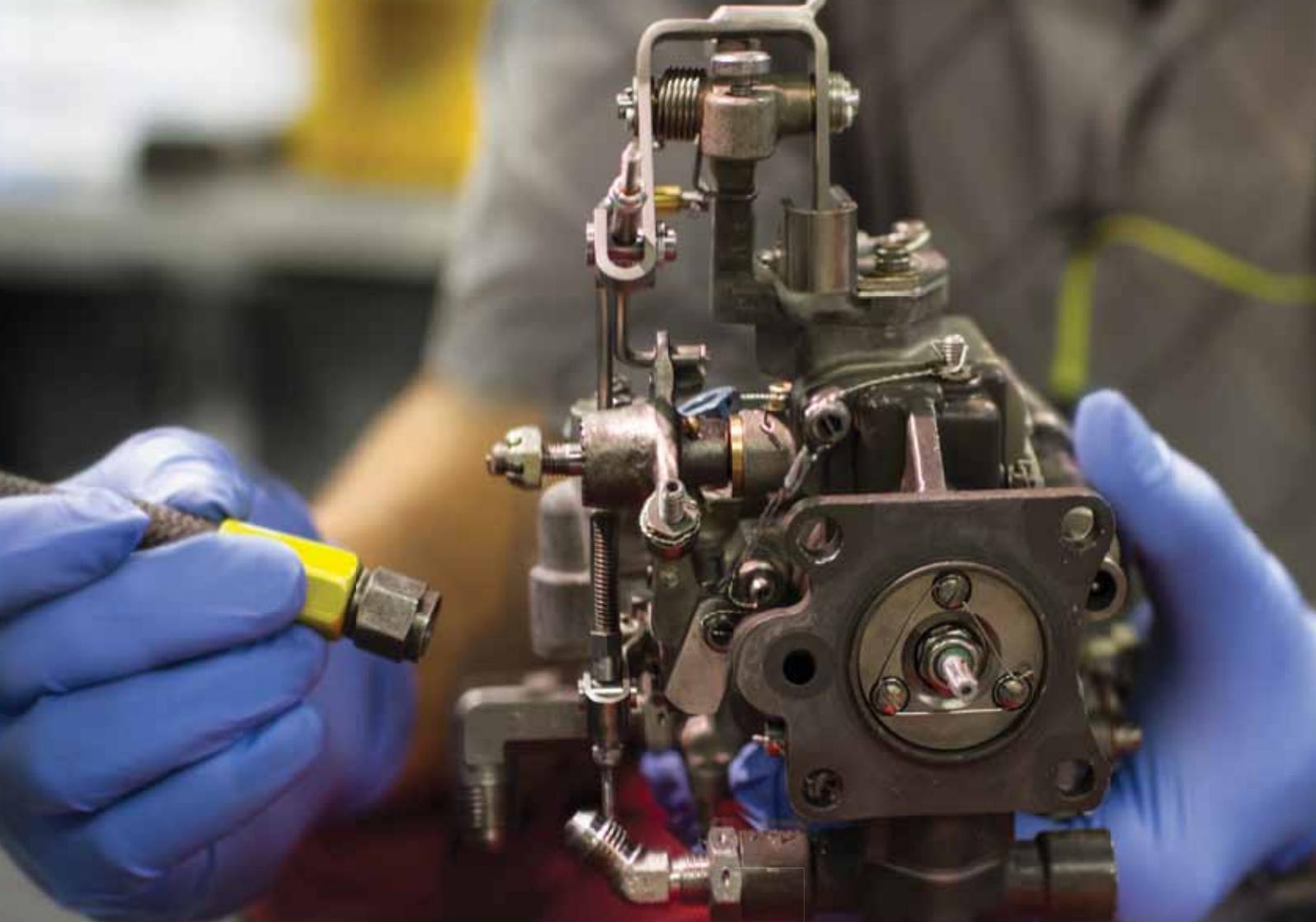
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BY JANE STANBURY | PHOTOS COURTESY OF FLYING COLOURS

Editor's Note: Is your corporate aircraft looking a little tired these days? Have you ever wondered what's involved in a custom refurbishment? We invited Peterborough, Ont.-based Flying Colours Corp. to walk us through a project that illustrates the custom design process, with a twist. In the first installment of this two-part series, we learn how a made-to-order plan and pre-engineered components combine to create a stunning, high tech Global Express interior that is both faster and less costly to install.

As residual aircraft prices remain low, many owners are choosing to keep their existing airplane rather than upgrade to a newer model. Continued economic uncertainty, a fluctuating dollar, and a glut of inventory in both the new and pre-owned aircraft sectors has also dampened enthusiasm for new aircraft purchases. However, there is a silver lining, as owners and operators recognize the opportunities presented by the increasingly sophisticated refurbishment and overhaul market.

Savvy individuals understand the value of purchasing a well-priced pre-owned aircraft, conducting a full maintenance

review, and giving the cabin a facelift through the installation of a customized interior to satisfy their specific mission.

Innovations in the business jet interior sector continue to move at the speed of technology. In-flight entertainment and connectivity solutions are beginning to reflect offerings on the ground; while a mounting range of soft materials, leathers, wood veneers, and contemporary compounds such as carbon fibre, or millimetre-thin stone veneers, are being cleverly amalgamated to create striking and unique cabins.

Add to this the growing number of design houses and brands—for example Hermes, Alberto Pinto, BMW, and

Porsche—that have stepped up to the interiors plate, and cabin refurbishments are an incredibly attractive option.

One of the latest innovations to come to market is the blending of customized design with pre-engineered components. Flying Colours Corp., the Canadian family-run international refurbishments company, is working with Inairvation, the 50/50 joint venture between Lufthansa Technik AG (LHT) and Austria's F/List components and furniture GmbH, to deliver one such offering.

The Inairvation approach focuses exclusively on the development, marketing, and sales of technologically integrated, integrally designed cabin systems for business jet interiors. These pre-engineered components have been designed to fit into certain aircraft types, including classic Bombardier Global Express jets as well as Bombardier Challenger 300 and 605 models, along with Gulfstream G450 and Gulfstream G550 aircraft. This prêt-à-porter, rather than haute couture, offering can reduce cost and time for those looking to restyle their cabin within a certain budget and tight timeframe.

Flying Colours Corp. is one of the few North American partners selected by Inairvation to install these interior

components, and the first company to sign a customer up.

“Our client completely understood that taking this route for his refurbishment would save him time and maximize his budget,” said Sean Gillespie, executive vice president at Flying Colours. “An individual design created by our own in-house design team in Peterborough incorporates a number of the pre-engineered components from Inairvation’s offering. This allowed us to create a cabin that matches his very individual style and personal vision, yet one that could be installed, completed and fulfilled within a specified time and budget.”

THE PROCESS

The project began with lengthy discussions between the internal design team, the client, and the design engineering experts from the Peterborough facility, where the work is ongoing.

“We have worked with this particular client on several projects and he has grown to trust us when we make recommendations. This strong and long relationship was a real advantage when detailing this particular concept,” noted Gillespie.

He explained that the customer, who

already owns a number of pre-owned aircraft, exemplifies the current trend for buyers seeking the best value option on the market.

“The rate of requests for cabin overhauls is on the rise, which we believe reflects the current sales landscape in North America, Europe and Asia,” explained Gillespie. “A reconfigured aircraft can often fulfil the needs of an owner at a lower budget and in a shorter time. Add in the benefits of the pre-engineered solution and we can deliver a truly customized aircraft, designed to meet specific needs, in a timeframe and budget that is often considerably lower than a new aircraft purchase.”

Flying Colours is now about midway through the five-month refurbishment project and is transforming the client’s classic 2003 Bombardier Global Express cabin into a thoroughly breathtaking interior. The baseline Inairvation components are just one piece of the much larger cabin refurbishment project, but down time is reduced by maximizing the non-recurring engineering costs.

“The aircraft is undergoing extensive reconfiguration inside and out. Once we are finished it will look as if it has just come off the production line,” said Gillespie.



Before and after: A 14-year-old Bombardier Global Express is undergoing a custom facelift at Flying Colours in Peterborough, Ont.



Connectivity is now a key focus when completing any interior.

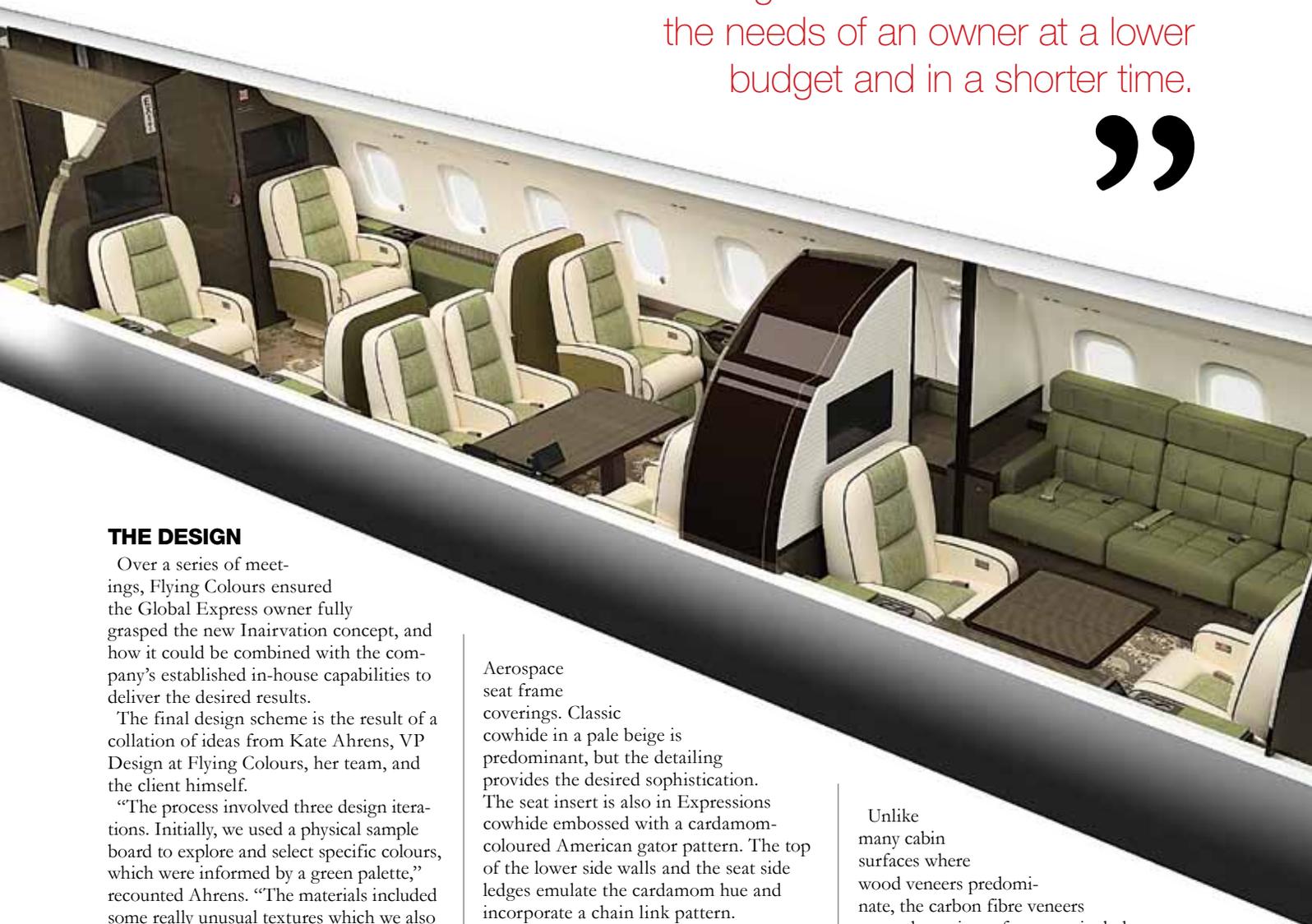


The baseline Inairvation components are just one piece of the much larger cabin refurbishment project.

A cross-section illustration of the final plan.

“A reconfigured aircraft can often fulfil the needs of an owner at a lower budget and in a shorter time.”

”



THE DESIGN

Over a series of meetings, Flying Colours ensured the Global Express owner fully grasped the new Inairvation concept, and how it could be combined with the company's established in-house capabilities to deliver the desired results.

The final design scheme is the result of a collation of ideas from Kate Ahrens, VP Design at Flying Colours, her team, and the client himself.

“The process involved three design iterations. Initially, we used a physical sample board to explore and select specific colours, which were informed by a green palette,” recounted Ahrens. “The materials included some really unusual textures which we also sampled with the client. Once these had been selected, we were able to consider how to collate everything for the desired effect of the overall project concept. We then used a 3D software system to render images of the final look. It helped us all to see what our final ideas could look like. Using this method, we realized the vision of contemporary elegance that combines with form and functionality to create an extremely comfortable cabin.”

The final plan was fixed in July 2016 ahead of the aircraft arriving at Flying Colours the following November.

An intoxicating collection of material textures and green and beige hues blend with an unusual brown carbon fibre finish to create the feel of a commodious cabin. The seat design is a good example of how Ahrens and her team exercised an incomparable attention to detail.

“Townsend Leather has been the inspiration for the seats,” said Ahrens about the new Global 6000 B/E

Aerospace seat frame coverings. Classic cowhide in a pale beige is predominant, but the detailing provides the desired sophistication. The seat insert is also in Expressions cowhide embossed with a cardamom-coloured American gator pattern. The top of the lower side walls and the seat side ledges emulate the cardamom hue and incorporate a chain link pattern.

The bottom of the lower sidewall is in Taj cowhide in the colour Kelly green, which is also being used for the piping. To complement the intricate selection of colours the seat back, armrest and vertical back band of the armrest feature a textured material known as Aniline Gaufrange, which is an embossed and hand-rubbed cowhide, featuring a cypress tone and a Moroccan pattern. Not only are the seats beautiful to look at, they are extremely comfortable and can be fully reclined.

The carbon fibre veneer further demonstrates the design intricacy as it features a brown twill pattern which breathes life into the surfaces it covers.

“While stunning, the pattern and material are quite challenging to work with,” said Ahrens. “We have had experience with carbon fibre but we still had to test, research and literally trial working with the material to make sure it would live up to expectations.”

Unlike many cabin surfaces where wood veneers predominate, the carbon fibre veneers cover the main surface areas including the tables, lavatory vanities, and pre-engineered side ledges. It is accented with a contemporary dark ebony hardwood.

The aircraft's lighting will add atmosphere via a rainbow spectrum of mood colours, all controlled by the Lufthansa Technik nice HD in-flight entertainment and cabin management system (IFE/CMS), which is integrated into the Inairvation components.

“We've used B/E Aerospace LED lighting which features a Quasar-coloured spectrum that enables a varied ambience within the cabin. This is perfect for accommodating all the phases of the range of this aircraft,” said Ahrens.

A powerful first impression is created for any passenger boarding the jet by the dramatic contrast between the F/List crème-coloured stone granite floor and the F/List black granite countertop.

“This is a really striking feature and one that repeats in the forward and aft lavatories.”



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The Global Express arrived at Flying Colours last November for an extensive facelift. “Once we are finished it will look as if it has just come off the production line,” said Sean Gillespie, executive vice president at Flying Colours.



“Innovations in the business jet interior sector continue to move at the speed of technology.”

”

Combined with the carbon fibre veneers the effect is spectacular,” said Ahrens.

In the cabin the pre-engineered side ledges, which incorporate the IFE/CMS, will be dropped into place. The baseline package includes an advanced user interface, a wireless interface for personal device integration—both iOS and Android—and a Hollywood studio content service with leading blockbuster movies and TV shows. The ergonomic side ledges will then be enclosed with the carbon fibre veneers to match the rest of the aircraft. All the elements have already been through rigorous design, testing and development, so the client does not have to wait, or pay, for this part of the process.

In addition to the comprehensive IFE system, a completely new Gogo ATG 5000 high-speed data system will be used to improve the existing cabin connectivity.

“The need for reliable connectivity is becoming a significant element to consider when it comes to cabin upgrades,” said Gillespie of the growing demand within the business aviation sector. “Customers are no longer satisfied with simply being able to make a phone call from the aircraft. They want Internet, Wi-Fi, email and constant communications with their

business, family and friends. With this system in place, the client will be able to stay in contact while flying across the U.S., as well as parts of Canada and Alaska.”

This innovative blending of an individually customized design with elements that have been pre-designed for a particular aircraft type is an unusual approach to aircraft refurbishment. However, with more and more owners looking for an increased range of options to satisfy their executive aircraft needs, it is likely to become a model that others will follow.

It has not been without its challenges to create such an interior. In Part Two, we will consider the complexities of the installation and what it takes to make the concept a reality inside and out, as we review the installation process, truly unique external paint work, and the final interior completion itself. ■



Jane Stanbury is director of marketing and communications at Flying Colours Corp.

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AIRBUS

Turboprop COMEBACK



SIMPLE ECONOMICS HAVE REVIVED THE BUSINESS CASE FOR TURBOPROP AIRCRAFT, AND MANUFACTURERS ARE RESPONDING WITH MORE UPGRADES AND GREATER CHOICE TO ATTRACT BUYERS.

BY LEROY COOK

After years of predicting the demise of turboprop aircraft production, ostensibly because propellers were so, so passé and jets were so very cool, the predictors have been proven wrong.

According to 2016 annual figures from the General Aviation Manufacturers Association (GAMA), turboprop deliveries rose by 3.4 per cent while jet production was actually down by 7.9 per cent last year. A total of 576 new turboprops was

delivered in 2016, representing an increase from 557 deliveries in 2015. There are a lot of reasons for this resurgence, but most of them relate to simple economics. It's cheaper to own and fly a turbine airplane equipped with propellers, and the operating requirements are simpler.

Looking abroad, we can anticipate growth in the use of single-engine turboprops in European countries. The European Aviation Safety Agency (EASA) has joined the rest of the world

in allowing commercial operation of single-engine turbine aircraft. This move is not expected to take business away from jet charter companies, but rather to open up new markets that had previously found jets too expensive.

The turboprop market can be divided into three categories: twin-engine; single-engine pressurized; and single-engine utility.

Turboprop twins have, for decades, been defined as “King Airs and others.” Beechcraft (now Textron Aviation) has



In 2016, Daher announced a new model of its TBM single-engine turboprop family, the TBM 930. Both the Garmin G3000-equipped 930 and the G1000-equipped 900 are currently in production. The TBM 930, the latest version of the world's fastest certified single-engine turboprop, reaches speeds of 330 knots. **Eduardo Da Forno Photo**

dominated the business by building good, solid airplanes that appeal to pilots and passengers alike. Piaggio's Avanti, on the other hand, does not really compete directly—rather, it offers extra performance the King Air can't match, such as 400-knot speed, a 41,000-foot operating ceiling and a jet-like ride ahead of pusher propellers. As evidenced by the Bombardier Q400's successful challenge to regional jets, a fast turboprop can certainly compete.

It's the single-engine business turboprop class that has the most choice, ranging from Piper's M500 and M600 personal-size turboprops to Pilatus' big PC-12NG. Textron is developing its Denali as a direct challenge to the PC-12, and the perennially about-to-certify Epic E1000 and One Aviation's Kestrel 350 are also under development, with sleek all-composite airframes. For now, each of the major players—Piper M-Class, Daher TBM 900/930, and Pilatus PC-12NG—

fills a distinct niche for executive-type turboprops.

The single-engine utility turboprops are Textron's Caravan and Quest's Kodiak, both designed to be adaptable to a variety of roles, from plush seating to floatplane and ski-plane operation. Pressurization and retractable landing gear is not a priority when lofting skydivers or bringing supplies to remote villages. Closely matched, both airplanes in this division are rugged, reliable and simple to operate.



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The King Air owes its enduring appeal to its full suite of capabilities, including reliable performance and the ability to land on shorter runways than jet aircraft. Newer models also offer VIP comfort. **Textron Photo**



The instantly recognizable Piaggio Avanti EVO is the world's fastest twin turboprop, powered by two "pusher" propellers and featuring rear delta fins and a pair of nose forewings **Piaggio Photo**

Here, *Skies* examines these aircraft in more detail:

BEECHCRAFT KING AIR

The four King Air models from Textron Aviation range from the King Air C90GTx to the King Air 250, King Air 350i and King Air 350ER. Sharing similar airframes, the King Air 350i and 350ER target different markets.

The 350i is a corporate workhorse, seating a maximum of 11 passengers with a 15,000-pound takeoff weight, operating at speeds up to 312 knots with Pratt & Whitney Canada PT6A-60A engines of 1,050-shp, delivering a 1,806 nautical mile (nm) range.

The King Air 350ER, for extended range, is powered by a pair of PT6A-60A engines and supports surveillance missions with a 2,692 nm range at a maximum takeoff weight of 16,500 pounds.

The three-foot shorter King Air 250 has two less cabin windows on each side, seating a maximum of 10 passengers and flying at speeds up to 310 knots with its 850-shp PT6A-52 engines. The King Air 250 has a standard takeoff weight of 12,500 pounds.

The entry-level King Air C90GTx builds on 53 years of production, offering seating for up to eight passengers, powered by PT6A-135A 550-shp engines and delivering speeds of up to 272 knots. In the past year, all King Air models have been re-certificated with the Collins Pro Line Fusion electronic flight deck.

"Our product roadmap is focused on satisfying our operators' requirements, and making Pro Line Fusion standard on our production King Airs is in direct response to customer feedback," said Christi Tannahill, senior vice president, Turboprop Aircraft and Interior Design. "Offering the latest technology in the cockpit and cabin has resulted in great market reaction; our owners and operators clearly appreciate that these new features improve the overall flight experience and value of the King Air."

Older King Airs can be upgraded with Garmin's G1000 Nxi suite. "We are excited to bring yet another modernized solution to our King Air customer base," said Brad Thress, senior vice president, Customer Service. "Garmin's G1000 NXi platform presents a valuable avionics solution for our King Air owners and operators who want an integrated flight deck that combines the latest in cockpit technology with an upgraded visual interface."

PIAGGIO AEROSPACE AVANTI EVO

The Piaggio Avanti EVO emulates jet-like performance with turboprop advantages. Its pusher-type engine configuration, combined with a three-lifting-surface design, allows it to have a 69-inch cabin height and 73-inch cabin width, placing



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engine and propeller noise aft of the cabin. The Avanti can fly as high as 41,000 feet with a 6,600-foot cabin altitude and cruise at up to 402 knots. An increased-range option allows trips as long as 1,720 nm.

The EVO package of improvements, announced in 2014, included winglets, five-blade scimitar-shape propellers, redesigned exhaust stacks, digital power steering for the nosegear, anti-skid braking and interior refinements. New Hartzell propellers, turning at 1,800 rpm instead of the previous 2,000 rpm, helped reduce external noise by five A-weighted decibels [dB(A)], or about 68 per cent, and the interior noise was reduced by one dB(A), roughly 20 per cent.

Piaggio Aerospace is wholly owned by the Abu-Dhabi-based Mubadala Development Company, although production and headquarters remain in Savona, Italy.

PILATUS PC-12NG

For now, the Pilatus PC-12 represents the largest and most capable single-engine turboprop, seating up to nine passengers in an expansive cabin. Because of the aircraft's big power-actuated aft cargo door and forward airstair entrance, the PC-12 is frequently used for a combination of passengers and freight.

With its PT6A-67P engine rated at 1,200 shp, allowing flat rating for high temperatures, the PC-12NG can cruise as fast as 285 knots. Thanks to the large wing and effective flaps, it can take off over a 50-foot barrier in 2,600 feet and range as far as 1,845 nautical miles. Some 90 PC-12NGs were expected to be delivered in 2016.

Ignaz Gretener, vice president of Pilatus Aircraft Ltd.'s General Aviation business unit, commented on the PC-12's high ranking in both sales and service in 2016: "The entire Pilatus team, from engineering to manufacturing to sales and service, worked hard this year to achieve these successes in a very challenging market. We continue to believe that the simple formula of a great aircraft combined with outstanding service is how we create value for our customers. We are grateful to our customers for continuing to partner with us in this journey."

DAHER TBM 900 AND 930

First to the single-engine turboprop market in 1990, Daher's TBM family offers speed and utility approaching many light jets. The TBM 900 series can cruise at up to 330 knots and is certificated to fly as high as 31,000 feet. Using the PT6A-66D engine delivering 850 shp, the TBM's large cargo door, incorporating entrance stairs, adds versatility, with an optional forward crew door for maximum use of the cabin. With the introduction of the TBM 930, Garmin's G3000 avionics suite was offered; the previous TBM 900, with G1000 avionics, is being upgraded with the new G1000 NXi.



Flown around the world, the Pilatus PC-12NG is one of the most popular turbine-powered business aircraft available today. Its versatility is key to its success. The PC-12NG flies in many capacities, including executive transport, cargo, air ambulance, airline, and government special mission applications. **Pilatus Photo**



Piper's M600, certified by Transport Canada in January 2017, incorporates a Garmin G3000 flight deck, with safety features like automatic level mode and electronic stability protection. **Jim Barrett/Piper Aircraft Photo**

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“Last year...54 airplanes were produced and delivered, two more than initially scheduled,” said Daher senior vice president Nicolas Chabbert. “We saw our sales doubled in Europe. With the 2016 TBM 900, the TBM 930 introduced the TBM e-copilot system.”

PIPER M-CLASS TURBOPROPS

Using the 600-shp version of the PT6A-42A engine, Piper’s M600 (certified by Transport Canada in January 2017) incorporates a Garmin G3000 flight deck, with safety features like automatic level mode, electronic stability protection and under-speed protection.

The M600’s 6,000-pound maximum take-off weight contributes to 2,400 pounds of useful load, about 700 pounds more than the still-available M500, and its larger fuel tanks can allow a maximum range of 1,484 nautical miles. The six-place cabin is compact, contributing to the airplane’s 274-knot maximum cruise speed.

TEXTRON AVIATION’S CESSNA DENALI

A new single-engine turboprop announced by Textron Aviation in 2015, the Denali will serve an entirely different market from the OEM’s Caravan. It will be a high-flying pressurized retractable, powered by a 1,240-shp GE turbine with a 4,000 hour time between overhaul (TBO), rather than the ubiquitous Pratt & Whitney. The avionics suite will be the Garmin G3000 system.

The Denali is expected to cruise at 285 knots, offer a four-passenger range of 1,600 nm and have an 1,100-pound full-fuel payload, incorporating a spacious cabin suited for executive use.

CESSNA GRAND CARAVAN EX

In production since 1985, Textron’s latest Caravan variant, the Grand Caravan EX, uses the PT6A-140 engine with 867 shp. The short-cabin Caravan 675 remains in the line, but the bulk of sales are for the Grand Caravan EX. The flight decks feature a Garmin G1000.

No slouch in the performance department, the Grand Caravan EX can cruise at up to 195 knots and range out to 964 nm. Seating up to 14, depending on the rules in the operator’s country, the aircraft’s useful load can be as high as 3,692 pounds. An optional belly pod adds even more storage space.

QUEST KODIAK

Certificated in 2007, Quest Aircraft’s Kodiak is slightly smaller than the Cessna Grand Caravan EX, seating up to 10 passengers in a utility role. Similarly fitted with a strut-braced high wing and rugged fixed tricycle landing gear, the Kodiak uses a 750-shp PT6A-34

Announced in 2015, the new Cessna Denali is expected to cruise at 285 knots, offer a four-passenger range of 1,600 nm and have an 1,100-pound full fuel payload, with a spacious executive cabin. **Textron Photo**



Also by Cessna, the Grand Caravan EX is the latest in a line that has been in production since 1985. Featuring the Garmin G1000, the EX can seat up to 14 and carry as much as 3,692 pounds. **Textron Photo**



In 2007, the Quest Kodiak was certified and became popular as a rugged, versatile utility aircraft. Slightly smaller than the Caravan, it excels at landing in tight quarters. Quest recently celebrated the 200th Kodiak delivery. **Quest Photo**



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INDUSTRY INSIGHTS

For insight into the state of the turboprop market, we spoke with Isaac Capua of Aviation Unlimited in Oshawa, Ont., exclusive Canadian dealers for Piper M-Class aircraft and the Quest Kodiak. He's seen some individuals move up from a Meridian to a light jet, and then go back to a single-engine turboprop, citing the increase in range and simpler operation. Single-engine turboprops are now at a mature stage, he feels, with good data on reliability. Some companies are adding a turboprop to augment the company jet for the 500-mile trips, like Toronto to Thunder Bay, where there's only 20 to 25 minutes of difference in overall flight time.

Ken Dono, sales manager for Columbia Aircraft Sales, Daher TBM representatives for Eastern Canada, told us there's absolutely a rising trend toward turboprop use, versus short-range light jets. The turboprops can go farther, carry more and cost less to operate. Plus, there are many more landing options, including airstrips of 2,500 feet in length. He says Columbia enjoyed a good sales year in 2016 and things are looking quite positive for 2017.

Chris Charnley of Charnley & Associates, who is the former regional sales manager for Hawker Beechcraft, sees a definite niche for turboprops in the business aircraft market. The small jets are runway limited, whereas the turboprop airplanes can go just about anywhere, he said.



Peter Handley Photo

The carbon-fibre Epic E1000 has roots dating back to 2004. Certification efforts began in 2013, with quoted cruise speed as 325 knots and range as much as 1,650 nm. **Jean Marie Urlacher Photo**



“

Turboprop deliveries were up in 2016 with 576 new turboprops sold, representing an increase from 557 deliveries in 2015.”

powerplant, with a maximum useful load of just over 3,500 pounds. Cruise speed is as high as 183 knots, and the cabin volume is 248 cubic feet; a belly pod is also optional. With eight feet less wingspan than the Caravan, the Kodiak manages tighter quarters more easily.

Recently celebrating its 200th delivery, Quest reported 36 Kodiaks were delivered in 2016.

“2016 was Quest's strongest year to-date,” said new CEO Rob Wells. “The company saw increased production levels and deliveries, as the demand for a versatile aircraft like the Kodiak grows. In addition, the increasing demand for Kodiaks required a 25 per cent expansion of the production facility, a project that was completed in September. This

essential investment will allow us to efficiently support production growth in the coming years.”

EPIC E1000

As a planned certificated outgrowth of previous kit airplanes, the Epic E1000 has roots dating back to 2004. Located in Bend, Ore., Epic previously pursued an ambitious single-engine jet and other programs. Following a brief Chinese ownership, the company is presently owned by Russian company Engineering LLC.

Seating six, the E1000 is powered by a Pratt and Whitney Canada PT6A-67A engine, flat-rated at 1,200 shp. Quoted cruise speed is 325 knots, certification is planned to 34,000 feet and range will be as much as 1,650 nm. Because the airframe is built of carbon fibre, the full-fuel payload is quoted to be 1,120 pounds. A three-screen Garmin G1000 avionics deck is planned. The certification effort began in April of 2013 and has resulted in steadily-advancing target dates for completion.

One thing is certain: With the plethora of choices in the turboprop aircraft market, there is a solution to just about every need. This is one segment of general aviation that seems to be holding strong, despite, or perhaps because of, struggling economics. ✚



LeRoy Cook has been writing about aviation subjects since 1970 and is a 50-year flight instructor with 16,000 hours logged. He calls himself “a student of aviation” and continues learning with each flight.



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**BY CHRIS THATCHER
PHOTOS BY COMBAT CAMERA**

Since October 2016, a coalition of Canadian and international special operations forces (SOF) have been supporting Iraqi and Kurdish fighters as they struggle to break the siege of Mosul, Iraq's second-largest city, held by the Islamic State of Iraq and the Levant [also known by its Arabic language acronym, "Daesh"] since June 2014.

Under a program known as "train,

advise and assist," Canadian SOF have been helping the Kurdish Peshmerga develop combat skills to counter a foe that has terrorized their country for the past four years.

Critical to that support has been the demanding work of a Canadian tactical aviation detachment, ferrying special forces, equipment and ammunition between a base camp near Erbil, Iraq, and forward locations, known as "tacti-

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A CH-146 Griffon helicopter flies over an Iraqi village during Operation Impact in Northern Iraq.



cal infrastructure,” from which they have backed the northern approaches to Mosul.

The tactical aviation detachment of CH-146 Griffon helicopters was first deployed as part of Air Task Force-Iraq in May 2016, when the Liberal government chose to withdraw Canada’s complement of six CF-188 Hornet fighters and increase the contingent of special forces dedicated to training. At the time, the aviation role was filled by 427 Special Operations Aviation

Squadron, a highly-specialized unit based at Canadian Forces Base Petawawa, Ont., with vast experience working with special forces.

Last October, that responsibility shifted to 430 Tactical Helicopter Squadron (THS) of Valcartier, Que., which arrived in Erbil with a full complement of aircrews, maintenance technicians, and headquarters staff.

The transition from a squadron dedicated to supporting SOF to one more accustomed to working with the regular

army was markedly smooth. Though most of the coalition members supporting the Kurds are special forces units, the tactical aviation job is not SOF-specific, said LCol Carol Potvin, the commanding officer of 430 THS, who served as the commander of the tactical aviation detachment before handing over to Maj Mathieu Bertrand, the detachment’s operations officer and deputy commander, on Jan. 14.

A line pilot himself, Potvin said the



A Canadian Armed Forces soldier guards his arcs of fire on board a CH-146 Griffon helicopter during an air mobility mission in Northern Iraq.

430 Squadron arrived in Iraq with a team of 60 personnel and four Griffon helicopters.



The door gunner watches vigilantly as the CH-146 Griffon helicopter takes off on a mission.



helicopter role of air mobility was primarily a conventional one. “This is more our bread and butter than SOF, so the transition went well.”

If anything, the helicopter workload of transport and resupply increased as Kurdish fighters intensified operations in advance of the assault on Mosul.

“Our missions didn’t really vary from what 427 was doing, they just got more intense,” said Pierre-Olivier, a Griffon pilot from Quebec making his first deployment. (Aircrew last names are withheld for operational security.) “It’s not a combat mission, but [there was] definitely more movement.”

As with the tactical aviation detachment in Afghanistan, a captain from 430 THS arrived in theatre two weeks ahead of the rest of the squadron to fly with 427 aircrew in order to learn the area of responsibility and ensure an uneventful handover.

430 THS arrived with a much larger footprint than 427, bringing a team of 60 personnel and four Griffon helicopters, one more than the SOF aviators.

“427 rely on [special forces] for many of their logistics and operations,” Potvin said, noting 430 needed a bigger footprint to be largely self-supporting. “We are more robust than 427, but we have more to give as well.”

Thus, the detachment was the beneficiary

of new accommodations designed specifically to meet its needs. Where 427 aircrews and technicians had been co-located with the Canadian special forces, 430 settled into a brand new compound at the end of an airfield near Erbil comprised of hard shelters and a large tent for heavy maintenance.

“We basically designed the camp with the engineers,” Potvin explained. “My [deputy] was charged with making sure the camp was going to meet our requests. We are well equipped. I have to say the flight planning room is bigger than I have in Valcartier.”

Known as Camp Erable, the site is now also home to Joint Task Force-Iraq Detachment Erbil, a headquarters staff of approximately 30 personnel, and a Canadian-led Coalition Role 2 medical facility of about 50 personnel, including physicians, nurses, medical technicians, laboratory and diagnostic imaging technicians, a dental team, and support staff.

The constant whirl of helicopters—day and night—might be jarring to some, but for the tactical aviation personnel who prepare for deployment on exercises by sleeping next to the flight line, the persistent sound of aircraft soon becomes background noise.

MANAGING RISK

With the increase in operational tempo, the air detachment has been flying between two to four missions per day, often combining missions using a forward-located ammunition and refuelling point (FARP) to take on gas without shutting down. Most involve transporting Canadian and coalition special forces to and from forward locations, and resupplying weapons, ammunition, medical supplies, generators and other equipment to small camps.

“Everything they need at their forward tactical infrastructure, we bring it to them and we provide mobility around multiple bases where they operate,” said Pierre-Olivier.

While the detachment is manned to operate 16-hour days without difficulty, Potvin said it “could answer a call for 24 hours a day” if mission critical emergencies required it.

Most missions are received the night before they are flown, allowing the unit’s headquarters planning cell and aircrew about 12 to 18 hours to gather intelligence from sources across the theatre, including the Canada’s All Source Intelligence Cell, and prepare the mission.

Final sign-off rests with Potvin, who must approve each mission tasked by Canadian Special Operation Forces Command or seek guidance from higher headquarters in Kuwait, known as Air Task Force-Impact, which also oversees the air operations of Canada’s CC-150 Polarix aerial refueller and two CP-140 Aurora surveillance aircraft.

“My main job is to manage risk,” he said.

“It is my most important job. I have to make sure we bring everybody back home. So, if the risk is above me to accept, then I go to my higher headquarters, and it could go up the chain to Ottawa to approve.”

Canadian forces in Iraq might not be in a combat role, but each mission contains risk. Most are conducted at some distance from the front lines of the sprawling conflict, but Pierre-Olivier acknowledged that “you never really know when Daesh is going infiltrate where we are flying.”

“We are always vigilant,” he said, noting that the Griffons are well-equipped with an array of self-defence systems and weapons for force protection. “We operate in a way that...we never neglect any suspect actions that we see on the ground.”

As with all conflict zones, operating procedures have been refined to fit the flying

conditions and the threat level, but the “mission profiles” do not differ significantly from what the aircrews fly in training, Pierre-Olivier explained.

“It’s not full spectrum operations, so what we are doing is nothing really new to what we have been trained. The tempo is good enough that we are not overwhelmed with planning. We can plan rapidly and then execute fairly quickly after that. Usually, we train for bigger missions that are more planning-intensive. Here we plan a lot but we know the area of responsibility pretty well, so it does get easier and a little faster as well.”

The major challenge, in fact, is the degraded visual environment generated by the ever-present dust. “You have to be cautious or you will get bitten,” he said of landing in a dust ball. “A dust ball can be an enemy here, as well as power lines—

A CH-146 Griffon helicopter flies over a desert during a tactical flying mission in Northern Iraq.



Most missions are received the night before they are flown, allowing about 12 to 18 hours for intelligence gathering across the theatre.



CH-146 Griffon pilots prepare for a tactical flying mission in Northern Iraq.

The Griffon likes the warm and dry weather, so it is performing well. Although the detachment runs two maintenance shifts, there have been few mechanical issues with the helicopters.



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power lines are everywhere.”

Like many Canadians, the Griffon has proven to be a hardy cold-weather bird that nonetheless performs best in warm climates. Temperatures have cooled significantly in recent months, a mix of modest days and near-freezing nights, but when *Skies* spoke with the detachment, it had seen no rain, almost ideal conditions for the CH-146.

“Like it was in Afghanistan, the Griffon likes the warm and dry weather, so the aircraft is performing very well,” said Potvin, adding that although the detachment runs two maintenance shifts, each working eight to 10 hours at a stretch, there have been few maintenance issues.

“The techs are still quite busy, but sometimes I know they would like the aircraft to break more,” he joked.

Even spare parts, a perennial problem for the Griffon fleet, have been in reasonable supply. Potvin acknowledged keeping the Griffon flying can be a challenge but said 430 THS arrived in theatre with plenty of spares and has been restocked from a regular CC-177 Globemaster III transport flight every few weeks.

While a new and evolving tactical aviation force employment concept calls for Griffons and the CH-147F Chinook to deploy as a combined unit, Potvin said to date the heavy-lift capability of the larger helicopter has not been necessary.

“That is my call. For what we are doing right now, the Griffon is the perfect size. The Griffon is the only utility helicopter in northern Iraq and, so far, [there has been] only one occasion where a Chinook could have been used. On all other missions, two Griffons have been more than enough to do the job.”

For most of the 60 personnel in the tactical aviation detachment, Erbil is their first deployment, an experience that has generated a palpable excitement among the team. “It is something that a pilot trains all his life to do—in fact, we train for worse,” said Potvin, who experienced tours in Bosnia, Haiti and elsewhere. “So [this] is a really good deployment. Everybody truly believes this is a just cause, that we are helping the Iraqi forces to retake the country from Daesh. There isn’t anybody in my detachment that believes we shouldn’t be here.”

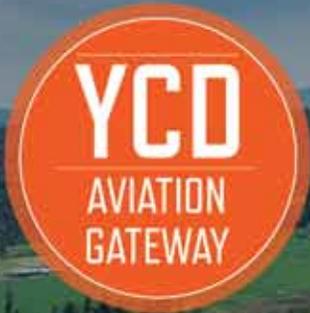
Added Pierre-Olivier: “I’m really proud to be part of a team effort to defeat Daesh. I think it is a fight that is worth fighting.”



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



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PRESSURIZED PISTON cruiser

PIPER'S M350 FARES WELL AGAINST THE COMPETITION, OCCUPYING ITS UNIQUE NICHE AS THE ONLY NEW PRESSURIZED PISTON-ENGINE AIRCRAFT ON THE MARKET.

BY ROBERT ERDOS

Mobility is a highly prized commodity for some busy people, both in business and in leisure. If you're a pilot "on the go," Piper Aircraft's M350 pressurized piston-powered single-engine airplane may be a solution.

Aviation Unlimited, Piper's Canadian sales distributor, brought a brand new demonstrator aircraft, registration C-GBTB, to Ottawa on a sunny autumn day. Isaac Capua and Conrad Hatcher flew the airplane from Aviation Unlimited's base at Oshawa Airport. As it happened, their arrival for our flight proved a good test of the airplane, as the Ottawa airport was under a blanket of fog. It was encouraging indeed to see, or rather hear, the aircraft complete a tough instrument approach and taxi out of the mist for our meeting.

The M350 is the latest development of what was originally Piper's popular PA-46 Malibu; a design introduced in 1983 which ushered in the age of the cabin-class single. The original Continental engine-powered, 310 horsepower (HP) Malibu suffered a number of high-profile engine failures, so Piper rebooted the design with the 350 HP Lycoming-powered Mirage in 1989. The concept for the



The M350 is the latest iteration in Piper's successful PA-46 model line. **Jim Barret/Piper Aircraft Photo**

 Download this as a wallpaper [here!](#)

 Watch the video [here!](#)





Important for the owner-pilot, the M350 has ramp appeal.
Peter Handley Photos



The PA-46 ushered in the age of the cabin-class single.



There are six seats and room for baggage in what Rob Erdos dubs a "serious travelling machine."



The Garmin G1000 avionics suite incorporates impressive flight envelope protection features.

turboprop-powered Meridian was introduced in 1997, featuring a 500 HP Pratt & Whitney Canada PT6A-42A turboprop engine.

In recent years, Piper has invested heavily in its M-Class models, which include the M500 and M600 turboprops, developed from the Meridian, and the M350 piston derivative of the Mirage. The M350 was introduced in 2015, certified as the PA-46-350P, and powered by a dual-turbocharged, fuel-injected 350 HP Lycoming TIO-540-AE2A engine driving a three-blade Hartzell constant speed propeller. The Matrix is the unpressurized version of the M350.

MEET THE M-CLASS

I was pleasantly surprised by the fit and finish of the airplane, perhaps having been biased by so many forlorn old Piper trainers that I've seen parked behind flying clubs. Not so the M350, which looked solid and robust. To my eye, it was swoopy and attractive on the ramp; not a trivial impression for what is almost entirely an owner-flown design.

The pre-flight inspection revealed an airplane that was thoroughly modern and well-conceived. The exterior lights are all light emitting diodes (LED) for improved service life. A small storage compartment in the under-wing radome and another in the tail provide convenient externally-accessible storage for light items. Capua extolled the merits of the M350's optional pneumatic deicing system over competing fluid-based systems.



The pre-flight inspection revealed solid construction and quality workmanship.

Cabin access is quite dignified for a light airplane, with entry via a two-part clamshell door and stairs. I settled into the left seat. Hatcher was my adult supervision in the right seat. The cockpit seats were thoroughly adjustable, and after some fiddling I found it quite comfortable. The headroom was the only disappointment—even for my quite average 5'9" frame, my headset just touched the cabin roof. Hatcher mentioned that a seat modification kit is available to allow up to three more inches of headroom, if one desires. I would.

Our demonstrator aircraft had a basic empty weight of 3,150 pounds, which, thanks to

its generous optional equipment, was 100 pounds over the published standard equipped weight. Adding two pilots, one human and some gear brought the zero fuel weight to 3,730 pounds. The fuel gauges indicated 76 gallons, or about two-thirds fuel quantity, bringing the gross takeoff weight to 4,186 pounds. That left us 154 pounds below the maximum takeoff weight of 4,340 pounds.

Clearly you cannot fill the seats and fill the tanks, but with a published maximum range of 1,343 nautical miles (plus reserve), the 720 pound (120 US gallon) maximum fuel load provides considerable flexibility to trade range for payload.

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“WHERE TO, BOYS?”

We obtained a clearance for a round-robin flight to Kingston, Ont. The start procedure was straightforward for a fuel-injected engine. Nosewheel steering was a bit stiff, with light centering forces, but I quickly made friends with it.

The earlier fog had cleared, and we departed Ottawa’s Runway 07 under a clear blue sky with light winds. Normal takeoffs are performed with 10 degrees of flaps, using a rotation speed of 85 knots indicated airspeed (KIAS). Engaging the Coupled Go-Around feature on the ground preset the flight director for a

wings-level, seven degree pitch attitude. Assuming maximum takeoff weight, the published takeoff distance over a 50-foot obstacle was a respectable 2,090 feet.

Hatcher recommended a 120 KIAS cruise-climb airspeed, which resulted in just over a 1,000 feet per minute rate of climb. Thanks to the turbocharger, one can expect the M350 to maintain its climb performance to nearly cruise altitude.

COMFORTABLE CRUISER

We levelled off at 14,000 feet under ISA+12 degree Celsius conditions and set High Speed Cruise power: 32.0 inches

manifold pressure; 2,470 RPM; with the mixture leaned to 1,560F turbine inlet temperature. The result was 190 knots true airspeed (KTAS) sipping 24.1 gallons per hour fuel flow.

Piper quotes a maximum cruising speed of 213 KTAS, but that would occur at the airplane’s 25,000 foot certified ceiling. Hatcher described “the mid-teens” as good cruising altitudes for the M350.

I mused that it was a pleasant novelty to be so high in a piston single-engine airplane with a cabin altitude of only 1,620 feet, owing to the 5.5 pounds per square inch maximum cabin pressure differential. If that appeals, then your airplane search narrows to the M350, since it’s the only pressurized piston-engine aircraft currently in production.

Hatcher agreed, offering that buyers are often attracted to the pressurization for their passengers’ comfort, as it affords higher, smoother cruise altitudes without need of an oxygen mask. “It trumps the parachute,” Capua added, in reference to the ballistic recovery chute in the competing Cirrus. The M350 can maintain sea level cabin pressure to 12,000 feet.

The cockpit environment in cruise left little to be desired. Owing to the pressurization, air conditioning is standard equipment. Heating and ventilation seemed quite adequate. Under my noise cancelling headset, the big Lycoming purred contentedly. With Garmin’s GFC 700 autopilot smoothly doing the steering, I idly poked my finger into the pulse oximeter on the instrument panel, and was rewarded with the knowledge that I had 98 per cent blood oxygen saturation. Oh, I apparently also had a pulse of 69 beats per minute. Reassuring.

In the event that I wasn’t adequately pressurized with oxygen, a hypoxia recognition system would detect the absence of pilot interaction with the avionics and commence an automated descent to a safer altitude.

The now nearly ubiquitous Garmin G1000 avionics suite includes dual 10.4-inch primary flight displays and one 12.1-inch multifunction display—and a whole lot of capability. Standard equipment in the M350 includes synthetic vision and a yaw damper. I took a stab at loading the RNAV RWY 19 instrument approach in Kingston, stumbling slightly due to my unfamiliarity. Hatcher, coming to my rescue, noted that computer-savvy pilots seem to expect to understand the complex G1000 immediately, musing that, “If you recall fixed-card ADF approaches, I’m surprised that pilots expect to master the G1000 in an hour.” Fair enough.

From there, the avionics simply steered us through the procedure and delivered us at the missed approach point. I just monitored our progress through the synthetic vision system, and was left to manage configuration and power.

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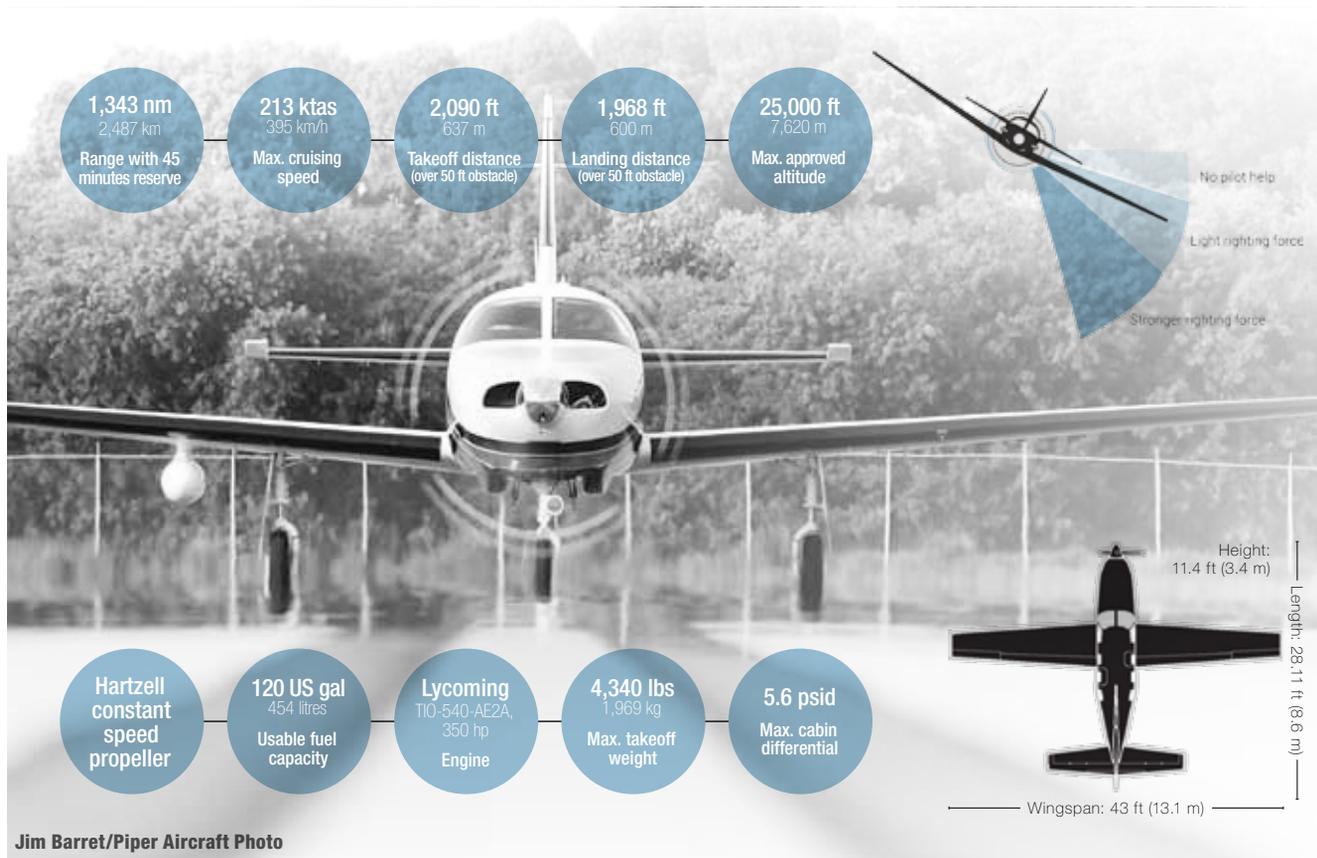


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Jim Barret/Piper Aircraft Photo

Commencing the missed approach is typically a high-workload moment requiring disengagement of the autopilot, but the M350's Coupled Go-Around Mode made it push-button simple. In concert with the Underspeed Protection System, the autopilot remains engaged and protects against excessively low speed while the pilot applies power and cleans up the flaps and undercarriage.

HANDLING, APPROACH AND LANDING

En route back to Ottawa, I took the opportunity to sample the M350's handling qualities. Autopilot disengagements were smooth, typically leaving the airplane in trim. The controls were pleasant, responsive and tight, and would present no undue challenges for a minimally experienced pilot. I found configuration changes transparent, requiring only small trim corrections. Having extended the undercarriage and full flaps, I sampled a few very benign stalls. At our operating weight, the low-speed audio warning activated at 63 KIAS, with only a small and easily corrected left wing drop at 59 KIAS.

The Electronic Stability Protection system provides additional flight envelope protection from roll upsets while hand-flying by automatically engaging servos

to input corrective forces should the pilot encroach upon safe limits.

A further neat Garmin innovation is the big, blue "LVL" (level) button on the instrument panel, which serves as a sort of panic button to quickly return the aircraft to a wings-level attitude with zero vertical speed.

Aircraft owner-pilots rarely fly as much as they would like, and maintaining proficiency is often a challenge. The comprehensive safety features in the M350 go a long way to matching the aircraft to its target demographic. If my opinion on these safety features isn't clear: "Yay, Piper!"

Returning to Ottawa it was quickly time for descent, which is usually a limitation of turbocharged aircraft, as power reductions need to be performed very slowly to avoid shock-cooling the expensive parts. I was pleased to see that the M350 could achieve better than a 2,000 foot-per-minute rate of descent without reducing power, thanks to the combination of wing-mounted speed brakes and the relatively high maximum airspeed (Vne) of 198 KIAS. Likewise, the generous undercarriage and approach flap (10 degrees) extension speed of 165 KIAS help the M350 to slow down when the airport appears.

Far too soon we were landing back on Ottawa's Runway 07, using full flaps and an approach speed (Vref) of 85 KIAS. Turning onto the taxiway, I noticed that I was smiling. That's the best endorsement that I can imagine for an owner-flown airplane design.

THE ENVELOPE, PLEASE

It is heartening to report that there are once again a number of single-engine airplanes on the market. Options include four- to six-place designs, piston and turboprop models, high- and low-wings, with fixed and retractable undercarriage.

The market hasn't been so well served since the 1980s, although today's airplanes are far better in every regard. Piper's new M350 fares well against the competition, occupying its unique niche as the only pressurized six-place single-engine piston aircraft.

The M350 is a light airplane, but it's also a serious travelling machine. Armed with the G1000's impressive capabilities, weather radar and certification for flight into known icing, the result is a virtually "go anywhere any time" airplane for pilots on the go. Mobility problem solved. 



Robert Erdos is a contributing editor for Skies magazine. He is a graduate of the U.S. Naval Test Pilot School and a professional test pilot. Also an aviation enthusiast, his spare time activities include displaying vintage airplanes and flying his RV-6 kitplane.



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IT'S THE **SKIES** THAT BIND

AS CANADA CELEBRATES ITS 150TH ANNIVERSARY THIS YEAR, THE NATION'S AVIATION COMMUNITY WILL BE FRONT AND CENTRE, HIGHLIGHTING AN INDUSTRY THAT STRENGTHENS, CONNECTS, AND SUSTAINS OUR DIVERSE POPULATION.

BY BEN FORREST





A viation is younger than the land. It is younger than the Rocky Mountains or the Canadian Shield or the Prairies or the Niagara Escarpment. It is younger than the peoples who have lived here for millennia, younger than the forests and the railroads and the fisheries and the farming communities that rose out of the soil.

But aviation is not much younger than Confederation—the union of New Brunswick, Nova Scotia and parts of present-day Ontario and Quebec in 1867 that laid a foundation for the Canada we know today.

The Wright brothers' first flight came just 36 years later, and as aircraft and pilots grew in sophistication a Canadian industry grew with them, playing a vital role in building, connecting and sustaining the second-largest nation in the world.

So it is fitting that as Canada prepares to mark the 150th anniversary of Confederation this year, its aviation community will be front and centre. Dozens of celebrations are being planned, channeling the same boldness and ambition that fuelled the industry's evolution and the evolution of Canada as well.

WINGS OVER THE NORTH

There are few bolder or more ambitious projects for Canada's sesquicentennial than the Canadian Arctic Aviation Tour, a series of airshows that aims to visit 97 communities across Northern Canada starting on June 2.

Forty-seven of the shows will be "wheels-on-the-ground," meaning aircraft will be able to land and spend time in the communities where they perform. The remaining shows will feature acrobatic displays overhead and show personnel arriving via ground transportation.

A core group of four aircraft is expected to perform in every show, including Harmon Rocket and F1 Rocket kit-built planes flown by Team Rocket, an acrobatic duo made up of Ken Fowler from Rocky Mountain House, Alta., and Eric Hansen from Cold Lake, Alta.

There will also be two other acrobatic planes flown by pilots from Rocky Mountain House: a Sukhoi 26 flown by Jerzy Strzyz and a Burt Rutan Long-EZ flown by Kyle Fowler.

Two Second World War-era Harvard aircraft from the Yellow Thunder Harvard Formation Team of Ponoka, Alta., are expected to perform in the tour's Eastern Canada leg. The pilots will be brothers Drew and David Watson.

The remaining shows will feature performers that vary from community to community, along with educational programs that invite show attendees to think about how the North fits into the future of Canada.



Watch the video [here!](#)

The Canadian Forces Snowbirds will fly over Parliament Hill on Canada Day and will play an essential role in the sesquicentennial celebrations. **Mike Reyno Photo**

Aerobatic pilot Jerzy Strzyz of Rocky Mountain House, Alta., is scheduled to fly his Sukhoi 26 in all stops on the Canadian Arctic Aviation Tour. **Aerophoto International Photo**



“We are also working very closely with organizations with regard to promoting aviation careers,” said Nancy McClure, president of the Canadian Arctic Aviation Tour.

“That is going to be a big focus for us: talking about the ability for communities in Northern Canada to be able to, I guess, grow their own.

“How can we make sure that pilots, AMEs [aircraft maintenance engineers], etc., are able to be enthused about not only taking on those careers, but being able to stay where they’re from in order to keep those jobs covered, as opposed to companies in the North having to bring in people who have no interest in staying there?”

A team of three core volunteers will travel to all 97 airshows, linking with local volunteers who will help make each show unique. Some local additions may be as simple as a community barbecue in conjunction with the airshow, while other communities will link their airshow with larger events, such as the Midnight Sun Fly-In, a float plane festival in Yellowknife, N.W.T.

“Each one is different,” said McClure. “Some of them are doing this as an opportunity to showcase some of their tradi-

tional art and traditional dance, etc.

“So [in] each community, it is a unique secondary event that is based on what they want it to be, and I would say that is all volunteer-driven.”

Five main shows are planned for Yellowknife, N.W.T.; Whitehorse, Yukon; Iqaluit and Baker Lake, Nunavut; and Churchill, Man. They will be similar to any airshow in Southern Canada, said McClure.

The tour is being funded with contributions from federal, territorial and municipal governments, as well as corporate sponsorships, and through online crowdfunding.

“In order to bring anything into these locations, you’re going to be bringing it in by air,” she said. “So if you’re going to be doing that, this is something that we can use to make aviation a celebration.”

VIMY FLIGHT

Canada’s sesquicentennial falls in the same year as the 100th anniversary of the Battle of Vimy Ridge, arguably the nation’s most celebrated military victory and one seen as a defining moment in its history.

Aerial photographs informed the creation of new maps that guided members of the Canadian Corps who captured the ridge in northern France



Nieuport XI replica Scout aircraft are slated to fly over the Vimy memorial in France on April 9 to mark the 100th anniversary of the Battle of Vimy Ridge. **Lyle Jansma Photo**



Bob and Steve Dengler, along with Rob Dugal MacDuff, are celebrating Canada's 150th birthday by trying to become the first Canadians to circumnavigate the globe in a helicopter. Hockey hall of famer Guy Lafleur is also scheduled to join them for part of the journey. **Mike Reyno Photo**

in April 1917. Men from all regions of Canada are said to have been represented at the battle, where 3,598 Canadians died and another 7,000 were wounded.

BGen A.E. Ross, who commanded the 28th (North-West) Battalion at Vimy, famously said: "In those few minutes I witnessed the birth of a nation."

To mark the 100th anniversary of the battle on April 9, four Nieuport XI replica Scout aircraft and two Sopwith Pup replica biplanes are slated to fly over the Vimy memorial in France.

The Nieuports belong to an organization of former Canadian military pilots known as Vimy Flight, which plans to tour them across Canada after the anniversary and participate in Canada 150 celebrations in Ottawa on July 1. The Sopwith Pups, which are being built at the Canadian Museum of Flight in Langley, B.C., are also slated to join the nation-wide tour.

"Pride is more of an American word than a Canadian word, but [Vimy is] something to stand tall about," said Allan Snowie, team lead for Vimy Flight. "You don't celebrate war, but the achievements by our young men and quite a few young nursing sisters in those days were extraordinary."

Vimy Flight grew out of a larger Canadian Heritage-supported project called *A Nation Soars: Commemorating*

Canada's Great War Flyers, which is anchored by a trilogy of one-hour documentaries from Ottawa-based Sound Venture Productions.

Vimy Flight Nieuports are featured in key flying sequences of the first two documentaries, *Drawn to Victory* and *Wings of Courage*.

The third documentary, *Flight Path of Heroes*, will focus on the Canadian Corps' stunning victory at Vimy. A film crew

will follow Vimy Flight during its visit to France, and footage from the trip will be included in the documentary.

"If we want to understand the world today, we've really kind of got to get a good sense to know and remember what truly happened in the past," said Tim Joyce, president and CEO of Sound Venture Productions.

"As we live through this centenary of



Team Rocket, an aerobatic duo made up of Ken Fowler from Rocky Mountain House, Alta., and Eric Hansen from Cold Lake, Alta., will participate in all stops on the Canadian Arctic Aviation Tour. **Ken Fowler Photo**

North American Harvard Mk IV aircraft, pictured here with the 2016 RCAF Demo Hornet, will take part in several sesquicentennial events this year.
Mike Reyno Photo



1914 [to] 1918, there's a great opportunity and I think even an obligation for people who are willing to go for it, to make sure Canadians do not forget."

MILITARY

The Royal Canadian Air Force (RCAF) CF-18 Demonstration Team will make its usual tour of airshows across the country this summer, with a new paint scheme inspired by the official Canada 150 logo.

The creative concept features a stylized maple leaf that appears in several variations on the body of the aircraft, most prominently on the wings and tail. The cockpit, wings and tail are mostly red, with white accents on the nose, wingtips, tips of the tail, and the aircraft's belly.

A Canadian Forces Snowbirds CT-114 Tutor aircraft will also be painted with the Canada 150 logo and used in static displays this year. Both the CF-18 Demo Team and the Snowbirds are slated to fly over Parliament Hill on Canada Day, and the CF-18 Demo Team is to take part in the Yellowknife stop on the Canadian Arctic Aviation Tour.

"The RCAF already has a special bond with so many Canadian communities, especially those that contributed so much

to Canada's air training program that helped lead the Allies to victory in the Second World War," said Maj Holly-Anne Brown of RCAF Public Affairs.

"The 150th gives us a great opportunity to be a part of their celebrations, to further strengthen that connection, and we're really looking forward to it."

"I think it's important to remember that Canada is still a very young country, and we have done amazing things in such a short period of time," said Maj Scott Spurr, a fellow RCAF public affairs officer.

"And who knows what we're going to be doing for the future, but whatever it's going to be, you can guarantee the RCAF is going to play a major role, or certainly a big part in it, just because of the nature of what we do."

HARVARDS

The Canadian Harvard Aerobatic Team, based in Woodstock, Ont., is a tribute to Second World War veterans that plans to participate in several venues during Canada's sesquicentennial.

They include the Norseman Festival in Red Lake, Ont., in July and plans to take part in the Canadian International Airshow in Toronto.

Team coordinator and wingman Dave Hewitt has been flying Harvards for 27 years and performing formation aerobatics in Harvards for 17 years. The aircraft's significance to Canadian history, particularly as an advanced trainer during the Second World War, is not lost on him.

"It's a huge, huge role," he said. "Not only is its design an awesome trainer, it developed very good pilots, being nicknamed the 'pilot-maker.'"

PORTER AIRLINES

Porter Airlines is celebrating Canada's 150th anniversary with a special colour scheme on two of its Bombardier Q400 turboprops. Porter is the official Canadian airline for the celebrations and will provide flights for artists and promotions.

The aircraft will have custom designs on their tail sections featuring Porter's fun and recognizable raccoon mascot, as well as the Ottawa 2017 logo. These planes will fly throughout Porter's network of 23 destinations in Canada and the U.S.

All 29 Porter aircraft operating this year will also have Ottawa 2017 decals beside their boarding doors.

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150th birthday,” said Robert Deluce, president and CEO of Porter Airlines. “Porter proudly embodies the modernity and founding spirit of Canada, so this partnership is a perfect fit for us.”

CANADA 150 GLOBAL ODYSSEY

When Bob Dengler received the first Bell 429 helicopter delivered in Canada in September 2010, he began thinking about using it to circumnavigate the globe.

He faced a few setbacks, including chemotherapy, that affected his ability to plan the trip. But now, at the age of 76, he’s ready to go.

“We’re still forging ahead,” said Dengler, who lives in Aurora, Ont., and is the founder of Dynatec Mining. “I’m back to normal, and we’re gangbusters on getting this whole thing put together for the first of July.”

In conjunction with the 150th anniversary of Confederation, Dengler and his son Steven, along with former Bell 429 test pilot Rob Dugal MacDuff, plan to fly more than 37,000 kilometres around the northern tip of the globe, visiting every Canadian capital city along the way.

If successful, it’s believed they will be the first Canadians to circumnavigate the globe in a helicopter.

The journey is set to begin July 1 in Vaughan, Ont., before touching down in Ottawa and Montreal. Then they’ll visit all four Maritime provinces before moving on to northern Quebec, Nunavut, Greenland, Iceland, Scotland,

Ireland, England, France, Germany, the Czech Republic, Poland, Belarus, Russia, Alaska, Yukon, British Columbia, Alberta, the North West Territories, Saskatchewan, Manitoba and Ontario before finishing up at the Bell helicopter plant in Mirabel, Que.

Canadian astronaut and physician Dr. Dave Williams and Hockey Hall of Famer Guy Lafleur are both scheduled to ride along for portions of the journey.

In total, the project is expected to last 35 to 40 days and will include several stops at locations important to Canadian history, including the Vimy memorial in France, where the pilots intend to place a wreath.

There will also be a stop in Baddeck, N.S., the site of the first airplane flight in Canada; and Signal Hill, N.L., where the first radio transmission across the Atlantic Ocean was received in 1901.

“One of the big appeals is, there’s been no other Canadian ever do it, so why not?” said Dengler.

“But the other thing is to tie it in with Canada’s 150th birthday, and kind of bring Canada a little more presence in the world in terms of our aerospace achievements.”

THE NEXT 150

Many have noted the importance of the railroad in helping create the Canada we know today, linking East with West and making possible the efficient flow of food and other supplies.

Some would say aviation is just as important in linking North with South, a role that is not expected to diminish any time soon.

“If we talk about aviation building the North, the need for aviation has not decreased,” said Nancy McClure, president of the Canadian Arctic Aviation Tour.

“It has now increased, and its profile in the North is going to become larger, not smaller.”

As Canada’s aviation community celebrates the first 150 years of Confederation, it has an opportunity to think about the role all citizens will play in the next 150 years.

“For some people in Canada, the last 150 years isn’t necessarily something they want to celebrate,” said McClure. “So we have to acknowledge that, but then we have to move forward.”

“So let’s see, how will that look, moving forward?”

- With files from Andy Cline



Ben Forrest is assistant editor of Skies magazine. Before joining Skies in 2015, he spent the better part of 10 years in the newspaper industry, where he worked as an editor, sports editor and general assignment reporter.



Kyle Fowler of Rocky Mountain House, Alta., will fly his Burt Rutan Long-EZ aircraft across Northern Canada as part of the Canadian Arctic Aviation Tour. **David G. Shultz Photo**

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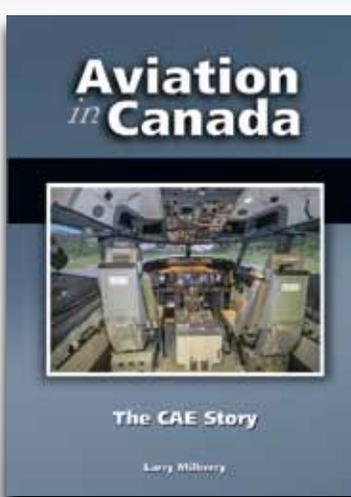
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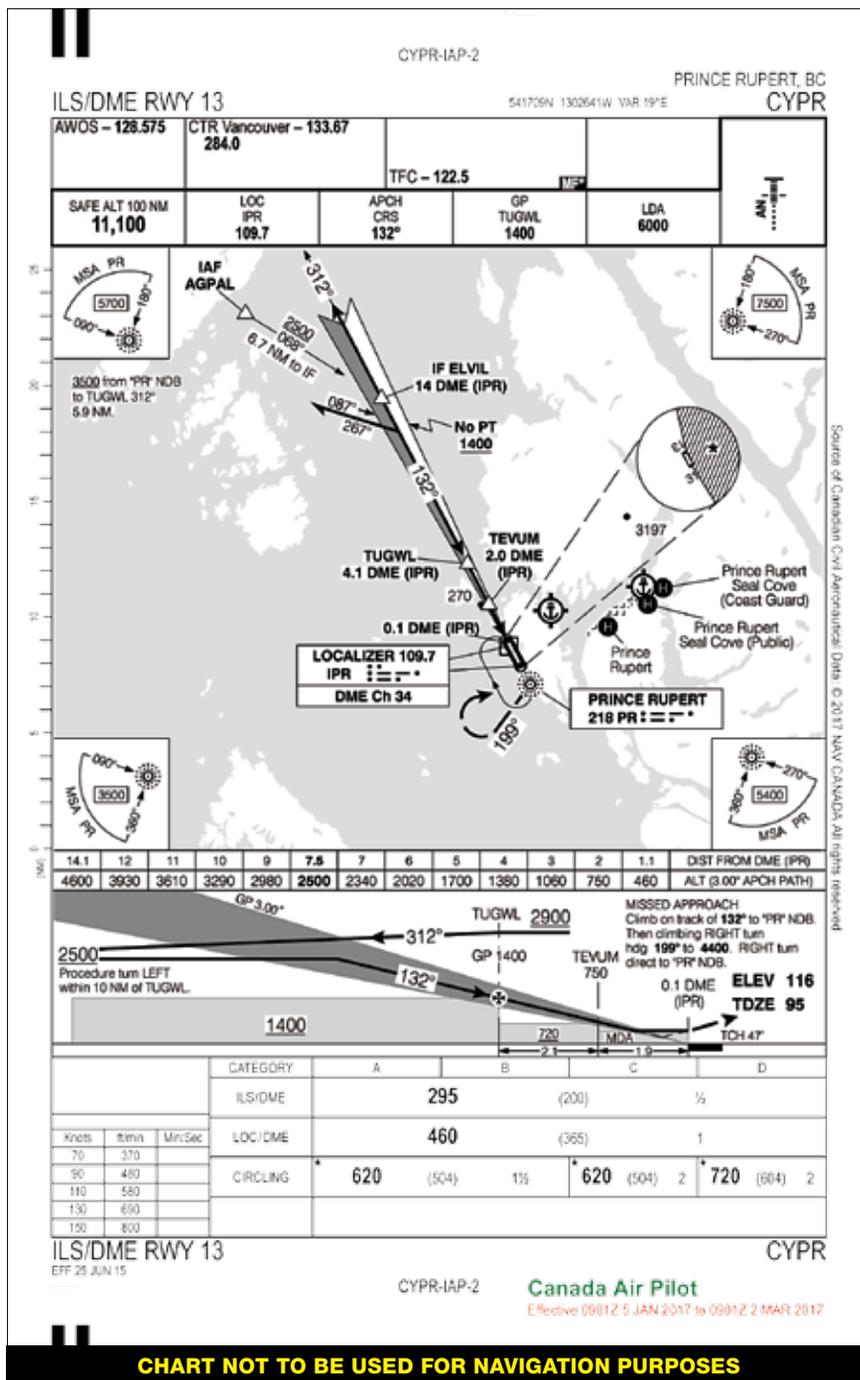
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Sharpen your IFR skills

BY JOHN MONTGOMERY



Test your instrument flight rules (IFR) proficiency and sharpen your piloting skills with this exclusive *Skies* feature!

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1. What are the equipment requirements needed to conduct this approach?
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4. How is the missed approach point determined when conducting the LOC/DME approach?
5. What would be your considerations if conducting a circling procedure for RWY 31 with an IAS of 100 knots?
6. Calculate the alternate minima for an aircraft conducting the LOC/DME approach to a planned straight-in landing on RWY 13.

John Montgomery 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.

CHART NOT TO BE USED FOR NAVIGATION PURPOSES



Meet Paul Gilmour, Co-owner, Precision Aero Components Inc.

BY LISA GORDON

When Paul Gilmour and his family came to Canada from England in 1963, they'd sometimes pack a lunch and drive from their home in Hamilton, Ont., to Toronto's Pearson Airport, where they'd watch airplanes from the old observation deck on top of the Terminal 1 parking garage.

That much-loved plane spotting hangout is long gone, but the experience kindled Gilmour's lifelong passion for aviation. This year, he celebrates 43 years in the business and a career in aircraft maintenance that has taken him north, south, and to many points in between.

Today, Gilmour is co-owner of Precision Aero Components Inc. in Mississauga, an aviation components repair facility he started with business partner Tony Di Vincenzo in 1993.

But back in 1974, Gilmour was a high school grad who heard about an aircraft maintenance apprenticeship at the Hamilton Flying Club. Although he'd never taken mechanics in school, "I called the flying club and four days later I had a job under AME John Davis."

Davis was a stern taskmaster who didn't suffer fools gladly. Under his tutelage, Gilmour learned his craft from the ground up. "The first week all I did was take a rag and some Varsol and clean up oil spots under the engines on the hangar floor."

It was Davis, in fact, who imparted some advice that Gilmour never forgot when he signed out an aircraft: "If you'd park your

own butt in that airplane, then it's safe."

After completing his apprenticeship, Gilmour headed off to the one-year aircraft maintenance engineer (AME) program at Centennial College. Since he'd already done his placement at the flying club, he was an attractive prospect for Austin Airways of Timmins, Ont., which head-hunted him out of college.

"I wrote all my AME exams in one morning at Transport and I didn't leave until they gave me my licence on the spot," he said. "The next thing I knew, I was driving to Timmins. Six weeks later, I was in a place called Nakina looking after a Beaver and an Otter."

Gilmour's career may have gotten started in the North, but it's taken him far and wide. From Timmins he went on to work in many places, including Thunder Bay, Toronto, Birmingham, Ala., and St. Croix in the U.S. Virgin Islands.

He's ventured beneath the cowlings of all manner of aircraft, from the flying club's little Cessna and Piper trainers to McDonnell Douglas DC-10 and Boeing 737 jets belonging to Canadian Pacific Air Lines.

When asked if he is partial to one type, he doesn't hesitate. "The Twin Otter is one airplane I really knew well. It still is kind of my favourite."

In 1993, while Gilmour was in between jobs, a chance meeting with Di Vincenzo led to the founding of Precision Aero Components.

"I came from the AME side and he

came from the purchasing and sales side," Gilmour told *Skies*. "We shook hands, met for lunch and we started it."

Today, Precision employs 12 people and delivers component repair and overhaul services to operators and aviation parts companies in North America, Australia, Europe, India, Africa and Greenland. Canadian customers from coast to coast include EVAS Air, Provincial Airlines, Voyageur, Air Georgian, West Wind Aviation, Porter Airlines, Jazz Aviation, Air Inuit and Central Mountain Air.

"We do fuel pumps, starter generators, electrical components, fuel boost pumps, GCUs, power panels, blowers, motors, hydraulic steering units, landing gear and pneumatic components. You name the aircraft, we work on it," said Gilmour.

Through the years, capabilities have been expanded upon customer request. While the initial focus was on starter generators, Gilmour said they would simply ask their clients what else they needed done.

"We'd go and ask them what they were having problems with and we'd help them fix it. We pride ourselves on that."

Gilmour has even spoken about the care and maintenance of starter generators at Bombardier Q400 operator conferences, due to the fact that generators maintained by Precision are realizing an impressive 1,600 hours between overhauls.

Now, he is the one who gets to pass on his knowledge to up and coming AMEs.

"If they have that passion, I tell them to stick with it. The best mechanic is the one who would take lawnmowers and go-carts apart at six years old. You can't teach that desire."

Looking back, Gilmour said he wouldn't do anything differently.

"I always went for something my gut said was right. It wasn't always about more money."

He's looking forward to the future at Precision. "It's something Tony and I started and we're very proud of it. We've found good people that we don't have to supervise every day."

These days, Gilmour, 60, is also contemplating retirement on his country property west of Toronto. He and his wife, Leslie, are currently building a barn to house their future equestrian farm.

"That's part of our retirement. I can play, fix fences, she can instruct on horses. We won't have to come into the city anymore."

But he knows he'll still look up every time he hears a plane fly over his farm.

"There's just something about airplanes. That's something you're born with and I don't know how you instill that in people, other than to say we need to get kids out of the basement and away from the video games and get them out to the airport." ■

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