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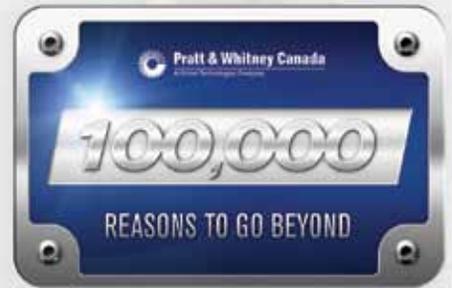
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Likened to a flying luxury SUV, Diamond Aircraft's new DA62 boasts seven seats, twin-diesel fuel efficiency, and a stylish yet rugged all-carbon composite airframe. *Skies* test pilot Rob Erdos finds the new light twin shines where legacy piston twins were weak. **Eric Dumigan Photo**



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Stuart Sanders Photo

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Come together, right now!

BY RUDY TOERING

Something different is happening in Abbotsford, B.C., this August. And, if my guess is right, it will begin to change the way the government—and Canadians—view aviation and aerospace.

The Canadian Business Aviation Association's (CBAA) national convention and trade show, CBAA 2017, Aug. 9 to 11, will be held in conjunction with AIAC Pacific's Aerospace Defence and Security Expo (ADSE) and the Abbotsford International Airshow. We will share opening and closing ceremonies, exhibition halls and have ringside seats at the renowned Friday night twilight airshow.

We expect over 1,000 aviation leaders, representing business, defence and government operations, to be part of this collaborative and exciting opportunity. With Abbotsford as the centre of Canadian aviation for that week, we have a unique opportunity to build partnerships and alliances with colleagues in related aviation sectors.

I am confident that everyone who joins us in Abbotsford will have a one-of-a-kind experience that will fulfil their passion for aviation and feed their drive to constantly improve and grow their businesses and careers.

As successful as I am sure this shared event will be, I believe that its greatest achievement will be its legacy. With different segments coming together, we've built a bigger tent.

Each of our sectors makes a tremendous individual contribution to Canada's economy. Business aviation, combining operations and manufacturing, generates \$10.7 billion and more than 43,000 highly skilled, high-paying jobs. The impacts of other aviation segments are equally impressive and key to Canada's current and future economy.

However, as someone once said "quantity has a quality all its own," and that is never more true than when

one is working to effect real change by demonstrating the importance and contributions of their industry.

As individual sectors, we have unique issues, of course. Business aviation wrestles with regulations that were designed for long-haul international carriers, equitable access to airports and airport services, and other challenges unique to our sphere. I am certain that my colleagues in defence and aerospace have their own unique challenges as well, and each of us deals with them on behalf of our constituencies.

By necessity, too many of our interactions with government deal with the issue of the day—we're trying to put out fires while constantly reminding officials about the bigger picture, and what's at stake if their actions hurt business aviation. It's an arduous process that frequently gets bogged down by outside factors like resource shortages or inexperienced decision-makers at government departments. You can get lost in the weeds.

Since there are issues that affect many aviation sectors equally, one solution

lies in working together towards a common goal. With a few strategic shared messages—for example, the importance of supporting Canada's reputation as an innovator in aviation manufacturing and technology—we can attract more government, and public, attention.

Shining a brighter light on the positives in aviation can also help us collectively deal with one of our greatest challenges: labour shortages.

The situation is already becoming critical and we have yet to find a complete answer. Pilot shortages may get the most attention, but they are the tip of the iceberg. Business aviation needs dispatchers, mechanics, engineers, designers, trainers and more.

CBAA has been promoting careers in business aviation with scholarships for aviation students and employees, including pilots, schedulers and dispatchers. We're also getting our arms around the size of the problem with a new Compensation Survey being done this summer. But there's more that can be done.

We need a cohesive and collective effort. First, we need to focus the attention of potential employees on the excitement and opportunities that an aviation career offers—and we have to break away from old paradigms. To succeed, we must attract more women to work in every aspect of aviation, from pilots to aircraft designers, engineers, mechanics and beyond. Not "because it's 2017," but because it makes good sense.

I think coming together in Abbotsford is the start of a new opportunity to lever our shared passion and strength, and change the way people think about aviation. I urge everyone to join us this August as we embark on what I think will be an exciting journey together. I hope to see you there.

Rudy Toering is president and CEO of the Canadian Business Aviation Association (CBAA).

“To succeed, we must attract more women to work in every aspect of aviation, from pilots to aircraft designers, engineers, mechanics and beyond.”

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Unfriendly skies: Thuggery, nanofonts and Yoda

BY KEN POLE

Indulge my twisted whimsy, but is there a plot to make air travel as unpleasant as possible? A spate of recent incidents seems to justify the question.

United Airlines grabbed global attention with the forcible removal of a paid passenger from an overbooked flight after he refused to give up his seat to an airline employee who was trying to make a layover connection.

Dr. David Dao, returning home to Kentucky from California via Chicago, was dragged from the cabin by uniformed airport police. No Tasers (RCMP take note), pepper spray, SAP gloves, handcuffs or leg-irons were employed—just official thuggery.

United CEO Oscar Munoz initially called Dao “disruptive and belligerent” but after other passengers’ smartphone videos erupted on social media, Dao received undisclosed compensation. I bet it’ll be some time, if ever, before he flies the “friendly skies” again.

Toronto lawyer Ben Carino, an associate with McCague Borlack LLP, notes that liability for personal injury aboard international flights is governed by the Montreal Convention, the principles of which are incorporated into Canadian law by our 1985 *Carriage by Air Act*.

However, the convention effectively limits the definition of “injury” to bodily harm. While it’s harder to prove, maybe it shouldn’t be; the psychological stress from my aforementioned suspected plot is increasingly manifest in unpleasantness.

Rather than learn from the Dao mess, United doubled down, pointing out that passengers who shot videos had violated its policy of no photography except for “personal events.” Many carriers have similar policies somewhere in their literature but in illegible nanofonts.

Then, after video of a baggage fee dispute went viral, United said its agent’s

behaviour did “not reflect the positive customer experience we strive to offer.” To paraphrase Jedi Master Yoda: “Strive not. Do—or do not. There is no strive.” In other words, talk is cheap.

Then there’s the recent British Airways computer system failure caused by a power surge, stranding 75,000 passengers over a long weekend. European Union rules required compensation of some 61 million Euros, not including hotel costs. Delta, Lufthansa and Air France also have had outages, albeit shorter, in the past year.

Let you think this is a rant about foreign carriers, it should be noted that Canadian operators have had their own incidents.

Not that long ago, an Ontario couple, having bought Air Canada tickets two months in advance, were told at check-in that they had been bumped due to overbooking. The next flight was 12 hours later. The airline did issue meal vouchers and cheques for \$800 each, but the delay cost the couple a non-

refundable US\$200 for a missed night at their destination.

So why do airlines overbook? Because they can, trying to ensure every seat is sold because some passengers also book other carriers. The economics are dodgy. At what point do compensation costs offset revenues?

Air Canada says bumping is rare and the Canadian Transportation Agency (CTA) seems to bear that out, having received 55 overbooking complaints in 2015-2016, less than four per cent of all air travel complaints. But I wonder how many frustrated passengers were unaware they could formally complain or simply couldn’t be bothered?

In the immediate aftermath of the Dao incident, Transport Minister Marc Garneau said the government’s position is that “when a passenger books a ticket, they are entitled to certain rights.” A short time later in the House of Commons, he introduced Bill C-49, an eye-watering collage of amendments to the *Canada Transportation Act* and nine other statutes.

Among other things, it would require carriers to inform passengers in “simple, clear and concise” language about carriers’ responsibilities, compensation levels, and any “other obligations” the minister may choose to highlight.

The CTA plans to “consult widely with Canadians, consumer rights organizations, industry, and experts,” a process expected to take two to three months. Much depends on how quickly Parliament processes C-49, but don’t expect the regulations to be in effect until at least 2018.

In the meantime, brace yourself for more madness. Too bad Robin “Mork” Williams and George Carlin are no longer with us. ❧

“So why do airlines overbook?
Because they can, trying to
ensure every seat is sold
because some passengers
also book other carriers.

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- Keith Christensen, Owner, Christensen Industries
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Fighting fatigue

BY TONY KERN

As adults, we've known this simple truth for years: Telling young people not to do things just doesn't work.

We lecture them and we tell them how much harm they can do to themselves and their futures, but their natural drives eventually take over. We can no longer tell them "just say no." We have to make protections available.

No, I'm not talking about the sexual habits of our teenagers. I'm referring to the work habits of aviation professionals, specifically related to human performance enemy No. 1: fatigue.

For the most part, the industry approach to eliminating fatigue is to simply counsel getting enough sleep—a wise course of action, to be certain. But this is only a partial solution to a very real problem. Simply stated, many people don't get enough sleep every night, and often report for work in a compromised state, or get there by the end of a long day or night shift. Fatigue programs need to provide tools and techniques for the times when people choose—or are forced to—work in a fatigued state.

The impact of fatigue is undeniable in our industry. In 2009, Robert Sumwalt, U.S. National Transportation Safety Board vice-chairman, said at a Federal Aviation Association (FAA) symposium that, "In the last 16 years, fatigue has been associated with 250 fatalities in air carrier accidents."

An FAA study by Jeffrey H. Goode, titled, "Are pilots at risk of accidents due to fatigue?" examined 55 human factors-related aviation accidents from 1978 to 1999 and concluded that accidents increased proportionally to the amount of time the captain had been on duty. The accident proportion relative to exposure proportion rose from 0.79 (one to three hours on duty) to 5.62 (13 or more hours on duty). This means that, "For pilots with 13 or more hours of duty, the proportion of accident pilot duty periods is over five

and a half times as high."

The FAA fact sheet on pilot fatigue lists a three-pronged approach to combat the problem: rest, duty, and flight time. The message is clear: "Don't work when fatigued."

But what about everyone that does? What about the pilot who doesn't get a decent night's sleep after crossing four time zones and still reports for duty? Or the mechanic who agrees to work a double shift to get the jets out on time? What guidance do we have for the tens of thousands of workers who show up every day in our industry after a bad night's sleep?

Over the past few years, we have developed a Fit4Duty program that fills this gap, and here are a few starting points for those who choose to—or are forced to—work when fatigued.

1. **Don't increase your tolerance for error.** Fatigue makes us moody, crabby, and lowers our vigilance. Expect this and don't succumb to lowering your standards.
2. **Do the hard stuff first if you have a choice.** Know that routine, proficient tasks are less susceptible to fatigue—new and complex tasks are more susceptible.

3. **Be aware of how sleep debt and time of day affects fatigue.** Most of us need around eight hours of sleep per day. If you're getting less, track it and realize that even one good night's sleep doesn't allow you to catch up. Many studies have shown that most major workplace incidents happen between 12 a.m. and 6 a.m. and between 1 p.m. and 3 p.m. due to the circadian cycles of our bodies. We tend to be naturally tired during these times of day, so whenever possible, schedule safety sensitive tasks to occur outside these times and increase your margin for error. Ask a buddy to double check your work.

4. **Use the tools you have been given (checklists, task cards, etc.)** The end of a 16-hour day is *not* the time to do something from memory, no matter how familiar you think you are with the task at hand.

5. **Break the work up into pieces and mini-tasks.** Fatigue may be temporarily overcome by performing brief tasks that last between two and five minutes. Take a "one step at a time" approach to large or complex tasks.

Hopefully, in time, regulators and organizations will come around and admit the truth. Telling people to get enough sleep just isn't good enough when it comes to dealing with the fatigue challenge. ■

Editor's note: In Canada, the federal transport minister has proposed changes to the Canadian Aviation Regulations that are aimed at improving passenger and flight crew safety by outlining a new approach to fatigue risk management. The proposed changes are controversial, with some segments of aviation arguing that regulations designed for the long-haul airline industry do not fit all operator models. All parties are encouraged to provide feedback on the draft regulations until Sept. 29, 2017.

“Fatigue programs need to provide tools and techniques for the times when people choose—or are forced to—work in a fatigued state.

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LEFT: Check out this amazing shot of the Canadian Warplane Heritage Museum's Avro Lancaster bomber, taken by photographer **Eric Dumigan**. For a limited time, the Lanc features a special wrap that commemorates the Ruhr Express, the first Canadian-built Lancaster bomber.

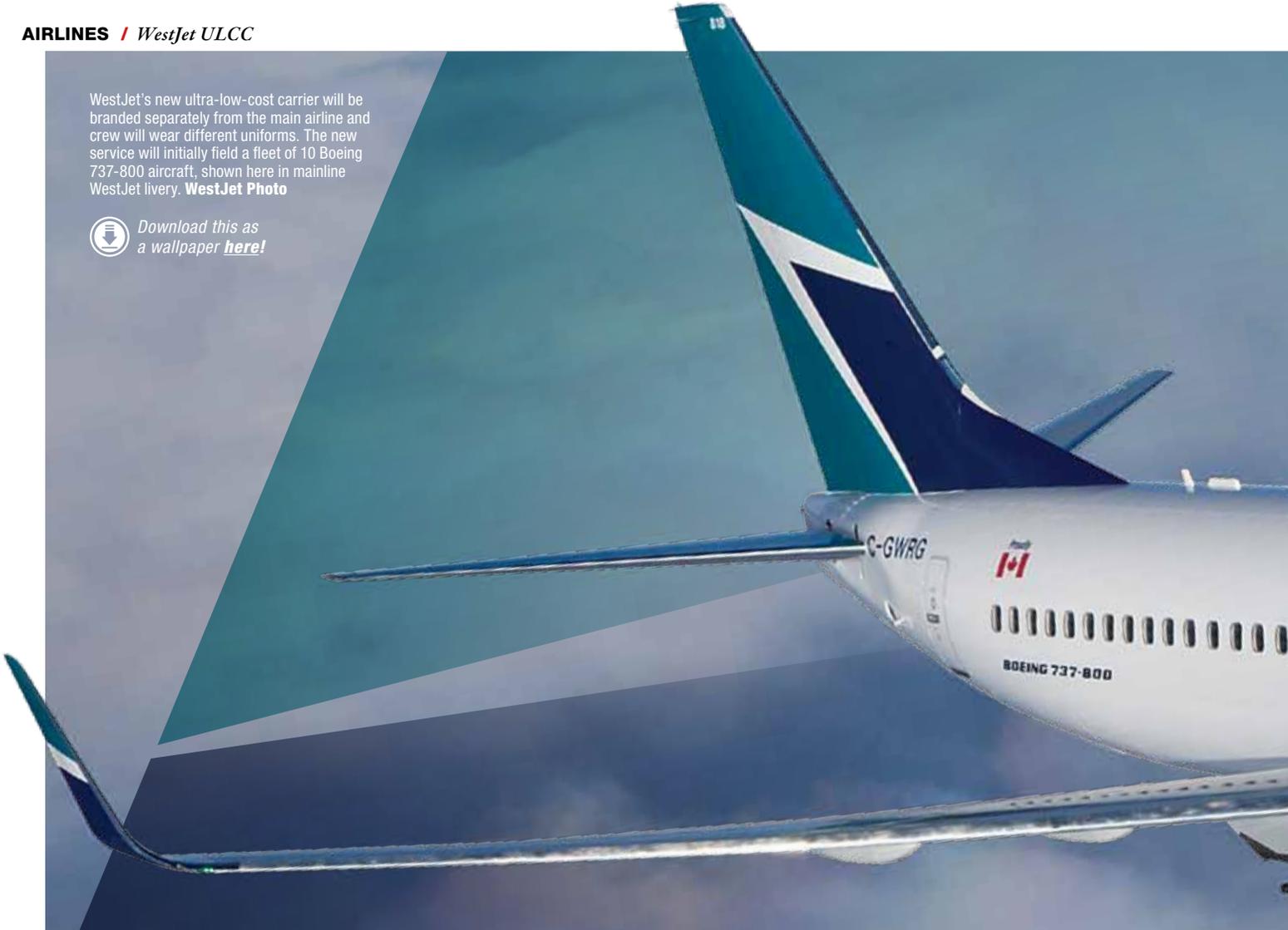
TOP: Raw power: A CF-188 Hornet from 401 Tactical Fighter Squadron returns to 19 Wing Comox, B.C., after a local sortie. **Stuart Sanders Photo**

ABOVE: Quebec charter airline Chrono Aviation proudly celebrated Canada's 150th birthday with a commemorative paint scheme on its Beech 1900D. In honour of the "soldiers, heroes and characters who have marked our history," each maple leaf honours an exceptional Canadian. **Martin Couturier Photo (yqbaviation.com)**

WestJet's new ultra-low-cost carrier will be branded separately from the main airline and crew will wear different uniforms. The new service will initially field a fleet of 10 Boeing 737-800 aircraft, shown here in mainline WestJet livery. **WestJet Photo**



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



WESTJET GOES “CHEAP & CHEERFUL”

AIRLINE'S NEW ULTRA-LOW-COST CARRIER
PLANS TO ANNOUNCE ROUTE STRUCTURE IN LATE 2017.

BY BRENT JANG



WestJet Airlines Ltd., which launched in 1996 as a discount carrier, wants to be a disruptor again.

Calgary-based WestJet announced plans in April to begin service with its own ultra-low-cost carrier (ULCC). Plans call for the initial deployment of 10 narrow-body Boeing 737-800s.

“The new ULCC will provide Canadians with no frills, lower-cost-level travel options while broadening our growth opportunities and opening new market segments,” WestJet president and CEO Gregg Saretsky said during a conference call with industry analysts.

The circumstances in 2017, however, are much different than in 1996. Back then, WestJet emerged as a low-cost alternative to the two major carriers—Air Canada and Canadian Airlines International Ltd.

This time around, Air Canada and WestJet are the two major airlines in the country. Over the years, WestJet has drifted away from its discount roots, gradually adding frills and expanding its network.

In May, WestJet announced that it will be acquiring up to 20 wide-body Boeing 787-9 Dreamliners, a move that will allow the airline to add new international destinations—including service to Asia, where Canadian Airlines flew before it merged with Air Canada in 2000.

The combination of international growth from the 787s and continental expansion from the 737s will form the basis of WestJet’s agenda in the coming years. WestJet is also continuing to nurture its four-year-old regional operation, Encore. Charles Duncan, former senior vice-president of technical operations at United Airlines, became Encore’s new president in June.

Saretsky said the ULCC will be separately branded and will even have uniforms that are different from WestJet’s brand.

“There’ll be more opportunity to drive ancillary charges because the focus on ULCC is just to have an absolutely rock-bottom entry fare. And then you pay as you consume for all the other products and services,” he said.

WestJet’s ULCC is headed by Bob Cummings, who joined the carrier in

2005. Cummings calls the new venture an exciting chapter in the airline’s history.

The goal to launch by the end of 2017 faces some turbulence on the labour front. WestJet pilots voted in May to join the Air Line Pilots Association (ALPA).

Saretsky gave a presentation to the Greater Vancouver Board of Trade in June. He said routes for the new ULCC will be announced in the fourth quarter of 2017. The new brand “will be cheap and cheerful,” said Saretsky.

After his speech, he addressed the issue of WestJet pilots voting to join the U.S.-based union. “It hasn’t altered our course but clearly, there’s a party now that has to negotiate a new agreement,” said Saretsky. “We have bargained with our WestJet Pilots Association. It wasn’t a union but it was an employee association that looked like a union. They paid dues. We bargained an agreement, which was binding by law. We would have had to have that same negotiation with the WJPA as we now will have with ALPA.”

Ben Cherniavsky, an analyst with Raymond James Ltd., said it is a new era for labour relations. “WestJet has always



paid 'competitive wages,' but gone are the days of the lucrative options and expanding profit cheques that turned early employees into millionaires," said Cherniavsky in a research note. "The corollary is that WestJet's labour costs will likely rise with a pilot union in charge. And if the flight attendants follow this lead, more cost pressure will come."

Vancouver-based Canada Jetlines Ltd. said it remains committed to its plans to start ULCC service, despite many delays.

Jetlines played down WestJet's announcement, predicting those plans will fall short of the budget concept envisaged by Jetlines.

WestJet's cost structure is too high to launch an "airline within an airline" to become a genuine ULCC, said former Jetlines CEO Jim Scott in an interview.

"Having high labour costs restricts your ability to actually be a true ULCC," said Scott, who has since stepped down from both Jetlines' management and board of directors.

Stan Gadek, former CEO of Sun Country Airlines based in Minnesota, replaced Scott in June.

"We're going to be selling our tickets exclusively over our website, so that will dramatically reduce our distribution costs," said Gadek in an interview.

Jetlines has not announced a planned launch date yet, but it is likely to be in 2018. The Boeing 737-300 and 737-400 are possibilities for aircraft.

"As a new company, we're starting with a clean sheet of paper," said Gadek. "I

wish WestJet luck, but I don't think they're being realistic with a low-cost subsidiary. It's a marketing gimmick. It sounds good but it doesn't work. I'm very skeptical that WestJet will be able to pull this off because their labour groups will resist."

Saretsky emphasized that he isn't taking anything for granted, and considers Jetlines to be a legitimate rival.

"We learned a long time ago to always take everybody seriously, even when maybe you shouldn't have to," he said during his visit to Vancouver. "It's never good when a company loses a leader at the top. It sort of signals either a different direction or an upset for different reasons. I won't speculate on that."

Air Canada's Rouge leisure division has already carved out a niche in transporting budget-minded travellers, notably to vacation destinations.

Another budding ULCC, Enerjet Corp.'s much-delayed FlyToo proposal, remains a long-term possibility.

NewLeaf, acquired in June by Flair Airlines Ltd., has focused on Abbotsford in B.C. and Hamilton in Ontario for its service.

Air Canada isn't taking anything for granted either, but its executives point out the challenges ahead for any ULCC.

"Unlike the United States, here in Canada we have limited secondary airports, which are usually very attractive to ULCCs," said Air Canada president of passenger airlines Ben Smith during a conference call with industry analysts.

Air Canada chief executive officer Calin Rovinescu said the proximity of U.S. airports along the Canada-U.S. border is an important factor to consider. "And so you by definition have some ULCC competition, if you like, built into the border dynamics because these U.S. border airports pick up a lot of ULCC-type traffic," he said.

Chris Murray, an analyst with AltaCorp Capital Inc., cautioned that WestJet's ULCC launch is subject to regulatory approval and a pact with pilots.

"We believe the launch of a flanker brand significantly complicates the plans of other participants seeking to start ULCCs in Canada and protects WestJet from market erosion in the highly sensitive fare category of travellers," said Murray in a research note.

He added that WestJet's 787 strategy will be vastly more complicated than the ULCC plans. 



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.

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FIRELINER TAKES FLIGHT

COULSON AVIATION IN B.C. HAS ACQUIRED SIX BOEING 737-300s FROM SOUTHWEST AIRLINES, WITH PLANS TO CONVERT THEM INTO MULTI-PURPOSE AIR TANKERS.

BY MIKE REYNO AND BEN FORREST | PHOTOS BY DEREK HEYES



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The first Fireliner, acquired from Southwest Airlines, arrived in Port Alberni on May 26. Over the next few months, Coulson Aviation will convert the aircraft into an air tanker capable of carrying 4,000 gallons (15,141 litres) of water or flame retardant.

As it passed over the runway at Alberni Valley Regional Airport on Vancouver Island in May, dipping low to the ground while media watched and snapped photos, the Coulson Aviation Fireliner looked much like any other Boeing 737-300 in an airline fleet.

With an immaculate white-and-crimson paint scheme and polished accents that reflected the afternoon sun, the aircraft would have seemed at home carrying passengers to any major airport in the world.

But Coulson, a renowned company based in Port Alberni, B.C., with extensive aerial firefighting capabilities, has a different, potentially game-changing purpose in mind.

This is the first of six Boeing 737-300s the company has acquired from Southwest Airlines, with plans to convert them into the first multi-purpose air tankers in the world.

“I think we separated ourselves from the market, because it is such a different product,” said Wayne Coulson, chief executive officer of Coulson Aviation, in an exclusive interview with *Skies*.

The first Fireliner arrived in Port Alberni

on May 26, after being repainted in Spokane, Wash.

Over the next few months, Coulson Aviation will convert the aircraft into an air tanker capable of carrying 4,000 gallons (15,141 litres) of water or flame retardant in a Coulson-developed gravity retardant aerial delivery system (RADS).

While an average competing tanker drops a maximum of 1,200 gallons (4,500 litres) per second, the Fireliner will drop 2,200 gallons (8,328 litres) per second—a rate no other aircraft can match due to their tank designs, said Wayne Coulson.

“No jet is meant to go low and slow at max gross weight,” he said. “They need to be a little faster, above stall margin, and that’s where you need the heavy flow. That’s why we’re up at 2,200 gallons-a-second flow rate on our tanking system to compensate for speed.”

What truly sets the Fireliner apart, however, will be its ability to carry as many as 63 passengers at a time—the rough equivalent of three fire strike teams.

“That’s going to be a big advantage, we think, in the world of firefighting, where you’re always moving people around,” said Coulson.

The tanking system can also be used to

disperse chemicals and oil, and the cabin can be reconfigured to allow for VIP transport.

While most of Coulson Aviation’s firefighting business is in the United States and Australia, the company is in talks with countries in South America and Europe, some of which may be drawn to the aircraft’s multirole capabilities.

“Some of these governments, they actually want to look at the option of putting the VIP interior for government use, or a higher end business class interior for moving government people around,” said Wayne Coulson. “So, using it 12 months a year. We’re getting a lot of traction on that.”

All of the conversion work for the first Fireliner will be completed at the Alberni airport, which recently extended its runway to the 5,000 feet (465 metres) needed to land a Boeing 737-300.

Workers will cut into the belly of the aircraft to create doors immediately below the fluid in the tank. The aircraft will have the only Next Gen Smart computerized tanking system in the world, with an onboard computer that has its own GPS and radar altimeter.

“We bias the door opening by the parameters of the airplane—so, based on



speed and altitude,” said Wayne Coulson. “The tank doors know what the airplane’s doing, and then compensate accordingly.”

The size of the entry door will stay the same, and the washrooms and galleys in the Fireliner are being kept intact, in part because the aircraft will fly at nearly 25,000 pounds (11,339 kilograms) under its maximum gross weight.

While the aircraft is large enough for a 5,000-gallon (18,927-litre) tank, Coulson Aviation opted for a 4,000-gallon tank for safety reasons, a decision that increases its carrying capacity for other items.

“Could the airplane do 5,000 gallons? Yes it could,” said Wayne Coulson. “Is it safer to do four? Yes. So that’s what we’ve done, as safety is our number one priority. This also means we can leave in the galley, the seats, the whole interior, and we’re not ripping everything out of it every time we

want to go tankering because we’re so far under max gross.”

Coulson Aviation is working with Boeing and Garmin to install the Garmin G5000 flight deck upgrade in the Fireliner, along with cockpit upgrades to its two C-130Q and two L100G Hercules air tankers.

“For night vision goggle operations, or even just general flying, that is the safest equipment you can have in a firefighting cockpit,” said Wayne Coulson.

“We also have the most technology into the tank,” he said. “One of the things we can do with this for night flying of the C-130 program is, we can drop two GPS points and we can fly on goggles between those two points, and the tank automatically drops between those two points the desired coverage level. That’s the type of technology we have in our tanking system.”

As with its C-130 fleet, Coulson Aviation has reverse-engineered the Boeing 737-300, allowing all modifications to be completed in-house.

A large team of engineers has been recruited to support the prototype Fireliner, part of a 110-person workforce that is expected to increase in size for the duration of the program.

While Coulson believes the Boeing 737-300 will be singular in its capabilities as an air tanker, it will inevitably be compared to other prominent tankers like the Avro RJ85/BAC 146 and the Lockheed L-188 Electra.

The Fireliner has 25 per cent more tank volume than all three competitors, said Wayne Coulson.

“And we’ll be able to carry seats—so, passengers—which the other two can’t,” he said. “We’ll carry the most fuel and



ABOVE: Coulson workers will cut into the belly of the aircraft to create doors immediately below the fluid in the tank.

TOP RIGHT: What truly sets the Fireliner apart will be the fact that its interior can be configured to carry as many as 63 passengers at a time—the rough equivalent of three fire strike teams.

MIDDLE RIGHT: Coulson Aviation is the only commercial company offering C-130 Hercules firefighting aircraft, two of which are currently on exclusive-use contracts in Australia. **Dan Megna Photo**

BOTTOM RIGHT: Wayne Coulson, right, and his son Britt of Coulson Aviation have recruited a large team of engineers to support the prototype Fireliner.



fly the farthest, which is important for re-position flights. Our average fuel load will give us almost four and a half hours of gas while contract spec only requires two and a half hours. Keeping well below gross weight allows us to have a safer, more capable airplane and to exceed all the contract minimum requirements.”

All of Coulson Aviation’s air tanker work takes place outside Canada,

something Wayne Coulson attributed to the nature of the marketplace. But he admitted it will be interesting to see how Canada reacts to the Fireliner, which he predicts will be one of the most efficient air tankers on the market.

“We’re extremely confident that, while it won’t be a C-130, it will be the next best thing and will perform a different mission,” he said. “That’s our baseline. Right now the 130 is the best air tanker in the world. I don’t think anybody you talk to would disagree with you We’re not really looking over our shoulder at the competitors. We’re just working off our own baseline, which is the best air tanker in the world.”

There are 14 next-generation tankers under contract with the United States Forest Service and another 10 older-generation tankers, according to Coulson. There are about 25 aircraft in the global market with 3,000-gallon tanks—plus three McDonnell Douglas DC-10s—and one Boeing 747 with a pressurized tanking system, he said.

Coulson Aviation is the only commercial company that has the only C-130 Hercules aircraft in the world used for firefighting, two of which are on exclusive-use contracts in Australia—one in Sydney and one in Victoria State. The company also has two Sikorsky S-61 helicopters and one Sikorsky S-76B helicopter in Australia, plus four Sikorsky S-61s in its North American fleet.

As for the Fireliner, conversion of the prototype was expected to begin June 1, with completion by the end of November. Then the aircraft moves south for two weeks in December to calibrate the tank with a series of drops on the U.S. Forest Service grid.

Approval is required from the U.S. Forest Service Airtanker Board, and the aircraft will also be made available for service in Canada with the hope of securing firefighting contracts in both Canada and the United States.

“It’ll be somewhere in the world in 2018,” said Wayne Coulson when asked when the aircraft will be flown operationally. “We’re just not sure, but we’ve got multiple options.

“The reality is, we’ve run out of airplanes for the opportunities we have, and that’s why we’re looking for the best airplane to complement the C-130. The Fireliner is able to do things the Herc can’t, which makes them a great team and the perfect pairing for the new marketplaces we’re expanding to.”



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THE VERSATILE TRANSPORT AIRCRAFT FROM AIRBUS DEFENCE AND SPACE IS SET TO PLAY A BIG ROLE IN CIVIL MARKETS, THANKS TO A LANDMARK DEAL WITH CANADIAN-BACKED STELLWAGEN GROUP.

BY BEN FORREST



An historic deal that will see the Airbus C295 medium transport aircraft leased for use in civil applications has created a new business model for the manufacturer and new opportunities for its Canadian-backed client.

Stellwagen Group, a wholly-owned subsidiary of the Canadian public company Acasta Enterprises Inc., has signed a firm order for 12 Airbus C295 aircraft for use in civil markets including the humanitarian sector, freight operations, and government agencies such as search and rescue services.

“This has the possibility to take us into areas of business which have not been so easy for us in the past,” said Kieran Daly,

a spokesperson with Airbus Defence and Space. “Stellwagen can be extremely helpful here and open up some really new possibilities.”

This is the first sale of the C295 to a leasing company, with the first aircraft in the order expected to be delivered in the fourth quarter of 2017. The remaining aircraft are slated for delivery within five years, with an option for 12 additional aircraft within the same five-year period.

“Typically as Airbus Defence and Space we are not really in the market of providing finance to operators in the way that our commercial colleagues might lean to use,” said Daly.

FOR C295



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Airbus has typically sold its C295 transport aircraft directly to governments. Now, a deal with Canadian-backed leasing company Stellwagen Group is opening the door to a variety of civil and humanitarian applications. **Airbus Photo**

“Stellwagen was an elegant solution for us to become kind of an interface and make that a much more practical proposition. So in that sense it is a new business model for us, whereas typically we have been involved in direct sales to governments.”

All other C295 customers are either explicitly military or government agencies that are quasi-military, like the coast guard, said Daly. The C295 is in service with 28 other operators in 25 countries, with a total of 198 firm orders for the type.

Based in Dublin, Ireland, Stellwagen Group sees itself as a fixed-income manager rather than a leasing company, but it will act as a lessor in this case.

It will provide the C295 to organizations and governments that need a rugged, durable transport aircraft but aren't in a position to buy aircraft themselves.

“There is an interesting dynamic between operating budgets versus capital expenditure budgets,” said Douglas Brennan, chief executive officer of Stellwagen Group. “Leasing fits in the operating budget, which tends to be more flexible at the government level.

“And so going through the long battle of trying to convince the legislature approving bodies to buy new equipment is relieved significantly ... and we're providing relief services and charitable

organizations that need to run operations like this to help people survive in difficult environments from starvation. They need reliable, safe equipment, and that's really the service we're providing for them at a less expensive [cost] than buying an aircraft up front."

The C295 is a nine-tonne capacity, ramp-equipped medium transport and mission

aircraft that is expected to lend itself well to civilian humanitarian work in harsh surroundings.

"This aircraft has extraordinary performance features that allow us to run operations in austere environments," said Brennan. "It's able to land in nearly any environment. It can take off and land within 400 metres; it can land on beaches."

Highly customizable and with a range of 2,000 nautical miles, the C295 has also been recognized for its versatility. It can be configured for intelligence, surveillance and reconnaissance; air-to-air refuelling; VIP transport and medical evacuation, among other missions.

"The 295 is famously robust and reliable," said Daly. "That tends to be the reason why people in the transport sector buy it—just because it does get up for work every day and has a really excellent reputation in that sense. It's very appropriate for those kinds of operating environments where it is very tough."

Brennan said Stellwagen has specific clients lined up for the C295 program, and one potential lessee in Canada. He said he could not reveal the names of the clients, but acknowledged the deal with Airbus is transformative.

"We've built up a reputation as a business for doing very new and innovative things," he said.

"That's what's led to our very steep growth in profitability, and this is another example of this. If we get this right, this will be one of the most profitable programs in aviation leasing out there today."

Stellwagen owns few other aircraft, choosing instead to manage aircraft for third-party investors, according to Brennan. The company has about 60 other aircraft under management, most of them narrow-body jets like the Airbus A320 and Boeing 737. There are also two wide-body Airbus A380 aircraft on the balance sheet, he said.

"We own aircraft only when we see a very unique opportunity," said Brennan.

It remains to be seen how important civil markets will be for Airbus and the C295 program in general, but Daly acknowledged this brings the company to an interesting place.

"We will see now how these early days work," he said. "If you look around, the number of aging aircraft—particularly from the former Soviet Union and the Ukraine that are in service and are old, or increasingly not well supported—that constituency runs into very large numbers of aircraft. So we do think that potentially, certainly as time goes by, there is some very interesting potential." 



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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.

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Defence policy COMMITTS BILLIONS to Air Force capability

BY CHRIS THATCHER

Canada will acquire 88 advanced fighter jets to replace its fleet of CF-188 Hornets, the Liberal government announced in a new defence policy released on June 7, 2017.

The commitment was one of over a hundred in a thick document, titled *Strong, Secure, Engaged*, that captured 14 months of public and government consultations and placed a premium on the health and well-being of Canadian Armed Forces (CAF) members and their families.

It also proposed to reverse recent year-over-year declines in defence spending by significantly increasing the defence budget from \$18.9 billion in 2016-17 to \$32.7 billion by 2026-27.

"I have been blunt about how years of under-investment have left our military in a financial hole," said Defence Minister Harjit Sajjan. "[This] is the plan to emerge from that hole and build an even stronger Canadian Armed Forces, investing and operating sustainably over the next 20 years."

The policy pledges to modernize the core fleets of the Army, Navy and Air Force and make new investments in space and cyber capabilities. It also provides for further investment in defence intelligence and communications capacity to better anticipate and react to emerging threats.

"This vision reflects our comprehensive analysis of the security environment," said a senior defence official, speaking on background.

The policy offers \$33.8 billion over the next 20 years for some 50 critical new capital projects, "mainly in equipment but also infrastructure and information technology," she said. It also provides \$74.2 billion for

more than 280 projects already on the books, a top-up of \$5.9 billion on previous budgets to "better reflect their true costs," according to the plan. And much of it is intended to be spent in the first 12 years of the policy.

To meet the demands of new capability, the government committed to an increase in the size of the CAF. The Regular Force will grow by 3,500 to 71,000, and the Reserves by 1,500 to 30,000. The civilian workforce is expected to increase by 1,150.

For the Royal Canadian Air Force (RCAF), that translates into \$46.4 billion over the 20 years for acquisition. More than \$20 billion is earmarked for 17 new programs, including a multi-mission aircraft to replace the CP-140 Aurora when the maritime patrol fleet reaches the end of its service life in 2030; a multi-role tanker to replace the CC-150 Polaris after 2026; unmanned aerial systems with weapons capability for intelligence, surveillance and reconnaissance (ISR) and target acquisition; and significant space-based systems to improve situational awareness, communications and targeting.

A further \$26.4 billion is allocated to fully fund a lengthy list of existing programs, including midlife upgrades or life extension projects for the Polaris fleet, the CH-146 Griffon and CH-149 Cormorant helicopters, air navigation and management avionics across a number of platforms, and a tactical integrated command, control and communications network to manage the movement of ISR data.

"We have a much stronger commitment here to all of the projects that are already underway," said a senior defence official.



Released on June 7, 2017, Canada's new defence policy includes provisions to sustain domestic search and rescue capability. This includes life extensions for existing systems, such as the CH-149 Cormorant helicopter, and the acquisition of new platforms. **Mike Reyno Photo**



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However, the bulk of the existing Air Force program funding, between \$15 and \$19 billion, will go toward a new fleet of fighter jets to replace the Hornets, a sizeable increase from the \$9 billion that had been estimated for 65 F-35 Joint Strike Fighters selected by the Conservative government before the program was frozen in 2012 over ballooning projected lifecycle costs.

“The previous government planned to purchase just 65 fighters, but didn’t actually purchase any, and didn’t budget adequately even for that inadequate fleet,” said Sajjan. “Eighty-eight fighters are required to fully meet our NORAD and NATO obligations simultaneously, not just risk-manage them, as the RCAF has had to do for a number of years.”

A senior officer, also speaking on background, said the new number of jets was based on an analysis of the future security environment as well as a capability-based analysis of NORAD and NATO commitments.

“Ultimately, for the RCAF, in considering its operational commitments to NATO and NORAD, its understanding of its maintenance profile requirements, and its understanding of its pilot and force generation requirements, 88 was the number that was necessary from a future fighter point of view to meet our [commitments].”

Defence officials did not address costs associated with the interim fighter capability project for 18 Boeing F/A-18 Super Hornets. The proposed acquisition suffered a setback in late May when both Sajjan and Foreign Affairs Minister Chrystia Freeland publicly scolded Boeing and threatened to review the procurement, following the company’s complaint to the U.S. International Trade Commission over government subsidies to Bombardier’s C Series aircraft. But they confirmed discussions remain ongoing with the U.S. government about the project.

Among other notable Air Force commitments, the government highlighted a project to replace the four CC-138 Twin Otter utility transport aircraft operated by 440 Transport Squadron out of Yellowknife; a comprehensive future aircrew training initiative; fighter lead-in training, including the option for a new training jet better suited to whatever the government acquires to replace the Hornets; and a Block 8 upgrade to the CC-130J Hercules fleet.

The senior officer said the CAF would be looking at remotely piloted vehicles in combination with spaced-based capabilities for domestic and expeditionary operations, and would seek a family of aircraft for the Army, Navy, Air Force and Special Forces, some of which are already fielded. Specific to the Air Force JUSTAS (Joint Unmanned Surveillance and Target Acquisition System) project, he said the medium altitude, long-endurance solution could be the same aircraft for both domestic and foreign operations and able

The CC-150 Polaris aerial tanker fleet is slated for replacement after 2026, according to Canada's new defence policy. **Stuart Sanders Photo**



The bulk of the existing Air Force program funding, between \$15 and \$19 billion, will go toward a new fleet of fighter jets to replace the CF-188 Hornets. **Derek Heyes Photo**



The RCAF has outlined a limited life-extension project for the CH-146 Griffon's avionics and communications systems, although outright replacement is apparently also being considered. **Skip Robinson Photo**





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The RCAF's fleet of four CC-138 Twin Otter utility aircraft is operated by 440 Squadron in Yellowknife, N.W.T. The aircraft have also been targeted for replacement. **Cpl Aydyn Neifer Photo**



to perform precision strike as required.

The plan also commits to acquiring airborne ISR platforms for special operations forces (SOF). The policy did not specify an unmanned or fixed-wing solution, but SOF command has in the past considered proposals for a modified Beechcraft King Air 350 for the role.

Government officials and politicians were eager to emphasize that not only is the plan fully funded, but all of the proposed investments were heavily scrutinized.

“Those capabilities were subjected to the most rigorous costing analysis, expert third-party review and inter-agency scrutiny across government that any Canadian defence policy has ever undergone,” said Sajjan.

The Liberals opted not to re-open the debate on ballistic missile defence, but they did pledge to begin discussions with the U.S. on NORAD modernization.

“That will include replacing the North Warning System with new technology. And it will include an all-perils approach to protecting against the full range of threats including air, maritime and underwater threats,” said Sajjan.

The policy acknowledged the critical role of the defence and aerospace industries in delivering capability and pledged to “increase the transparency and timeliness of communication to the defence industry associations,” including through a new defence industry advisory group, as part of larger efforts to streamline procurement.

That message was met with enthusiasm from Canada's trade associations.

“The government's new defence policy statement is the first time in over 30 years that such positive language has been used to recognize the value of Canada's defence industrial base and how industry contributes to meeting Canada's defence

objectives,” said Christyn Cianfarani, president of the Canadian Association of Defence and Security Industries.

“The passion and commitment of senior defence officials and military officers was clear in all of the briefings and discussions that have led to today. They clearly believe in this new policy and are already working to see it put into practice,” added Jim Quick, president and chief executive of the Aerospace Industries Association of Canada. 



Chris Thatcher is an aerospace, defence and technology writer and a contributing editor to Skies Magazine.

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BY BEN FORREST



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Bombardier displayed the CS300 in airBaltic livery at this year's Paris Air Show. While it didn't get any orders for the C Series, the OEM did see success with its Q400 turboprop line. **Patrick Cardinal Photo**





TOP: Airbus unveiled the A380plus at this year's show. The updated version of the massive jet features fuel-saving winglets and an improved wing design, as well as lengthened maintenance intervals. **Patrick Cardinal Photo**

ABOVE LEFT: Canadian test pilot Billie Flynn put the Lockheed Martin F-35A fighter through its paces in front of the Paris crowd. **Patrick Cardinal Photo**

ABOVE RIGHT: Bombardier announced orders and commitments for more than 60 of its popular Q400 turboprops, which are assembled in Toronto. **Bombardier Photo**

As the eyes of the aviation world rested on Le Bourget airport in mid-June for the Paris Air Show, Canadian companies showed more than a glimpse of their world-class capabilities and boundless potential.

More than 120 Canadian firms and 500-plus representatives, including federal and provincial cabinet ministers, joined the 322,000 people said to have gathered in northern France for the largest and oldest aerospace exhibition of its kind.

It was a successful show for many, including original equipment manufacturers like Boeing and Airbus, both of whom have Canadian suppliers, and who captured the bulk of more than 1,200 aircraft order commitments announced at the show.

While Canadian aerospace giant Bombardier lacked new firm orders for its C Series jets, it announced orders and commitments for more than 60 Q400 turboprops, which are assembled at the com-

pany's Downsview plant in Toronto.

"It was a very successful show from not just Canadian industry but from Canada generally," said Jim Quick, president and CEO of the Aerospace Industries Association of Canada (AIAC).

"Clearly people are seeing the value of the Q400 from a regional perspective, and I think the announcements during the Paris Air Show are a direct result of that."

A massive flying display punctuated the festivities at Paris, including the Lockheed Martin F-35A jet fighter's first demonstration at an international airshow, with Canadian test pilot Billie Flynn putting the aircraft through its paces for thousands of onlookers.

ONWARD AND UPWARD

Boeing launched its single-aisle 737 MAX 10 airliner at the show, the newest member of a 737 MAX family that has become the



fastest-selling group of planes in company history. All told, Boeing announced 179 firm orders at Paris and options, order letters of intent (LOIs) or option LOIs for another 587 aircraft valued at US\$44.5 billion.

Airbus announced firm orders for 144 aircraft and memorandums of understanding (MOUs) for 182 aircraft, the majority of which are from the A320 family of single-aisle jetliners. In the wide-body segment, Airbus won business for 20 aircraft worth US\$5.9 billion, including 12 firm orders and MOUs for eight aircraft.

Bombardier tallied seven firm orders, 25 options and 32 option LOIs, valued at US\$1.7 billion. A major item was a letter of intent with low-cost carrier SpiceJet of Gurgaon, India, for up to 50 Q400 aircraft.

The company also announced it signed an agreement with Phillipine Airlines for the exercise of seven Q400 aircraft purchase rights, and an LOI with CemAir of South Africa for two Q400 aircraft. It also

revealed Ethiopian Airlines Enterprise as the previously undisclosed customer that signed a firm purchase agreement for five additional Q400s.

Bombardier said it has now recorded a total of 585 Q400 aircraft on firm order.

C SERIES

While a CS300 in airBaltic livery was on static display at the show, marking the C Series' first year in service, the lack of new firm orders was conspicuous.

Bombardier did reveal on June 21 that Ilyushin Finance and Co. (IFC) and an undisclosed airline have signed a framework agreement on the lease of six CS300 aircraft, but that was the show's major C Series announcement.

As the Reuters news agency noted, Bombardier also did not announce any C Series orders at the Farnborough International Airshow in the United

ABOVE: A large Canadian contingent attended the Paris Air show, including several federal and provincial government ministers. Shown here are (L-R): Brad Duguid, Ontario minister of economic development and growth; Scott Brison, Treasury Board president; François-Philippe Champagne, minister of international trade; Jim Quick, president of the Aerospace Industries Association of Canada; Marc Garneau, transport minister; and Navdeep Bains, minister of innovation, science and economic development.

Mike Reyno Photo



Boeing launched its single-aisle 737 MAX 10 at the 2017 Paris Air Show and leasing company AerCap placed an order for 15 of the aircraft. The MAX family has become the fastest-selling group of planes in Boeing history. **Boeing Image**



Montreal-based CAE released its airline pilot demand outlook at Paris, predicting the global industry will need 255,000 new pilots over the next decade. **WWFC Photo**



The A350-1000, scheduled to enter service in 2017, is the longest-fuselage version of Airbus' all-new family of twin-aisle, wide-body jetliners. At Paris, Airbus won commitments for 20 wide-body aircraft worth \$5.9 billion. **Patrick Cardinal Photo**

Kingdom last year, but subsequently won key sales from Delta Air Lines and Air Canada.

Bombardier is confident of winning more C Series orders this year and hopeful existing customers will convert options into firm orders, according to Bloomberg News. Lufthansa has 30 such positions, while Korean Air Lines Co. president Walter Cho is talking about exercising 20 options beyond the 10 jets on order, Bloomberg reported.

As of December 2016, the C Series had recorded 360 firm orders and most capacity is sold out through 2020, according to Reuters. Bombardier has said it is comfortable with existing sales of the aircraft.

"I think you're going to continue to see more orders," said Quick in an interview with *Skies*. "From everything you read and everything you hear from people, the technologies on that aircraft are global leading technologies. I am very optimistic about the future of the aircraft and that platform."

AIRBUS C295

Airbus also secured a firm order for 12 C295 medium transport aircraft from aviation financier and lessor Stellwagen Group, a subsidiary of the Canadian public company Acasta Enterprises Inc.

This is the first sale of C295s to a leasing company achieved by Airbus Defence and Space. The agreement includes options for another 12 aircraft, and is expected to position Stellwagen to address civil markets including the humanitarian sector, freight operators in austere environments, and government agencies such as search and rescue services.

"This game-changing agreement with Airbus for the unique C295 will transform Stellwagen," said Geoff Beattie, chairman of Acasta, in a news release. "It also validates its business plan, demonstrates continued industry innovation and leadership and positions the Group to further develop the commercial market."

Stellwagen formed in 2013 to fill a perceived gap in the aviation finance market and has since expanded into aircraft servicing and investment management. These form a major investment platform within Acasta, which also owns companies involved in private label consumer staples in health and beauty care, as well as cleaning and chemicals. (See full story on page 24.)

CAE

Montreal-based CAE, which has the largest network of civil aviation training locations in the industry, released its airline pilot demand outlook at Paris, predicting 255,000 new pilots will be needed in the global industry over the next 10 years.

The outlook follows a previous study from Boeing that predicted a need for 617,000 commercial airline pilots between the years 2016 and 2035.



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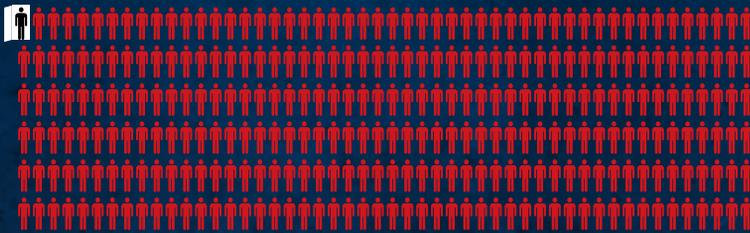
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US\$150 billion **WORTH OF ORDERS ANNOUNCED**



According to CAE, more than half the pilots needed in the next decade have not started their flight training. The study predicts the greatest demand for new pilots will be in the Asia-Pacific region, with more than 90,000 needed for rapid fleet expansion.

The company also announced a series of aviation training solution contracts at Paris valued at approximately C\$85 million. These agreements cover airline pilot and cabin crew training, crew resourcing, business aviation pilot training programs, as well as the sale of four full-flight simulators.

JOBS FOR QUEBEC

About 200 manufacturing jobs could be created in Quebec thanks to funding announced at the show, according to the federal and provincial governments.

Navdeep Bains, federal minister of innovation, science and economic development, was at Le Bourget to announce a \$1 million repayable investment that will help Austrian aircraft cabin design company F/LIST set up a manufacturing facility in Laval, Que.

F/LIST is a manufacturer of high-end interiors for business and private jets and expects to begin operations in Laval in the fall of 2017, according to a news release. The new location will initially employ 15 specialists and as many as 100 people by 2020.

This is the company's first production plant outside of Austria and is to include offices, a showroom, and the company's competence centre for flame retardant wood veneers.

F/LIST installs interiors in Bombardier and Embraer aircraft and reportedly hopes to develop its business with those companies through its Laval location, as well as with OEMs like Gulfstream, Cessna and Dassault. F/LIST also currently installs interiors in Pilatus aircraft.

Another \$2.2 million in repayable contributions were also announced at Paris to help six Quebec small- and medium-sized



enterprises (SMEs). More than 90 new manufacturing jobs linked to the aerospace industry could be created through the investments.

The funding is meant to help SMEs acquire leading-edge technology to develop and commercialize products that will contribute to making Canada a global aerospace leader.

Investment recipients include Libellule Monde Inc. (\$600,000), APN Inc. (\$500,000), DCM Group Inc. (\$400,000), BHS Composites (\$325,000), Rapid Precision Industries Ltd. (\$225,000), and TRAF Industrial Products (\$150,000).

AERO MONTREAL

It was a successful show for Aero Montreal, Quebec's aerospace cluster.

The group announced three major deals, including a tripartite collaboration agreement with the Ontario Aerospace Council and the Portuguese Association for the Aeronautics, Space and Defense Industries.

This is an historic agreement intended to promote closer links among Canadian and Portuguese companies and is expected to provide opportunities for networking and exchanges among companies in the three clusters.

OPPOSITE: Embraer's E195 E2 prototype sported a striking eagle paint scheme. **Patrick Cardinal Photo**

ABOVE: Canadians collaborated at Paris. Among the announcements, Aero Montreal signed a tripartite agreement with the Ontario Aerospace Council and the Portuguese Association for the Aeronautics, Space and Defense Industries. **Mike Reyno Photo**

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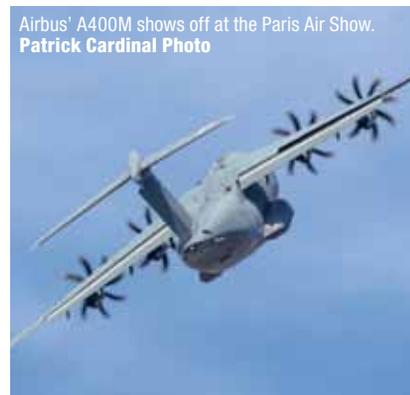
The show featured 2,381 exhibitors (up three per cent from 2015) from 48 countries. **Mike Reyno Photo**



The majority of Airbus orders was from the A320 family of single-aisle jetliners. **Patrick Cardinal Photo**



Airbus' A400M shows off at the Paris Air Show. **Patrick Cardinal Photo**



“Linking with the Portuguese is a good opportunity to get to Europe, and also in terms of the space sector,” said Suzanne Benoit, president of Aero Montreal, in an interview with *Skies*.

“Canada is one of the few countries outside of Europe to have signed a collaboration agreement with the European Space Agency. So our space companies can connect with Portuguese [companies] ... they are very much into the space sector.”

Aero Montreal also signed a collaboration agreement with Gyeongnam Technopark, an industrial cluster located in South Korea, at the Paris Air Show.

The agreement is part of Aero Montreal’s commitment to helping Quebec SMEs develop business opportunities in Asia, according to a news release. In the next 10 years, Asia-Pacific is expected to become the geographic area with the highest demand for new aircraft.

“South Korea is quite active and they have very good capabilities in aerospace,” said Benoit. “I think it is strategic that we connect with them as soon as possible and position ourselves.”

Aero Montreal also signed an agreement with SAFE Cluster, the competitiveness cluster for security and aerospace players in the Provence-Alpes-Cote d’Azur region of southeastern France.

The new document aims to reiterate an agreement signed with the Pegase cluster at the Farnborough Airshow in July 2012. It focuses on aeronautics, industrial and natural risk management, as well as the use of aeronautical methods and techniques for security solutions.

“This year we had many announcements and a very strong delegation,” said Benoit. “We all worked together to try and attract investment and also help our companies expand abroad and internationalize themselves—you know, find new clients.”

ONTARIO

In addition to its tripartite agreement with Aero Montreal and the Portuguese cluster, the Ontario Aerospace Council (OAC) also signed a memorandum of understanding (MOU) with Manitoba Aerospace at Paris.

“It really is an opportunity, particularly our SME members, to benefit from interacting with the other cluster,” said Moira Harvey, executive director of the OAC.

“What we really want to be able to do with that is facilitate relationships between the member companies in each of the clusters and have [a greater] strength for them to be able to work with each other.”

Given final assembly and interior completions for the Bombardier Q400 take place in Toronto, the OAC welcomed news of additional orders for the aircraft. The same was true for new orders from Boeing and Airbus, which may provide long-term stability for Ontario firms in the supply chain.

“I think the aerospace market for our Ontario companies is a very stable market right now and that’s thanks to the very strong order books that we see across the major OEMs,” said Harvey.

“It looks like there’s longevity in that stability. It’s not the massive peaks and valleys that we tend to see in some of the cycles. It seems to be very solid and very strong.”

- with files from Kenneth I. Swartz





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T R A I N I N G I N N O V A T I O N

CAE CELEBRATES ITS 70TH YEAR WITH A RENEWED FOCUS ON IDENTIFYING AND DEVELOPING DISRUPTIVE TECHNOLOGY THAT WILL DEFINE THE FUTURE TRAINING PARADIGM.

BY CHRIS THATCHER | PHOTOS COURTESY OF CAE

It used to be called the suggestion box, a place for employees to leave their best ideas to improve the company, or at least the coffee. Today, workplace idea generation often has a more competitive vibe, drawing on the example set by television shows that encourage people to pitch new thinking about products, services and processes to senior executives.

Count CAE among the many companies now trialling this approach. The Montreal-based modelling, simulation and training company is widely recognized as one of the most innovative enterprises in aerospace, changing forever the way pilots and instructors are trained. But since 2012, it has also dramatically shifted the way it sources ideas, changing from a closed innovation process in which senior executives set the priorities, to a more open approach that has sought to tap the creativity of all 8,500 of its employees.

To avoid a free-for-all and keep the ideas channelled with strategic priorities, CAE that year launched Innovation Challenges to its entire workforce, inviting suggestions along three lines of inquiry that Marc St. Hilaire, vice-president of technology and innovation, admits are the sorts of perplexing problems that keep him awake at night.

“I believe innovation can come not only

from engineering employees, but from everybody who touches some part of the process or product,” said St. Hilaire, an aerospace engineer with 32 years of experience in the sector, including 11 with CAE.

“Innovation could be in the product itself, or within the processes we use to build it, or in the way we go to the market and advertise.”

Until this year, the previous four Innovation Challenges typically generated around 100 ideas. Those were shared on an internal web portal to which employees could contribute their thoughts. Stories would soon develop around an idea as people added new dimensions or cast a positive or negative vote.

Perhaps because CAE is marking its 70th anniversary or because St. Hilaire immersed himself in a highly creative promotional video and campaign to employees, this year the challenges drew over 200 responses to four themes: cloud computing, cyber technology, new training media, and the environment. “This year was exceptional,” he said. “We touched probably 100 per cent of the company.”

The ideas were grouped into common threads, and in June each group presented their ideas before a panel of senior managers, trying to persuade them to make the ultimate investment. If previous compe-

titions are any indication, more than a dozen of those ideas could find their way into future products and services.

In past editions, the 100 proposals have typically been boiled down to around six or seven that are worth taking to the lab for feasibility testing. A few have then gone on to prototyping, and one or two have then survived the business test: can CAE market it?

“I am proud to say a significant number of those tested ideas have migrated through the journey and you can find them in our products,” said St. Hilaire. “The best example is the new instructor station that is in our latest product. That’s the result of one of the earlier challenges where we asked people, ‘How do we ease the load on the instructor and modernize his/her workstation?’”

CAE’s approach to utilizing big data to deliver a next-generation pilot training system has its origins with the Innovation Challenges, as does a new product line that capitalizes on the emergence of augmented reality. In January, the company introduced a health care training solution that integrates Microsoft HoloLens to help train doctors and nurses in ultrasound and catheter insertion on a mannequin.

“The challenges have paid off big time,” said St. Hilaire.

▶ Watch the video [here!](#)



The CAE 7000XR Series full-flight simulator (FFS) meets specific operator requirements while surpassing Level D regulatory requirements. Among its features are upset prevention and recovery training capability and the next generation instructor office.



Founded in 1947 as an avionics repair company, Canadian Aviation Electronics by the 1980s was breaking new ground in flight simulation, an innovation that transformed both pilot training and flight safety. Shown here, the company's A350 full-flight simulator cockpit.

“

Since 2012, CAE has dramatically shifted the way it sources ideas, changing from a closed innovation process to a more open approach involving all employees.”

COMPLETE TRAINING PARTNER

CAE's broad call for innovation is related, in part, to a corporate change that began two years ago when the company shifted its primary focus from manufacturing training platforms and simulators to being a full-service training partner. Along with the shift has come an increased need to find better ways to leverage the full scope of digital technology.

Founded in 1947 as an avionics repair company, Canadian Aviation Electronics by the 1980s was breaking new ground with the U.S. Federal Aviation Administration on the certification of flight simulators, an innovation that transformed both pilot training and flight safety.

By the early 2000s, the company had adapted the software of its full-flight simulators to more desktop-like applications, a suite of two- and three-dimensional devices it called Simfinity, which significantly reduced the training footprint and allowed pilots to practice procedures and specific systems before entering the more expensive simulators.

Beginning a decade ago, CAE then delivered similar tools in a web-based service, allowing pilots to download and view and rehearse approaches and landings to hundreds of airports all over the world. At the same time, the company also began offer-

ing modelling and simulation technology to aircraft manufacturers like Mitsubishi and Bombardier.

“We have adapted our full-flight simulator and transformed it into an engineering development test bench to test their systems and help design and build their aircraft,” said St. Hilaire.

While CAE continues to advance and deliver simulators worldwide—it recently confirmed contracts for full-flight simulators for Air India and Japan Airlines, among others—the announcement in June of a new CAE training facility with Korea Airports Corporation at Gimpo Airport in Seoul for the pilot training of five Korean carriers is more indicative of its current focus as a complete training partner. Consequently, the company is evaluating how best to deliver pilot and aircrew training to a generation more accepting and expectant of technology.

“We have intensified our efforts to focus our brain power and innovation capability on mechanisms to deliver training in a very modern way,” said St. Hilaire. “Instead of the traditional classroom printed material, we've started to look into all of the modern technologies to deliver training, and to leverage digital technology, big data technology, and web technology to provide a training experience that is truly 21st century.”

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AIRBUS



ABOVE: One of the successful examples from CAE's Innovation Challenges is the company's next-generation training, launched with AirAsia. Participants celebrated the program validation phase last fall.

RIGHT: CAE's new instructor station is the result of a suggestion from an earlier Innovation Challenge.

OPPOSITE: A new helicopter training and research and development centre in Mount Pearl, N.L., features the first Level D full-flight simulator with night vision goggle compatibility in Canada. Built by CAE, the Sikorsky S-92 simulator is used extensively by Cougar Helicopters for offshore training. **Heath Moffatt Photo**



One example, which emerged from the first Innovation Challenges theme on big data, is CAE's next-generation training, an employee idea that has flourished into a system CAE launched with AirAsia and began validating last fall. The concept harkens back to the primary education experience of many students, where little record of their actual performance remains beyond test scores, a grade and a few comments on a report card.

Most pilot training, too, has fallen short

of capturing the full picture of a pilot's training journey. The record may show satisfactory performances in groundschool, and passing marks on flight instruments, full simulators, and live flying, but it misses a lot of the contextual data about strengths, weaknesses and overall performance.

Tapping into the data generated by all those systems, next-generation training aims to employ collection and analysis techniques to provide insight into a pilot's skills and help improve the quality and efficiency of training.

"You can't improve on your coursework, on your performance if you don't have a record of the good points and the weak points," said St. Hilaire. "This is your training record that stays with you. We are measuring the training journey in a numerical way, from the beginning to the end, as you go through each training event and each objective. We are measuring your knowledge, your performance, and your proficiency. You can quickly start to visualize where you are with your peers. You can also see if your coursework is poorly designed, if it has a chokepoint where students are tripping."

The data-driven approach will improve the experience not only for individual pilots, but also for instructors and training managers with large fleets, who can quickly identify which approaches produce the best results. It should also assist aviation regulators by providing a means to measure efforts to improve aircraft and passenger safety.

"All of this new data and web technology gives us the capability to precisely map the training journey and take actionable decisions on it," said St. Hilaire.

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CAE's Montreal headquarters.



Moving into health care simulation, CAE developed the Juno mannequin for nursing clinical skills practice.

TRAINING REIMAGINED

For this year's edition of the Innovation Challenges, CAE sought ideas to expand next-generation training, asking employees to reimagine training media by thinking outside the current training constructs of the classroom, printed material, partial task trainers, and even full flight simulators.

"I call that the traditional training footprint," said St. Hilaire. "New training media includes augmented reality like the Microsoft HoloLens glasses or your personal smartphone, which is a media to push content back and forth between a training organization and an individual. We [wanted] to stimulate the employees to look around at all the media they carry. There's been a real revolution. Your smartphone is now a window between you and the rest of the world that is being leveraged to push content."

CAE also invited employees to look more critically at the environmental footprint of the company and its products. Simulators remove thousands of hours of live flying and significant efforts have been made to reduce or change the use of chemicals and heavy metals in its products, but St. Hilaire is looking for other innovations. "We are already pretty green. Our product is green, our business is green, but now we are looking ahead. What's next?"

It is far too early to know which ideas will survive the lab, but already St. Hilaire is considering possible themes for 2018, challenges such as artificial intelligence (AI) and autonomy, especially as more unmanned systems enter the airspace.

"Artificial intelligence is going to disrupt our life in ways that we have not even imagined so far," he predicted.

Perpetually on the hunt for the next disruptors, St. Hilaire and the company's technology team are regular attendees to the technology events of CAE's core business lines of aerospace (civil, defence and security) and health care. But they can also be found among the booths and demonstrations of the Consumer Electronics Show and South by Southwest. Whether it involves participating in local innovation clusters or supporting academic research, the goal is always to try and understand what might change the training paradigm.

"I'm a big believer that innovation will come from the intersection of industries that normally you wouldn't think of working together," he said. "A traditional sector like aerospace can find a lot in the IT or gaming sectors, or even the medical sector. Those industries are pushing innovation that nobody has talked about." ■



At the 2017 Paris Air Show, it was announced that the first CAE-built C Series full-flight simulator had been upgraded to Level D status by regulators in Canada, Europe, the United States and South Korea. Celebrating the announcement were Nick Leontidis, left, CAE's group president of civil aviation training solutions, and Todd Young, vice-president and general manager, customer services at Bombardier Commercial Aircraft.



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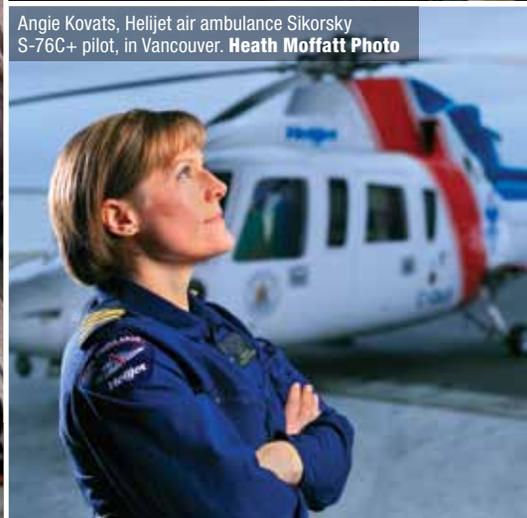
Capt Skye Simpson, a pilot from 436 Transport Squadron, 8 Wing Trenton, prepares to fly the CC-130J Hercules during RIMPAC 16 in Hawaii. **MCpl Mathieu Gaudreault Photo**



According to the Government of Canada Job Bank, 2011 data indicates that women represent just six per cent of workers in the "aircraft mechanics and aircraft inspectors" category. **Aviation Institute of Maintenance Photo**



Search and rescue technician MCpl Ashley Barker, with 413 Squadron from 14 Wing Greenwood, attends to the injuries of a casualty during a medical event at SAREX 15 in Comox, B.C. **Cpl Ian Thompson Photo**



Angie Kovats, Helijet air ambulance Sikorsky S-76C+ pilot, in Vancouver. **Heath Moffatt Photo**



Tiina Lane is an air traffic controller at the Sault Ste. Marie Tower. **Nav Canada Photo**



Through its "Women Soar at Porter" program, Toronto-based Porter Airlines is aiming to attract female candidates to all aspects of its operation. **Porter Airlines Photo**



CC-115 Buffalo navigator Helen Neilson of 442 Squadron in Comox, B.C. **Heath Moffatt Photo**

Minding the GAP

WOMEN'S CONTRIBUTIONS TO AVIATION, AEROSPACE AND DEFENCE ARE ALREADY CRUCIAL, AND SET TO GROW. WITH LOOMING OCCUPATIONAL SHORTAGES AND A DESIRE FOR GREATER DIVERSITY, THE INDUSTRY'S GENDER GAP MAY SOON BE A THING OF THE PAST.

BY BEN FORREST

 [Watch the video here!](#)

Contessa Bishop recalls sitting with her father in the kitchen of their family home when she was around 10 years old, listening to him guess about what the future might be like if she became a pilot.

The picture he painted was a complete fantasy, she said, full of ideas she later debunked. She remembers him guessing pilots worked only half the year for enormous sums of money, flying all over the world to new and exciting places.

"I made the decision [to become a pilot] based on fiction, based on not really knowing why or what I was choosing," said Bishop, who now flies Bombardier Q400s for Jazz Aviation LP and is an accomplished flight instructor.

"But the cool part is that the more involved I got the more it really fed my soul, [and] the more I fell in love with aviation."

Bishop joined the Royal Canadian Air Cadets at age 13, earned a glider licence, and studied at Conestoga College and

Waterloo Wellington Flight Centre in Southern Ontario, where she earned her commercial pilot's licence with instrument flight rules and flight instructor ratings.

Her career launched soon after the terrorist attacks of Sept. 11, 2001, and survived two industry downturns. She spent time as a college-level flight instructor and cargo pilot, and worked in corporate and airline operations, before landing at Jazz about four years ago.

It took more hard work and resilience to arrive here than she could have predicted at age 10, but Bishop will tell you the journey was worth it.

"There's a part of me that feels like I'm just getting going. I get so many more ideas of where I want my aviation career to go," she said.

"[It's been] worth it on so many different platforms—the growth it's afforded me, the professional and personal development, the friendships gained and the sights that I've seen."

SGT ISABELLE LECLERC

Q&A

COMPANY: Royal Canadian Air Force

TITLE/POSITION: Occupational advisor for aviation, air weapons and non-destructive testing technicians

JOB DESCRIPTION IN A NUTSHELL: I use my experience as an aviation technician to oversee the training, employment, and career progression for other technicians in 8 Air Maintenance Squadron.



Skies: What first attracted you to aviation?

IL: I've always wanted to be in the military, mainly because my father spent 29 years in the Army and I looked up to him. He was adamant that the Air Force was the way to go. Though I was most passionate about cars growing up, I was intrigued by the simple fact that big metal objects were able to fly, and thought the ingenuity that went into this was astounding.

S: What appealed to you most about working in this field?

IL: Being in the military was definitely what I wanted to do with my life. I was very drawn to the Air Force, I was good at working with my hands, and I absolutely love engines—all engines. Hence, becoming an aviation technician was a perfect fit for me and seemed like the most natural choice.

S: Did you have a mentor who helped you along the way?

IL: I've had countless great mentors along the way, but one stands out: CWO Al Wotton. Thanks to him, I got over my fear of public speaking; learned how to improve how I dealt with people inside and outside my organization and how best to manage those under me with their strengths and weaknesses.

S: What is the best piece of career advice you have ever received?

IL: One of the great mentors I mentioned previously was my master corporal when I was a more "senior" corporal. He said to me: "You learn as much from your horrible bosses as you do from your good ones; you see firsthand not only what to avoid, but also the effects of those poor behaviours."

S: What was the biggest obstacle you had to overcome to get to where you are today?

IL: I had to learn to be more confident, which took some time. I believe this trait to be essential in leadership, as people are far less likely to follow someone lacking self-confidence because it impacts how confidently they give direction.

S: What other barriers do women face when it comes to getting into your line of work?

IL: The Canadian Forces provide a workplace for women where we have equal pay, equal opportunity for professional advancement, and amazing opportunities to experience the world in a very unique way. Nothing really stands in our way except how we let our perceptions of stereotypes and societal pressures affect our outlook, behaviour and ambition.

S: What needs to happen to entice young women and girls into aviation?

IL: Madame Marie Deschamps' report [External Review into Sexual Misconduct and Sexual Harassment in the Canadian Armed Forces] shined a light on some undesired behaviours within our organization. In the very short period of time since then, we've evolved immensely. More needs to be done but no organization is ever perfect I think the public needs to be made aware of how far we've come and how the Canadian military provides a very professional workplace for men and women alike.

S: What advice do you have for girls who might be interested in doing what you do?

IL: Do it! Don't let stereotypes of what you think others want you to do be factors in what you ultimately decide to do for a career. We are extremely blessed to live in a country where one is free to choose their path. The military aviation world has come a long way and is far more welcoming to women than some might think.



OUT OF THE ORDINARY

Bishop's story is remarkable in part because of her tenacity and perseverance, but also because she found a foothold in the Canadian airline industry, where only about five per cent of pilots are women.

The proportions are not significantly better elsewhere in aviation and aerospace. A mere six per cent of private pilots in Canada are women, according to the Brampton Flight Centre, a prominent flight school near Toronto.

Only 15 per cent of Canadian air traffic controllers are women, according to Canadian Women in Aviation, a conference Bishop helped organize this year to encourage and inspire women in all aspects of aviation.

Women fill vital roles throughout the Royal Canadian Air Force (RCAF), serving as pilots, air combat systems officers,



aviation technicians, aerospace control operators and a long list of other occupations. Still, they make up only 18.7 per cent of total personnel, a number the Air Force is trying to grow.

Despite these statistics, there is a growing awareness of women's essential contributions to Canada's aviation, aerospace and defence sectors, and how crucial they will be to any future success.

Attitudes and misconceptions that served as barriers to women entering the industry are beginning to change, and there are efforts around the world to help them engage with aviation and pursue the many rewarding careers associated with flying.

"It's not even just necessarily getting the message out about aviation," said Bishop. "Aviation is my choice, but we can lead by example when we do what serves us.

"If the next young child, I don't care

which gender, wants to choose engineering, then they should have that free will choice—that ability to choose to contribute to the world in whatever way suits them."

OPPORTUNITY KNOCKS

With Boeing predicting a massive global pilot shortage requiring as many as 617,000 new commercial airline pilots by 2035, some are noting a tremendous opportunity for women to enter the industry.

"It is a great time for anyone who would like to become a pilot, particularly women. There are tremendous opportunities and the road is easier right now to a job at the end," said Julie Pomeroy, general manager of the Brampton Flying Club.

Pomeroy is also an accomplished pilot and flight instructor who earned her commercial pilot's licence in 1978, inspired in part by her father, William Pomeroy, who



LEFT: 443 Maritime Helicopter Squadron members at Victoria International Airport, left to right: Carly Cake, Chelsey Llewellyn, Tanya Carr and Darlene Such. **Heath Moffatt Photo**

TOP: Women make up only 18.7 per cent of total Royal Canadian Air Force personnel, although efforts are underway to increase that number. **DND Photo**

ABOVE: Cpl Alexandra Lampard, a technician from 4 Wing Cold Lake, Alta., replaces the covers of the CF-18 Demonstration Hornet at the Yellowknife Airport in July 2016. **P02 Belinda Groves Photo**

RIGHT: Women are making their mark on all sectors of aviation, including pilot Lorraine Ru Lon Morris. She flies the EAA's Boeing B-17 Flying Fortress, Aluminum Overcast, one of only a few airworthy examples of the type. **Heath Moffatt Photo**

BELOW: Porter Airlines has deployed all-female flight crews to various events encouraging women in aviation. **Gustavo Corujo Photo**

BOTTOM: "If you can see it, you can be it." Many aviation organizations are targeting young girls and women as the next big labour market source. **Gustavo Corujo Photo**



introduced her to flying at a young age.

But it was the late Rick Wynott, chief flight instructor and general manager at Brampton Flying Club when Pomeroy was growing up, who became an early mentor.

"His passion for aviation was infectious," said Pomeroy, who has been general manager since 2005. "He made flying fun, and he helped to reduce the barriers to obtaining a licence."

Pomeroy began her career at Brampton Flying Club, working several years as a flight instructor and flight test examiner before spending about a decade working for Central Airways in Toronto as chief flight instructor, operations manager and eventually vice-president of administration.

She left aviation for 13 years to start a canoe and kayak outfitting business, but returned to Brampton as general manager after Wynott passed away in a diving accident.

"I don't think I had anything stand in my way," said Pomeroy when asked about barriers to her success. "It was quite the opposite when I started out. I was lucky to have parents that were supportive. My father wanted me to fly, and I think that is an important factor for young girls."

Supporting women in aviation is a key goal for the Brampton Flying Club, in part because there is such a huge demand for pilots.

"I think it's simple: the aviation industry needs pilots, managers and flight instructors. There are many jobs available to both men and women right now," said Pomeroy.

"We need to see women as owners of aviation businesses and in the boardrooms, but bottom line: the industry needs pilots. There is a huge untapped market there, with women. It just makes good business sense to tap into it."

CHANGING THE CULTURE

A key barrier to women in aviation can be simple awareness of the variety of rewarding careers available. There's a belief among some in the industry that girls aren't socialized to pursue aviation and mechanical trades, as well as a sense that high school guidance counsellors don't recommend aviation because they're poorly informed.

"There's little awareness there, right from the get-go," said Joy Parker Blackwood, a private fixed-wing pilot and president of the Northern Lights Aero Foundation, an organization devoted to attracting young women to the industry.

"So it's harder as they get older if they don't know there's a possibility. And then when they find out that, 'Well, I don't know that I want to be a pilot,' or, 'That's going to cost too much money,' what people fail to tell them too is all the other opportunities that are in all sectors of aviation—whether it's air traffic control, maintenance, being an educator, an engineer, research. The list is endless of the other opportunities, and the jobs you can have."

Changing aviation and aerospace's perception problem is a key focus for the Northern Lights Aero Foundation, which highlights the achievements of prominent women each year through its Elsie MacGill Northern Lights Award gala.

The gala recognizes up to eight women annually for contributions in specific disciplines, with the hope of inspiring young women and girls. Past inductees to the Northern Lights Wall of Fame include Dr. Roberta Bondar, the first neurologist in space and Canada's first woman astronaut; Judy Cameron, the first female pilot hired by Air Canada; and Tracy Medve, president of Kelowna, B.C.-based KF Aerospace and former president of Canadian North Airlines.

"I believe it's core, essential," said Blackwood when asked how important it is to have examples for young women to look up to and potentially have as mentors.

"Women don't have a lot of mentors in the industry, because the numbers are still low ... it's key to know how people took their path. Also, there are several women-only organizations in Canada and around the world because women still need this mutual support."

A WEALTH OF OPTIONS

Aviation's perception problem is also a key concern for Nav Canada, the company that owns and operates Canada's civil air navigation service. Women occupy about 25 per cent of the company's leadership positions, but only 16 per cent of its technical occupations group—which includes air traffic controllers, flight

ANNA PANGRAZZI

Q&A

COMPANY: Apex Aircraft Sales Ltd.

TITLE/POSITION: Owner/broker

JOB DESCRIPTION IN A NUTSHELL: Aircraft sales



Skies: What first attracted you to aviation?

AP: A private pilot groundschool was offered as an elective course in my high school and I did very well in the class. I learned to fly when I was 18 and it became a passion! I initially wanted to fly for an airline but my vision was not good enough. But it remains my dream to stay in aviation!

S: What appealed to you most about working in this field?

AP: The thought of being able to fly for a living appealed to me!

S: Did you have a mentor who helped you along the way?

AP: My mother instilled in me the thought that I could do anything I wanted to do ... that is such a great gift to give your child! I also met a group of women pilots in Toronto who belonged to the Ninety-Nines. Many of them were my teachers and mentors. They were a great support group.

S: What is the best piece of career advice you have ever received?

AP: It was a very simple piece of advice from a client ... work works! If you just put your head down and work hard you will see results.

S: What was the biggest obstacle you had to overcome to get to where you are today?

AP: I think the vision issue and not being able to get into an airline was one obstacle. But some things you just have to work around and find other options and I did!

S: What other barriers do women face when it comes to getting into your line of work?

AP: Being in sales takes a certain amount of risk-taking. I have been on straight commission my whole life—and there are times I haven't sold a plane for months—but again, it takes hard work and tenacity. Some people just want a steady paycheque.

S: What needs to happen to entice young women and girls into aviation?

AP: I think we need industry and academia to step up their game on recruiting women and making aviation appealing to women. I think that is really starting to happen now. A lot of airlines are starting to actively support initiatives to draw women to the field. I think successful women in the industry need more visibility—young people need to know there are opportunities. I think media can really help by providing more images and stories of women.

S: What advice do you have for girls who might be interested in doing what you do?

AP: Set the goal and work toward it! The field of aviation is so rewarding, challenging and fun. But you have to be willing to work hard at acquiring the skills you need and making the connections that can help you reach your goals.



KENDRA KINCADE

Q&A

COMPANY: Nav Canada, Elevate Aviation

TITLE/POSITION: Air traffic controller, founder and chair of Elevate Aviation

JOB DESCRIPTION IN A NUTSHELL: As an air traffic controller, I control the safe, orderly and expeditious flow of aircraft in the sky. Elevate Aviation is a non-profit organization that is growing across Canada. We work hard to raise awareness of the many amazing careers in aviation, hoping to draw more ladies into the field.



Skies: What first attracted you to aviation?

KK: I was invited into the air traffic control centre in Moncton, N.B., and when I walked in the door and saw what was going on, I knew it was what I was supposed to do. I didn't have any experience in aviation and knew it would be a long, hard journey but I was prepared to do whatever it took to succeed.

S: What appealed to you most about working in this field?

KK: The challenge. When I saw the air traffic controllers sitting in front of the radar screens, talking to the pilots and solving conflicts between the aircraft, I thought it looked like such an interesting career. To look at the aircraft and figure out how to get them safely from point A to point B was a challenge I wanted to take on.

S: Did you have a mentor who helped you along the way?

KK: One of my great mentors is my co-worker John Bright. Seventeen and a half years ago, he was my instructor. He saw that I had potential and mentored me. He helped me believe in myself and if it were not for him, I would not be a controller today.

S: What is the best piece of career advice you have ever received?

KK: The best advice I have been given as an adult, with the non-profit organization, is to just 'start.' Some people would wait until everything is perfect before they decide to start something or do anything! But, it never quite gets to 'perfect' and they let opportunities pass them by. Zig Ziglar says, "You don't have to be great to start, but you have to start to be great."

S: What was the biggest obstacle you had to overcome to get to where you are today?

KK: I think the hardest thing I did was packing up my four small children and travelling from Edmonton, Alta., to Cornwall, Ont., to take the intense training required to become an air traffic controller. My youngest turned one while I was there. You no longer have to travel to Cornwall to train, but back then you did. It was a huge challenge making it all work, but I believe if you really want something, you put your head down and do what it takes to make it happen.

S: What other barriers do women face when it comes to getting into your line of work?

KK: I think we are doing a fantastic job of breaking down any left-over barriers to help women become air traffic controllers. Between the mentorship program at Elevate Aviation to help women become aware of the career, to come and see what it's all about, and make them aware of the application process, Nav Canada has a Thrive mentorship program that is designed to help people succeed, men or women. I think the biggest obstacle right now is making more women aware of the career and showing them how amazing this career is and what type of lifestyle it allows.

S: What needs to happen to entice young women and girls into aviation?

KK: I believe more awareness is needed and we are doing what we can to help change that. Next March during International Women in Aviation week, Elevate Aviation is doing a cross-country tour at Nav Canada facilities (as well as other aviation professions) to showcase air traffic control to as many ladies as we can across Canada. When girls come in and see what we do they are always surprised to know we even exist!

S: What advice do you have for girls who might be interested in doing what you do?

KK: My favourite quote is by Neale Donald Walsch: "Life begins at the end of your comfort zone." If you want to have one of the best careers in the world (in my opinion) and become an air traffic controller, don't let any fear, self-doubt or sabotaging negative self-talk stop you. Find out more about the career by going to takecharge.navcanada.ca or contacting us at info@elevateaviation.ca.

service specialists, pilots, technologists and engineers.

"The issue in the past is that the industry hasn't naturally attracted many women," said Lyne Wilson, director of talent acquisition and organizational health for Nav Canada. "So what we're trying to do, and to get better at, is attract more women."

To this end, Nav Canada has introduced recruiting initiatives and created internal women's councils to better understand and address the issues women face. The company has also tried to be more family-friendly, and together with its unions, through the collective bargaining process, offers various forms of leave to parents who need time away from work to care for young children. In addition, all employees have access to peer support programs where they can speak about work-related stress and challenges in their personal lives.

"Whether it's at the senior leadership level or in an operational role, we want to continue to increase the number of women within the organization," said Wilson. "We see their role increasing in the future."

MECHANICALLY INCLINED

Carolyn Mounsey worked for Bombardier while she was in her early 20s, studying biotechnology at Seneca College in Toronto and preparing for a career as a lab technician. The aviation bug bit her, and she was never the same.

“

There is a growing awareness of women's essential contributions to Canada's aviation, aerospace and defence sectors, and how crucial they will be to any future success.”

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HMCS Fredericton's air detachment deck director signals the deck crew during the start-up of an embarked CH-124 Sea King helicopter. **DND Photo**



Cpl Cindy Bergeron, a weapons technician with 425 Tactical Fighter Squadron, installs a laser-guided training round on a CF-188 Hornet. **MCpl Marc-Andre Gaudreault Photo**



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“It’s one of those things where once you get bit, that’s it—you’re done,” said Mounsey. “I had the experience and I decided that I couldn’t leave aviation alone after that.”

When her first career didn’t pan out as she hoped it would, Mounsey returned to aviation, intrigued by its endless learning opportunities and the chance to work on heavier-than-air flying machines.

“It’s a profession where you never stop learning and there is, in my opinion, not a whole lot of room to get bored,” she said. “That was the really big attraction for me.”

Mounsey returned to school and earned an aircraft maintenance technician diploma from Centennial College, then completed a two-and-a-half-year apprenticeship in corporate aviation and landed a job as an aircraft maintenance engineer (AME) at a major airline.

Her second career is just starting—when she spoke with *Skies*, Mounsey had been with the airline less than a month—but the job is feeding a passion that won’t go away.

“I don’t know really how to put it,” she said, trying to explain what hooked her during that stint at Bombardier. “Airplanes, they’re super cool.”

There are relatively few women AMEs working in Canada.

Mounsey’s college program reflected the imbalance: In a class of about 125 people, only seven were women, she said. Mounsey made friends with some of the other female students and they formed

a small community within the program. But she also had a larger peer group that was mixed, she said. Her gender was never an issue.

“We all just hung out together and treated each other as equals,” she said. Still, the idea that mechanical work is for men and not for women has popped up occasionally.

“I’ve been told that I can’t do this job, and it turns out that I’m not so bad at it,” she said. “But that being said, I think that attitude is dying off ... in my experience actually working with people around my age, and younger, and a bit older, that kind of attitude is disappearing.”

LEADING THE WAY

When MGen Tammy Harris was named the first female deputy commander of the RCAF earlier this year, it was the latest in a long list of “firsts” in her exemplary career.

Harris was also the first woman to command an RCAF wing: 9 Wing Gander, N.L. She was the first woman to command a major Canadian Armed Forces base, CFB Borden, Ont., and the first female commander of the Canadian Forces Support Training Group.

But Harris is quick to say her gender has had no impact for her as a leader in Canada’s military.

“Leadership challenges are the same for me as they are for my peers—male,” said Harris. “We’re challenged by the resources you have, by the enemy you’re up against, by the weather, by the aircraft we’re flying.

“So the challenges are all the same. What makes a difference is your experience and how you lead in those types of opportunities. My being a woman has had no impact, one way or the other, for me as a leader in the RCAF. It’s gender-neutral for me.”

As deputy commander, Harris will help guide a Canadian military focused on reducing its gender gap and improving its diversity. The percentage of women in the Canadian Armed Forces (CAF) Regular Force and Primary Reserve combined is 15.2 per cent, with a goal to increase that to at least 25.1 per cent by 2026.

At 18.7 per cent, the RCAF has the second-highest proportion of women in the CAF. The Royal Canadian Navy is highest with 19.5 per cent and the Canadian Army is lowest with 12.8 per cent. Still, the RCAF is focused on increasing the role of women as it moves forward.

“If I’m in a command position and I’m challenged by a difficult new problem, I want to have a team that’s offering me advice and solutions that have different experiences—different ways of thinking, different ways of looking at things,”

CAPT ANNA MCSHEFFREY



COMPANY: Royal Canadian Air Force

TITLE/POSITION: First Officer on the CH-149 Cormorant with 103 Search and Rescue Squadron at 9 Wing Gander, N.L.

JOB DESCRIPTION IN A NUTSHELL: One of 12 search and rescue pilots covering a vast area that includes Iqaluit, Nunavut; Eastern Newfoundland and Labrador; and offshore.



Skies: What first attracted you to aviation?

AM: I was actually in Air Cadets and at age 15 I had the opportunity to go up in a glider for the first time. Up to that point I was actually scared of flying, but it only took one flight and I absolutely loved it. I just knew after that I wanted to pursue flying as a career.

S: What appealed to you most about working in this field?

AM: Probably the varying jobs from day to day. Both the job satisfaction knowing that I’m able to help people out, as well as it’s always going to be different. Each day I go into work, I know that I’m doing something that I really enjoy. It’s kind of all those factors together that made it a really ideal job for me.

S: Did you have a mentor who helped you along the way?

AM: I had a number of mentors, and it wasn’t necessarily someone I had picked out to be a mentor—just people throughout each phase of my flight training and my life that were really there to support me, to provide their time.

S: What is the best piece of career advice you have ever received?

AM: I think the best career advice I’ve ever received was just that I could do it. It wasn’t any one person; it was kind of all the way along, starting off when I was quite young with my family. And then through all my flight training—having a lot of positive flight instructors that were really encouraging along the way.

S: What was the biggest obstacle you had to overcome to get to where you are today?

AM: I’ve had a number of obstacles to overcome to get to where I am today. The biggest one for me was medically: I had to have heart surgery in order to get Transport Canada to issue my medical. So I had that done at quite a young age, and then after that, when I decided to join the military, I found out I needed laser eye surgery. I had to do that as well, to be able to get accepted.

S: What other barriers do women face when it comes to getting into your line of work?

AM: Well, I’m very happy to say that I feel in today’s society that that question is actually no longer relevant. I haven’t felt any issues all the way through my flight training up to now that was any different for me as a female than it was for male students. So I really think that it’s an equal playing field, as long as people are there to put the work in.

S: What needs to happen to entice young women and girls into aviation?

AM: I think it’s exposure at a young age—letting girls know that it is definitely something that they can do. When I was young I never even had an interest in aviation because I did have a fear of flying, and it wasn’t until I was 15 and I got the chance to go fly [that I became interested], so I think it’s those types of opportunities that young girls just need to be exposed to, to open the horizons to what’s out there that they could do.

S: What advice do you have for girls who might be interested in doing what you do?

AM: Ask questions, try to find out what you can about it, follow up if you do have somebody you can contact. I think that’s the biggest thing. As well, just look for different opportunities to check out different things. In aviation, that could be in the engineer side of things or the mechanic side of things. There are lots of different avenues, and just explore and try to get more information about things you may be interested in.

CAPT JULIE BEVERSTEIN

Q&A

COMPANY: Porter Airlines**TITLE/POSITION:** Captain and pilot recruitment ambassador**JOB DESCRIPTION IN A NUTSHELL:** I fly as a line captain at Porter Airlines. I also conduct pilot interviews and hiring, develop relationships with aviation colleges and act as a student mentor, all the while promoting Porter as a career airline.

Patrick Cardinal Photo

Skies: What first attracted you to aviation?

JB: My father is a retired airline pilot, so I grew up watching him go to work, travel and have a great passion for his job. I always had an interest in flying but liked science and thought being a doctor would be a respectable career. To be honest, when I think back it never really occurred to me that I could be a pilot, so I went to the University of Toronto and started my undergrad. One day I was chatting with someone who was learning to fly and we talked about flight training, jobs and various aviation colleges in Ontario (which I had no idea existed). When I learned about Seneca College, I was sold. I moved away from my aspirations to become a doctor and focused on learning to fly. I remember my father tried to talk me out of it as he knew what a long, hard career it could be, but I was determined!

S: What appealed to you most about working in this field?

JB: It's hard to choose only one thing. It simply is a lot fun. You work with great people, you get to have fun adventures and you are constantly learning, which is important to me.

S: Did you have a mentor who helped you along the way?

JB: Mentorship is a big part of this industry and I have had many amazing mentors. My father was a big one initially and he has always been a good person to talk to. My instructors and colleagues over the years have also been fantastic mentors. At this point, my chief pilot, director of flight operations and vice-president of flight operations have been invaluable mentors.

S: What is the best piece of career advice you have ever received?

JB: Don't give up, work hard and if you can't hack it, recognize it and move out of aviation. It sounds a bit harsh, but it really was the best advice I ever received. I took it to heart and wanted to be sure I got to where I am because I had earned it on my own merit and it wasn't because of my gender. I have always worked hard and had a good attitude, which has carried me far.

S: What was the biggest obstacle you had to overcome to get to where you are today?

JB: This career is a journey and I haven't ever felt that there have been "obstacles," but I guess [there have been] a few challenges. I finished Seneca and got my first job instructing three months before 9/11. The industry slowed down significantly and it put my "five-year plan to get to Air Canada" on the sidelines. I was lucky to get a full-time job teaching at Seneca through those slow years and I felt like I had won the lottery! Working at Seneca was amazing and I still work there part-time. I was turned down by Air Canada in 2008, which was devastating at the time; however, when one door closes another opens, and that door was Porter.

S: What other barriers do women face when it comes to getting into your line of work?

JB: I don't know if women really face barriers that are different than men, but sometimes they can be their own worst enemy. I have seen some women lack the confidence or even just the vision to even consider being a pilot. I think the barrier is perception. The perception has to change. I guess there are some women who run into individuals who still don't think the flight deck is the right place for a woman, but that seems to be rarer now. Sometimes the job requires relocating and long stretches away from home. This can be hard on families, but there are so many different types of jobs in aviation that you can find one that suits your lifestyle.

S: What needs to happen to entice young women and girls into aviation?

JB: I believe in the "if you can see it, you can be it" philosophy. Growing up, I never saw a female pilot and rarely heard of them. The more female pilots that enter the industry, the more "typical" it becomes and people won't think twice about it anymore. At Porter, through our Women Soar at Porter initiative, we focus on grassroots recruitment—we engage with young girls and share our passion for aviation!

S: What advice do you have for girls who might be interested in doing what you do?

JB: If you want something in life, go for it! If it ends up not being right for you, change your path, just like I did. Work hard, never rest on your laurels and have a positive attitude. You will always have an office with the best view and you will never stop learning.

said Harris. "And that's what diversity gives us. It becomes a force multiplier in today's very complicated, contemporary security environment."

The CAF are actively recruiting women, with the promise of challenging career opportunities, excellent training and rewarding pay and benefits. There are also attempts to make the CAF more family-friendly for both women and men, with continual reviews and amendments to personnel policies aimed at achieving a better balance between military service and family responsibilities.

Canada's military goes as far as to say it has a "moral obligation" to support its members and their families, and to ease the difficulties of juggling career and home.

To give women a chance to learn about military life before they join, the CAF is launching a new Women in Force Program (WFP) where they can talk with current CAF members and experience different facets of a military lifestyle. This includes fitness training, hands-on demonstrations of occupations and tactical skills.

Two 10-day events are scheduled for August at CFB Borden and one at Saint-Jean Garrison, Que. Two three-day events are scheduled for October in the same locations.

"I think the contribution of women in the next 10 to 20 years will be extremely important," said Harris. "The current security environment is continuously evolving and changing ... and female leaders have a great role to play in ensuring that our most vulnerable populations abroad have a voice at the peace table."

THE FUTURE

Given the desperate need for pilots and the desire for more diversity in air traffic control and defence, it appears likely women will play a larger role in Canada's aviation industry as it moves forward. The success of all these sectors will rely on women to a significant degree, and opportunities abound.

An ultimate sign of progress may be arriving in a time when gender is known to be irrelevant and is no longer used as a qualifier. Instead of seeing women pilots, women executives, women air traffic controllers and women AMEs, we will see people doing their jobs, and doing them well.

"That's where I'd like to go with it," said Contessa Bishop, the Jazz Aviation LP captain who began dreaming of being a pilot when she was 10 years old.

"We can all just be human and just do our jobs and take gender off of the table." ■



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WOMEN TO GET INVOLVED IN AVIATION.

BY JACQUELINE LOUIE

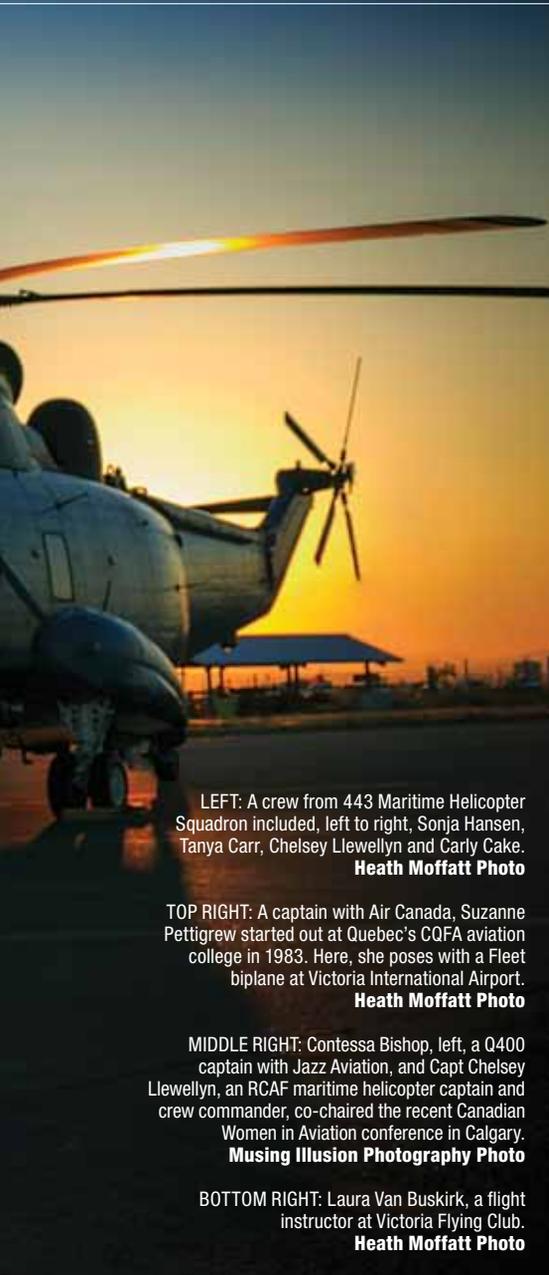
Whether women are involved in the aviation industry as a vocation or avocation, Canadian Women in Aviation (CWIA) is dedicated to supporting them from that initial spark of interest all the way through to a lifelong investment in aviation, “in whatever capacity they decide to take it,” according to Capt Chelsey Llewellyn, a maritime helicopter captain and crew commander in the Royal Canadian Air Force (RCAF).

Llewellyn co-chaired CWIA's recent 2017 conference, themed “Rise and Thrive,” which took place at Southern Alberta Institute of Technology's Calgary campus from June 21 to 24. CWIA's 14th conference was attended by 170 registrants from across Canada, as well as from the U.S. and overseas.

A biennial event that has been held since 1991, the CWIA conference provides women

with a unique perspective that “cuts through a lot of the isolation that women in aviation experience,” said Llewellyn, who co-chaired the conference with Contessa Bishop, a Q400 captain with Jazz Aviation. “It's about professional development, networking, creating friendships, and mentorship. It's about promoting women to enter the field of aviation—a career that has no gender limitations.”

CWIA is a non-profit organization that is completely volunteer-run, with the mission of supporting, educating and fostering networks for women in aviation. This year's conference included nearly two dozen speakers, as well as a tradeshow and recruiting expo; and half a day of tours to a variety of organizations and locations in Calgary, including WestJet, Viking Air, the Calgary Police Air Support Unit, the Calgary Airport Authority and SAIT Aerospace.



LEFT: A crew from 443 Maritime Helicopter Squadron included, left to right, Sonja Hansen, Tanya Carr, Chelsey Llewellyn and Carly Cake.
Heath Moffatt Photo



TOP RIGHT: A captain with Air Canada, Suzanne Pettigrew started out at Quebec's CQFA aviation college in 1983. Here, she poses with a Fleet biplane at Victoria International Airport.
Heath Moffatt Photo



MIDDLE RIGHT: Contessa Bishop, left, a Q400 captain with Jazz Aviation, and Capt Chelsey Llewellyn, an RCAF maritime helicopter captain and crew commander, co-chaired the recent Canadian Women in Aviation conference in Calgary.
Musing Illusion Photography Photo

BOTTOM RIGHT: Laura Van Buskirk, a flight instructor at Victoria Flying Club.
Heath Moffatt Photo

Marcia Strang, who works as an emergency planner with the Vancouver Airport Authority, has been attending CWIA conferences since 1991.

"There is great value in holding these kinds of events for women to get together," said Strang, an organizing committee member for this year's conference. "We are always looking for ways for women to feel included, and to help mentor each other in aviation."

The CWIA conference is an inclusive event, open to both men and women, Strang added. "We want everyone to feel welcome and be heard. You don't have to be a member of a club, and you don't have to join any organization to attend."

More than 23 speakers, including military experts and industry leaders, presented at the conference.





Kathy Fox, chair of the Transportation Safety Board of Canada, speaks at the CWIA conference. (See more on page 104). **Musing Illusion Photography Photo**



Capt Judy Cameron, the first female pilot hired by Air Canada in 1978, said being a pilot is "the best job in the world." **Musing Illusion Photography Photo**

Here's what some of them had to say:

DEVELOPING LEADERS

Maj Gen Tammy Harris, deputy commander of the Royal Canadian Air Force—the first woman to hold such a post in the entire Canadian Armed Forces—described the CWIA conference as an outstanding way for women to strengthen their voice.

"Your voice, your career, your choices, your leadership, your mentorship, your wins, your failures, your courage and your strength—all these things come together to enable you to change the world around you," she told CWIA conference participants.

"By extension, you cause a ripple effect that is changing the world. You are making a difference, and you are a catalyst for change. Other people are watching, and are going to pick up on what you do. Being a woman in 2017 is both a privilege and a responsibility. It's a privilege, because we live in a democracy where we can go out and have a voice. And it's a responsibility, to continue moving forward and help those who haven't found their voice yet, to find theirs."

TRAILBLAZERS

Many of the speakers addressed the need to encourage the next generation of women to consider a career in aviation.

Capt Judy Cameron, the first female pilot hired by Air Canada in 1978 and the first female Boeing 777 captain in Canada, described being a pilot as "the best job in the world." She encouraged more women to enter the field.

"Women rarely seek out non-traditional careers such as those in aviation," she said, noting that females make up just five per cent of airline pilots worldwide. (Air Canada is doing slightly better than average, with 210 women pilots out of a total 3,491).

Cameron, who believes it's important to make women in aviation more visible, advised CWIA conference attendees to pursue their dreams relentlessly.

"The reason I got to where I am today is that I worked to achieve what I did. I was following a very strong role model, my mother, who was a single mother in the '50s and brought me up to believe I could be anything I wanted to be," said Cameron, who is now retired.

"Don't let anyone dissuade you, and do not limit yourself—believe in your own abilities," she said. "If you believe in yourself, anything is possible. Pursue excellence. When you do your very best with all your heart, the sky is certainly the limit. Don't give up. And don't take no for an answer."

Tracy Medve, president of KF Aerospace, told conference attendees that it's important

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“My hope is that one day, it will just be ‘people’ in the aviation industry—that gender will be irrelevant: Colleen Halpin, vice chief of defence staff CWO. **Musing Illusion Photography Photo**



“Don’t be afraid to tackle new challenges” was the message from Tracy Medve, president of KF Aerospace. **Musing Illusion Photography Photo**

not to be afraid to tackle something new, even if it’s in an area they don’t know a lot about, “because you’ll always learn something new and useful that will take you to the next step, and the next step beyond that. It’s important to work hard. If you give your utmost effort in everything you do, if you’ve got a good track record of taking on responsibility and showing initiative, you will be recognized as someone who can be trusted and relied on.”

MWO Laurie Moore, RCAF traffic technician and CC-130/CC-177 loadmaster, described aviation as an exciting and deeply rewarding industry. Even when there are tremendous challenges, “you’re going to find your way around it,” she said. “Just because it’s difficult doesn’t mean you can’t overcome it. Not all obstacles are roadblocks and you need to recognize the fact that it’s only an obstacle.”

To bring more women into the industry, “we need to make women in aviation an acceptable norm,” said Capt Kaylee Horn, a helicopter instructor and school flight safety officer with 3 CFFTS Canadian Forces Flying Training School.

Horn, who spoke about women in aviation from a transgender perspective within the RCAF, believes that the only way things will change is to make women more visible in their roles.

“The only way you represent societal norms is to be visible,” she noted. “Visibility sets the norm for the public. Visibility sets the tone for what women can do.”

As part of her own routine, Horn will wear her flight suit while doing after-work errands, instead of going home and changing first. This way, people not only see her, they’ll also strike up conversations with her. She gets a lot of kids coming up and asking her about her job.

When women have the opportunity to be visible, and if they want to be visible, Horn encourages them to do so—for example, by appearing at airshows and at public events.

Attracting women into the aviation industry is just the first step, she believes. The next step is how to keep them.

“The few who make it often feel isolated,” said Horn, who thinks that mentorship helps give women both a sense of community and a sense of direction for their career.

In her presentation, Horn spoke about her experience as a transgender woman. Born male, “I always kind of knew I was a woman at heart, but didn’t know how to speak that out, so I stayed hidden. I didn’t see another way to exist in this world and support myself,” she said.

Then she reached a point in mid-life when she realized that she didn’t have a life. “I got to a point where there was no value in it. I had to make the decision to

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SKIES CONTRIBUTING PHOTOGRAPHER
HEATH MOFFATT AIMS TO INSPIRE THE
NEXT GENERATION.

BY LISA GORDON

Heath Moffatt is always looking for a new angle.

These days, Moffatt—a Victoria, B.C.-based professional commercial photographer who specializes in aviation photography—is passionate about what he calls his “Pilot Project.” It’s a collection of photos depicting the men and women of Canadian aviation, and his subjects aren’t just pilots. He’s volunteered to photograph maintenance personnel and other aircrew members, too.

Moffatt, who developed what he calls a “love affair” with aviation around age 10, decided to merge it with his other passion in life, photography.

Since then, he has honed in on various sectors of the industry. Most recently, he partnered with Canadian Women in Aviation (CWIA) to shoot photos of women who have made aviation their life’s work.

“Turning that into a personal project [as a division of] Pilot Project has allowed me the freedom to go out and create and celebrate the women that are in the aviation industry,” said Moffatt.

“One only has to look at the statistics to see there is a massive imbalance with women in the industry. Gender shouldn’t be an issue. We’re all human beings. We all share a passion for flying. Flying is freedom.”

He said that when he meets a new subject, he tries to discover what inspired them to pursue their career, and then he tries to portray that passion through visual storytelling.

His ultimate goal is to spark that same fire in the next generation.

“The angles I’m choosing when I photograph them almost make them seem

like superheroes,” he explained. “The motivation here is to come up with a creative image. The aircraft becomes almost a prop—no pun intended! It’s really all about the pilot and their achievements.”

Moffatt especially enjoys photographing veterans and active military members.

“As a grateful citizen, this compelling image is my way to say thanks for what they do out there. And it’s fun to come up with dynamic, unique visual stories to tell in a minimum amount of time.”

While every photographer’s style may be slightly different, Moffatt emphasizes lighting to create his unforgettable images.

“How can I light something to make it pop? I always look at what my colleagues in the profession are doing and then I ask myself how I can be different,” he told *Skies*.

As for Pilot Project, Moffatt said his non-revenue labour of love is gaining momentum. He would like to have the opportunity to cross the country, creating a photographic record of the faces of Canadian aviation. He mentioned Chris Hadfield and Canada’s newest female astronaut, Jennifer Sidey, as two people he’d like to photograph. One day, he’d like to see it go international.

“This is my Pilot Project, creatively and figuratively,” concluded Moffatt. “It’s pulled me in some fantastic directions so far. What’s next? I’m going to leave all the doors open to whatever’s on the horizon. There are a lot of extremely talented people out there.”

Editor’s note: Look for many of Heath’s unforgettable Pilot Project images in our Women in Aviation section.

either end my life, or accept the difficult path of transitioning.”

Looking back, four years later, “that was the right decision for me,” said Horn, 45, who sees society changing rapidly, allowing more people to express who they truly are.

She added: “The best thing is that women are capable, and are currently in every job in the aviation industry.”

A SYSTEMS APPROACH TO AVIATION SAFETY

“In today’s environment, what we are learning is that it really takes a systems approach to safety,” said Kathy Fox, chair of the Transportation Safety Board of Canada (TSB).

A systems approach to safety not only includes training and preparation for aircraft crew, but also considers the operating environment in which people are working, said Fox, noting that companies must be able to manage their safety risk with formal processes, and demonstrate they can effectively manage that risk.

On its watchlist, the TSB has identified a number of recurring safety issues that warrant more attention from the government, Transport Canada and industry alike.

Among 10 key transportation safety issues, there are three related to aviation: unstable approaches, runway overruns, and risk of collisions on runways. There are also two multimodal issues: safety management and oversight, and slow progress addressing TSB recommendations.

“Industry doesn’t have to wait for the government or the regulator, Transport Canada, to act,” said Fox. “They can take voluntary steps to reduce the risk in their operation.”

INTO THE FUTURE

“My hope is that one day, it will just be ‘people’ in the aviation industry—that gender will be irrelevant,” said Colleen Halpin, vice chief of defence staff CWO, the first woman in the Canadian Armed Forces to hold this appointment.

“When everyone has equal opportunity to do what they want to do—to take that gender piece out of the equation, and to just be successful Canadians in aviation—that will be a good day.”

The next CWIA conference will take place in 2019. ■



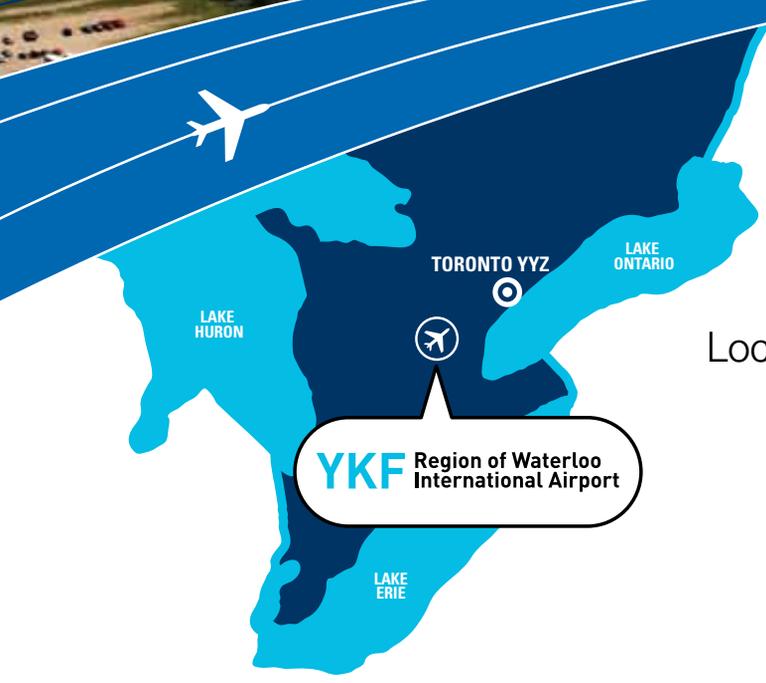
Jacqueline Louie is a Calgary-based freelance writer. Her work appears in magazines, newspapers, and online.



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THE LIGHT TWIN

SKIES TAKES A SPIN IN DIAMOND AIRCRAFT'S NEW SEVEN-SEAT DA62.

BY ROBERT ERDOS | PHOTOS BY ERIC DUMIGAN



Reimagined



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Diamond Aircraft's new all-composite DA62 fits a myriad of missions: twin-engine trainer, charter aircraft, corporate shuttle and personal transport. Production is being transferred from Diamond Austria to the plant in London, Ont., with the Canadian branch converting the type certificate to Transport Canada authority, a process it hopes to conclude by mid-November 2017.



The DA62's Austro Engine AE330 180-horsepower powerplants are liquid-cooled, four-cylinder, four-stroke compression ignition designs. Yes, "compression ignition," as in diesel.



The cockpit is accessed via gull-wing doors that, together with the control sticks and interior layout, bring a high-end sports car to mind. **Rob Erdos Photo**



The DA62 features a 60/40 split flat-folding three-seat centre row and an optional third row incorporating two seats. **Rob Erdos Photo**



The optional equipment list includes air conditioning, 36-gallon auxiliary fuel tanks, weather radar, satellite datalink for weather and entertainment, and a TKS "weeping wing" anti-icing system certified for flight into known icing (FIKI). An upgrade to the latest Garmin G1000 NXi avionics system will also be available.



Diamond's DA62 boasts impressive cruise efficiency. During the test flight, fuel flow was just 9.4 gallons of Jet A per engine, per hour. **Diamond Aircraft Photo**

The years haven't been kind to the light piston twin. Several decades ago, in the heyday of general aviation manufacturing, there were dozens of light piston-powered twin-engine airplanes on the market. Today, there are but a few.

Diamond's new DA62 may well serve to reverse that trend. *Skies* magazine was invited to evaluate the innovative composite twin at Diamond Aircraft's factory in London, Ont. The flight revealed an airplane that combines impressive cruise efficiency with unprecedented simplicity of operation and easy handling.

Anyone seeking to eulogize the light twin will no doubt quote two factors that purportedly led to its demise: fuel economy and safety. There is no question that it is more expensive to feed and service two powerplants, and today's fuel prices will give anyone pause to think before buying an airplane with an "extra" engine.

Furthermore, the primary attraction of a twin-engine airplane is redundancy in the event of an engine failure; however,

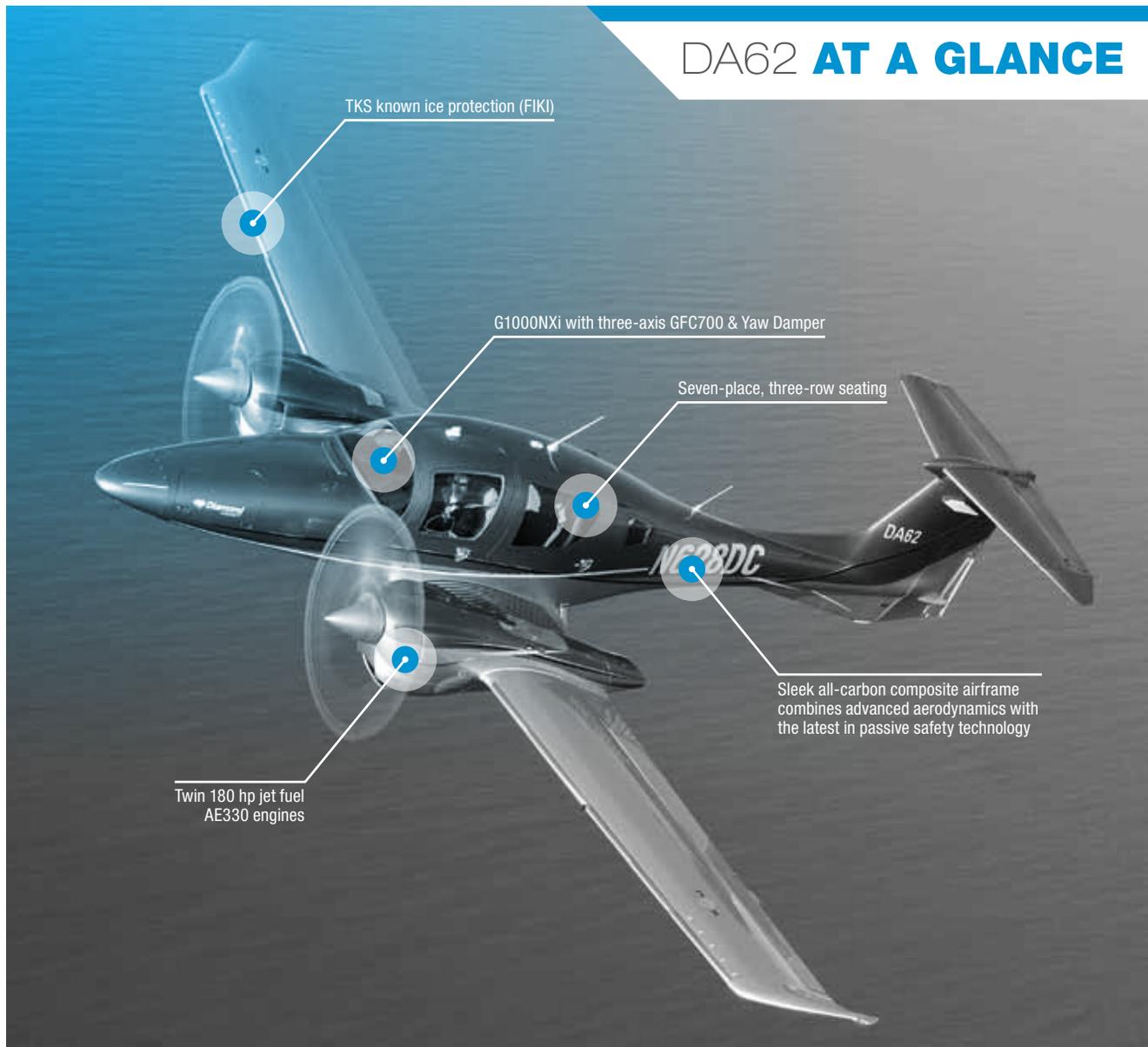
accident statistics have conclusively proven that a light twin is no safer than a single-engine airplane after an engine failure. Sure, there's a second engine, but among the legacy piston twins the complex systems, tricky handling and marginal single-engine performance all erode the presumed safety margins.

The DA62 shines where legacy twins were weak.

SHINY NEW DIAMOND

It's hard to identify the single coolest thing about the DA62, but its Austro Engine AE330 powerplants must be high on the list. They are liquid-cooled, four-cylinder, four-stroke compression-ignition designs, featuring common rail fuel injection, intercooled turbochargers and gear reduction, producing 180 horsepower.

That's quite a hyphenated mouthful, but did you notice the "compression ignition" part? Yes, as in "diesel." Diamond has been an industry leader in the development of jet fuel compression-ignition piston aircraft engines, and from

DA62 **AT A GLANCE**

my brief exposure to the DA62 I can understand the appeal. In addition to being smooth and quiet, their electrical engine control units (ECUs) perform digital magic that greatly simplifies engine management. Liquid cooling also eases operation by eliminating the risk of shock cooling. In further happy news, the overhaul interval (TBO) has recently been increased to 1,800 hours.

A notable advantage of the DA62's novel engines is that they burn Jet A; a big benefit not only because jet fuel is typically cheaper, but because in some locales avgas is simply not available.

The DA62 shares a superficial similarity to Diamond's other twin, the DA42; however, with seven seats it's a completely different aircraft. Both cockpit seats are accessed via spacious gull-wing doors, plus a third on the left fuselage for access

to the back seats. There is a 60/40 split flat-folding three-seat centre row and an optional third row incorporating two seats. I took a turn climbing into all of the seats, and found the combination of generously sized doors and ample handholds made it a breeze. Two forward baggage compartments, accessed via two small gull-wing doors on the nose, had a capacity of 66 pounds per side, simplifying management of the centre of gravity.

The optional equipment list provides considerable operator flexibility and includes air conditioning, 36-gallon auxiliary fuel tanks, weather radar, satellite datalink for weather and entertainment, and a TKS "weeping wing" anti-icing system certified for flight into known icing (FIKI). An upgrade to the latest Garmin G1000 NXi avionics system will also prove a popular option.



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Test pilot Rob Erdos was a fan of the DA62's conventional stick and throttle arrangement, finding control response pleasant for hand flying, with just a bit of adverse yaw in evidence at low speeds.



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CLIMB ABOARD

It was my privilege to fly the DA62 with Diamond's chief pilot, Bill Scott. He compared the DA62 to a flying luxury SUV, but I was thinking sports car as I hefted myself up the trailing edge step and then lowered down into the sporty cockpit. The interior layout, gull-wing doors and control sticks in lieu of yokes conspired to whisper "Ferrari." It's the sort of airplane that makes you wish someone was taking a picture of you. Once settled, I found the seats comfortable and the field of view outstanding. The backrests and rudder pedals are adjustable.

Starting the DA62 was almost comically simple. Once the electrical master switch was selected on, the G1000 displays were online within about 30 seconds. Following a quick poke at some self-test buttons, the procedure called for the left engine master switch to be selected on, followed by a brief pause until the engine glow annunciator extinguished, after which the starter button was depressed. Vroom! The process was repeated with the other engine, and we were ready to taxi before I found a place to hide my pen.

The run-up check was similarly straightforward, after we had taxied for a few minutes to warm up the engine oil, coolant and gearbox temperatures. Run-up literally required two steps: depress the ECU test buttons and wait while the engines underwent a programmed test routine, then momentarily test each of the duplex ECUs with another switch. The absence of engine warning annunciations after the test indicated that we were good to go. The checks can be completed simultaneously, making the warm-up the longest part of the pre-flight routine.

It was a long taxi from Diamond's factory to the active runway. I found that the pedals required nearly continuous small nudges to deflect a slightly stiff nosewheel steering mechanism, but otherwise taxiing was pleasant. The two engines sounded like distant sewing machines. Under all that glass, I was already in love with the air conditioner.

Our DA62, registration N628DC, serial number 38, had an empty weight of 3,749 pounds. We added two ostensibly adult humans, 66 pounds of gear, and seven gallons of TKS de-icing fluid, bringing our zero fuel weight to 4,257 pounds. Fuel onboard was about two-thirds of maximum capacity of 89 gallons, bringing our gross takeoff weight to 4,718 pounds. Maximum takeoff weight for the North American models is 5,071 pounds, which left an available payload of 360 pounds. From another perspective, our demonstrator aircraft had a very respectable full fuel payload of 717 pounds, notwithstanding that it was carrying a generous list of options.

SMOOTH CRUISING

It was a perfect day for a test flight, with a quartering crosswind of 15 knots, gusting to 20, as we lined up on London's Runway 15. Full throttle yielded an ECU-regulated 100 per cent power; however, upon advancing the throttles I recall mild confusion because the ample acceleration didn't seem to be accompanied by enough noise. Among their other virtues, the Austro diesel engines are quiet!

The published takeoff distance at maximum takeoff weight under sea level standard conditions is 1,574 feet with the flaps set to the takeoff position. The DA62 is also approved for operation from unimproved strips.

I used the recommended cruise-climb airspeed of 120 knots indicated airspeed (KTAS), which resulted in slightly better than 1,000 feet per minute climb rate. I selected the Flight Level Change mode and watched the GFC 700 autopilot smoothly climb through mild turbulence with less than a two knot speed variation. Nice.

We levelled off at 10,000 feet (2C air

temperature) and 95 per cent power, letting the slippery twin accelerate until we were rewarded with 188 knots true airspeed (KTAS, or 160 KIAS).

If the reader needs a gentle prod when I reach the punchline, this is it: Our fuel flow was 9.4 gallons per hour of Jet A per engine! I simply cannot imagine another production twin-engine airplane that can approach the DA62's impressive cruise efficiency.

Higher altitudes or lower power settings offer even more efficient cruising options. The certified ceiling for normal operations is 20,000 feet. For example, at 16,000 feet,



Skies test pilot Rob Erdos, right, with Diamond chief pilot Bill Scott.

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Diamond has described its DA62 as a “flying SUV,” in large part due to its spacious cabin which offers optional three-row, seven-passenger seating.



The DA62's engine controls consist of a power lever and an engine master switch. It is simplicity itself.



Given its jet-like operating simplicity, the DA62 would be an ideal twin-engine trainer.

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standard conditions and realistic operating weights, a 75 per cent power setting yields a published speed of 177 KTAS burning 14.8 gallons per hour. On missions where endurance is the objective, a 50 per cent power setting delivers 144 KTAS and 9.7 gallons per hour. With a published no reserve maximum range of 1,345 nautical miles, or a maximum endurance of 9.5 hours, full fuel tanks in the DA62 broaden one's options.

Looking around the DA62's tidy cockpit, I was struck by what was missing. In lieu of the usual forest of knobs and levers—throttle, propeller speed, mixture, cowl flaps, carburetor heat, magnetos—the DA62's engine controls consisted of a power lever and an engine master switch. Propeller speeds were set and synchronized by the ECUs. Mixture control was automatic, as was everything else. It was simplicity itself. One can hardly wish for less.

HANDLING

We found a few minutes to assess the DA62's handling. I was a big fan of the conventional stick and throttle arrangement, even in a twin, and found the controls all fell comfortably to hand. Control response was pleasant for hand flying, with just a bit of adverse yaw in evidence at low speeds. I found the rudder forces firm.

We did a few power-off stalls in various configurations. They were uniformly

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benign, with a gradual crescendo of airframe and control buffeting, in addition to the mandatory lights and tones, to awaken even the most obtuse pilots. At our loading condition, I could comfortably sustain full aft stick while retaining adequate lateral control.

Scott talked me through an engine shut-down. The procedure was as follows: Shut off the switch. Okay. I wanted to simulate a worst-case engine failure on takeoff, so I applied full power with the speed still low following a practice stall in the takeoff configuration. Passing the normal rotation speed of 80 KIAS, I selected

the critical left engine master switch off. Faster than I could say, “identify, verify, feather,” the engine shut down and the propeller feathered. The transition to a single-engine climb at the recommended 87 KIAS presented no undue challenges. Again, rudder forces were high, but trim authority was sufficient. The certified single-engine ceiling is 13,000 feet.

En route back to London, Scott made quick work of the set-up for an autopilot coupled instrument approach on the Garmin G1000 avionics suite. I used the opportunity to feign distraction, allowing our roll attitude to increase toward a dangerous spiral divergence. Fortunately, the G1000’s Electronic Stability Protection (ESP) system was paying attention, activating to gently nudge the controls back toward a safer flight regime; an invaluable safety feature in a light airplane.

All too soon, the DA62’s solid trailing link undercarriage lowered us onto the runway at London. It speaks well of an airplane when I need to consciously restrain myself from adding power and taking it around the pattern again. I was smiling. In the DA62, there’s a lot to like.

UTILITARIAN EFFICIENCY

I foresee the DA62 fitting into myriad missions. Given its jet-like operating simplicity, the DA62 would be an ideal twin-engine trainer for those pilots intent upon flying “grown up” airplanes.

With seven seats, it’s certainly not the cheapest dedicated trainer, but some operators will appreciate an aircraft with legitimate charter capability. It would make an ideal light corporate shuttle, especially for flight departments with mixed fleets where the crews have all but forgotten concepts like cowl flaps and mixture controls, since its operation is “turbine simple.”

It’s easy to envision the DA62 as personal transportation for a family that feels that redundancy is better served by a “spare” engine than a parachute. In short, there are plenty of uses for a DA62. Perhaps there are good reasons to buy a piston twin after all. ✚



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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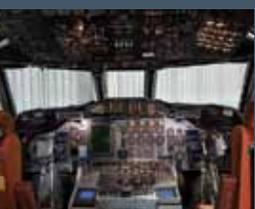
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SMART FACTORY

GE AVIATION'S QUEBEC AUTOMATION JOURNEY GOES GLOBAL.

BY CHRIS THATCHER

Drive southeast from Montreal along Highway 10, and the city centre soon gives way to the bucolic landscape of the Montérégie region's small mountains, arable plateaus, and rolling hills best known for vineyards, hiking and other outdoor activities.

It's not exactly where you'd expect to find a high-tech hub. Yet nestled in the small town of Bromont, at the foot of Mount Bromé, lies one of the leading developers of aerospace manufacturing automation, an engine components company maximizing robots in its own processes and exporting automation solutions worldwide.

With over 80 facilities globally, General Electric Aviation could have selected from any number of locations to establish its Global Robotics and Automation Centre in 2011. Bromont, however, stood out. It was the most automated facility in the GE Aviation supply chain, and it was in the thick of Quebec's energetic and rich technology and aerospace R&D cluster.

"We are a well-kept secret," admitted Alain Ouellette, the centre's executive leader. "[But] we were heavily invested in automation, and we had demonstrated the capabilities, so it was a natural flow into the automation centre."

Bromont manufactures compressor blades and vanes for such engines as the CFM56, the widely-used turbofan engine produced by CFM International, a joint venture between Safran and GE; the Leap, the highly advanced eventual replacement for the CFM56 series; and the GENx, a next-generation engine for, among others, Boeing's 787 Dreamliner and 747-8. It also produces parts for Safran and for IHI's (Ishikawajima-Harima Heavy Industries) CF34-8 and CF34-10 engines.

The facility produced 3.2 million parts last year and is expected to exceed four million in 2017 as CFM56 production levels off and Leap production ramps up. Remarkably, while the workload has steadily increased year over year, the workforce of 700 has remained largely the same, due primarily to automation.

"Back in '83, for the whole year, we produced five CFM engines. Today, (in a 12-hour shift) we produce five engines," said Bill Mateer, site operations manager.

Bromont was built as a state-of-the-art facility in the early 1980s, an industrial and technological benefit commitment related to the purchase of the CF-188 Hornet fighter jets, and, like much of the manufacturing sector at the time, immediately began experimenting with robotics. But the venture proved to be short-lived. Too few processes were robust or repetitive enough to automate successfully, and by 1985 the robots were removed.

"In the '80s and '90s, we tried things and found that automating a bad process gives you cheaper bad parts, but they are still going to be bad," said Ouellette.

"We didn't have process control," added Mateer. "Robots do excellent work when you have a repeatable process. We didn't have it."

What GE Aviation calls its "automation journey" took flight in the late 1990s as the Japanese principles of kaizen (continuous improvement) and lean (waste reduction) took root in North American manufacturing. For Bromont, robots also help to solve critical health and safety problems, especially for workers sweltering in repetitive and hazardous forging processes.

"We did a lot of kaizen activities, we leaned out the processes, and it became evident that we had opportunities for automation," Ouellette explained. "And then people started asking for robots. That was the great



GE Bromont manufactures compressor blades and vanes for the CFM International Leap engine, the highly advanced eventual replacement for the CFM56 series turbofan engine. **Rob Butler for GE Reports Photo**

 Watch the video [here!](#)



Staff in Bromont also make parts for the GEnx, a next-generation engine for, among others, Boeing's 787 Dreamliner. **GE Photo**

thing. They said, 'Have you thought of putting a robot here?' It has just snowballed since the late '90s."

Today, the facility features over 150 robots performing a variety of forging, forming, testing and inspection processes. And poor safety ratings, which hampered the company's performance two decades ago, have been replaced by best-in-class practices.

EXPORTING EXPERTISE

GE Aviation may have placed the Global Robotics and Automation Centre in Bromont, but the Bromont shop floor comprises only a small part of the centre's focus. It has served as a testbed for automating compressor and vane manufacturing, but the company consists of at least seven different value streams—from airfoils, to composites, engine component repair, assembly and testing—at over 80 facilities in 20 countries, and the robotics centre has a mandate to help develop automation solutions for all.

Starting from a small team of mostly local hires, the centre has grown to almost 50 engineers. It works with Fanuc Robotics Canada to design and build the actual automation solutions, but draws on the guidance of the chief manufacturing engineer

for each value stream as well as site visits to identify priorities and processes ripe and robust enough for automation.

So far, Ouellette and his team have travelled to half of the facilities across GE's global network, from Europe, to Asia, South America and throughout North America, and have developed an automation "growth playbook" for each value stream, a roadmap to guide the systematic introduction of robotics that leverages the innovation within and across each stream.

"We try to develop a solution that is going to be generic for a value stream. Once we have made a copy of something and we have it working well, and we have it in site A, ideally site B is also able to use that same technology," he explained. "We will tweak it slightly for a different product, but 80 per cent of the engineering is reusable. We don't want to invent a customized solution for every site."

Recent accomplishments include robots for GE's new additive manufacturing plant in Auburn, Ala.; an automated engine inspection system for Peebles, Ohio, to ensure CFM engines destined for Boeing are correctly assembled; and early work on a solution for an engine assembly facility in Lafayette, Ind., to inspect a fully assembled engine for all the correct nuts, bolts and brackets. In total, the Bromont centre

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ABOVE: More than 150 robots perform a variety of forging, forming, testing and inspection processes. **GE Photo**

RIGHT: The Bromont centre expects to deliver around \$11 million in automation solutions for the GE supply chain this year. **GE Photo**



“

As advanced as many of the automated systems may seem, they represent only the first steps in a much longer “smart factory” journey.”

expects to deliver around \$11 million in automation solutions for the GE supply chain this year.

“The selection of the projects is heavily scrutinized to make sure we hit the right priorities with the right return on investment,” Ouellette said. “Most are new applications that are developed here and then transported around the world. We export Quebec know-how and expertise around the world.”

DATA-DRIVEN BUSINESS

The Bromont factory floor is a captivating blend of human and robot interaction. While many of the automated processes are of the dull and dangerous variety—the repetitive forging of small parts in front of a hot furnace that requires human monitoring or the precision honing of enhanced leading edges on next-generation compressor blades—others are more sophisticated examples of collaboration in which machine and human work together to produce parts.

An initial fear that robots would replace large segments of the workforce proved unfounded. “We found the opposite,” said Mateer, noting that even with the removal of some 50 million manual operations in forging and forming, the number of employees remains mostly the same.

In fact, the workforce has become more technically proficient, trained to understand, adjust and operate parts of robotic equipment. “We didn’t send our operators to school, we trained them here to manage the robots,” said Ouellette. “The idea is, let’s raise the skill set; let’s prepare them for the future.”

As advanced as many of the automated systems may seem, they represent only the first steps in a much longer “smart factory” journey that will eventually see the introduction of artificial intelligence, led by GE’s global research centre in Niskayuna, N.Y.

“We are in the early stages of hooking up our machines to systems that will bring them judgement, the ability to make decisions, able

to work in an autonomous way,” said Ouellette.

Next generation engines will introduce new alloys, ceramic matrix composites, and additive manufacturing, all of which will require further innovation and automation, he observed. “Technology constantly evolves; it is a never-ending story.”

At present, the automation solutions are what he called Predix-capable, GE’s cloud-based analytics platform for the data generated by industrial equipment that will eventually drive critical decision-making. “We are not fully connected yet, but since the ‘90s this has become more and more a data-driven business.”

That is reflected in things like the measurement and management of coolant for machine tools. Ten years ago, every machine had its own cooling system; today, “we have centralized the coolant, we have better control over the temperature, the cleanliness, and we have simplified the maintenance program on the equipment,” he explained.

Despite the remote location, GE Aviation has had little difficulty attracting talent. Bromont sits between Montreal and Sherbrooke, with access to a half dozen universities and technical schools, all developing graduates eager for well-paying jobs and rewarding work. It may be within commuting distance of Montreal, but it offers a quality of life ideal for families.

“It puts us in the middle of a very generous ecosystem of engineering,” said Ouellette. “We have a variety of different engineering challenges that make it interesting for people to come and work here.”

And when others downsize, GE Aviation has opened its doors, recently capturing talent from IBM, among others.

The Global Robotics and Automation Centre may still be a relatively well-kept secret, but as more of its solutions change manufacturing and business processes in GE Aviation facilities around the world, it won’t remain that way for long. 



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A MARKET WORTH PURSUING

OTTAWA AVIATION SERVICES HAS GROWN INTO A PROFESSIONAL PILOT TRAINING SCHOOL THAT HAS ITS SIGHTS FIRMLY SET ON THE GLOBAL MARKET.

BY JAMES CARELESS



Ottawa Aviation Services (OAS) is focusing on the global professional pilot market by cementing partnerships with domestic operators while running a cutting-edge training facility in Cornwall, Ont.

Based at the Nav Centre—the former Transport Canada ATC (air traffic control) residential training campus in Cornwall now operated by Nav Canada—OAS’

Professional Pilot Training Centre of Excellence features the latest in ground school and simulator equipment.

Ground instruction is complemented by the school’s fleet of Cessna C172, Grob G115C and Piper Seneca II aircraft, along with partner-owned King Air 200 twin turbine aircraft. (OAS continues to operate its original flight training school at the Ottawa Macdonald-Cartier

International Airport.)

“Over the next 20 years, 150,000 new pilot positions are projected to become available in the global market,” said Joan Williams, chair of the OAS board. “Add the fact that 100,000 more pilots will be retiring, and we expect that a quarter of a million new professional pilots will be needed by the year 2037.”

That’s the future. Even today, the global

 Watch the video [here!](#)

Ottawa Aviation Services (OAS) has partnered with National Helicopters to train Chinese helicopter students at the Nav Centre in Cornwall, Ont. **OAS Photo**





OAS is transforming from a local flight school to an international flight training management company with locations in both Ottawa and Cornwall, Ont. **OAS Photo**



Nav Canada operates the Nav Centre, the former air traffic control residential campus in Cornwall. OAS' operation there is part of a larger strategy to turn the facility into a world-class flight training centre. **Nav Centre Photo**

professional pilot training market is worth US\$15 billion. “That’s equivalent to the list price of 45 Boeing 777-300s,” remarked Williams. “It is definitely a market worth pursuing.”

OAS’ operation at the Nav Centre is part of a larger strategy to turn this former Transport Canada campus into a world-class flight training facility. This includes the Centre of Excellence in Aerospace Training Education and Research program that has been established at the Nav Centre by Nav Canada and Carleton University. The Nav Centre provides the facilities while instructors from Carleton and Nav Canada deliver courses, including a recent five-day session on flying drones safely.

“Cornwall has become an important focus of our efforts as we transform OAS from being a local flight school to an international flight training management company,” said Cedric Paillard, president and CEO of OAS. “Working with the Nav Centre, the Cornwall Regional Airport, commercial air transport operators as well as domestic and international training and

technology partners, our goal is to make OAS a globally recognized professional pilot training provider.”

OAS is working in partnership with National Helicopters of Kleinburg, Ont., at the Nav Centre.

“National is providing rotary-wing flight training for foreign students in Cornwall,” said Dan Munro, president of National Helicopters. “We have based five Robinson R22s at the Cornwall Airport for this training, along with our flight instructors. OAS is providing the training program management and groundschool instruction, with accommodations provided at the Nav Centre.”

According to Munro, the Nav Centre is also providing all classrooms, lecture halls and ATC simulators.

At present, OAS and National Helicopters are training 34 Chinese helicopter students in Cornwall, with 20 more international rotary-wing student pilots expected by September 2017.

OAS is scheduled to welcome 30 international fixed-wing students in mid-2017.



Chinese students train in Cornwall. **OAS Photo**

[As these students are being sponsored by a non-Canadian organization, OAS does not require approval from the Ontario Ministry of Training, Colleges and Universities to operate as a Private Career College (PCC), said Paillard. However, he added that OAS has applied for PCC approval for its expanded operations in Cornwall.]

Meanwhile, at the Ottawa campus, OAS trains Canadian and international students to obtain their Integrated Airline Transport Pilot Licence (iATPL); trains graduates to become instructors through its Enriched Flight Instructor Rating course; and provides instructors with the opportunity to build the pilot-in-command (PIC) time necessary to move to the flight deck of a commercial air transport plane.

The world’s airlines need well-trained professional pilots; not just in Asia, but right here in Canada. Regional carriers such as Air Georgian, Porter Airlines and Transwest Air are among those in need. That is why Air Georgian and Transwest have signed agreements with OAS to hire students who have graduated from the school’s iATPL program and built their PIC time as flight instructors, all the while meeting the school’s benchmarks.

The details: Under OAS’ iATPL program, a successful student who earns 250 hours of flight and 760 hours of groundschool can write the ATPL exam to qualify as a captain or co-pilot on a two-crew aircraft over 12,500 pounds, rather than having to log 1,500 hours of flight time before doing so. As part of the iATPL program, this student will have earned a student pilot permit, private pilot licence, night rating, commercial licence, multi-engine rating and a Group 1 instrument rating.

“The purpose of our Memorandum of Understanding with OAS is to set out a cooperative framework whereby Air Georgian will hire flight instructors from OAS as flight crew employees for the Air Georgian CRJ operation,” said Julie Mailhot, the airline’s chief operating officer. “This framework includes provisions for interviews and hiring timelines that will benefit OAS by aiding instructor retention, and benefit Air Georgian by contributing to the building and maintenance of a pool of qualified



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pilot candidates.”

She added that candidates will benefit from a clearly defined career pathway progressing from their first instructing job to a position as a pilot on a regional jet operated by Air Georgian, an Air Canada Express partner.

Although Air Georgian only signed this deal with OAS in April 2017, Mailhot is confident in its success. “We have had successful candidates coming from this school before so we knew about the quality of the instruction,” she said. “We reviewed their training centre, training techniques and curriculum and their SMS

system prior to signing the agreement.”

To help identify future flight crew members, Porter has established the Destination Porter pilot mentoring program which counts OAS and other Canadian flight schools as partners. For a pilot to be accepted into Destination Porter, they must have a minimum 3.0 GPA, as well as a strong flight test record and a recommendation from their flight school.

“OAS has a very effective selection process. [It] offers a high standard of training and its graduates complete the program with essential skills that we value at Porter,” said Capt Julie Beverstein, the

airline’s pilot recruitment ambassador and an active captain in her own right. She added that, “OAS is very progressive and invests in its program to deliver a high level of relevant training for its students. They understand the importance of students graduating with integrity, professionalism and a strong work ethic. Students receive the skills needed to find meaningful work through one of many pathway programs.”

Even before OAS’s iATPL program came on stream, the school’s high standard of professional flight training paid off for student Daoud Hassan. A lifelong flying enthusiast who had his first lesson at age eight—“I had to take four cushions off the family couch into the cockpit, so that I could see over the panel,” Hassan said—he earned his private pilot’s licence as a teenager before moving on to a flight attendant position at Etihad Airways. He came to OAS in 2012 to earn his professional pilot’s licence.

“After just over 14 months of working with OAS, I had made my way to a Class II instructor and was working ‘round the clock to get my hours up,” said Hassan. When he had earned 1,500 hours, Daoud went for a job interview at Air Georgian.

“I didn’t require a sim eval or any computer-based testing as I was a candidate coming from OAS—that stuff was part of my selection as a flight instructor—which was a benefit of working at OAS,” recalled Hassan. “I must have done all right, because Air Georgian chief pilot Andre Daryanani offered me the job three weeks later, which I gladly accepted.”

After nearly five years operating as a crewmember on the Beech B1900D and the CRJ, Hassan is now a training captain on Air Georgian’s Bombardier CRJ200 fleet, “and really enjoying the challenge of being a check pilot for the company.”

“Even before we launched our training facility at the Nav Centre, and signed crewing agreements with Air Georgian and Porter, OAS was on the fast track to being an international flight training facility,” concluded Paillard. “We’ve come such a long way from being a private pilot flight school that started out at the Ottawa airport in 1990!”

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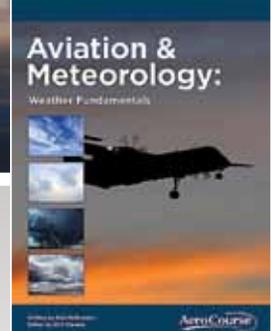
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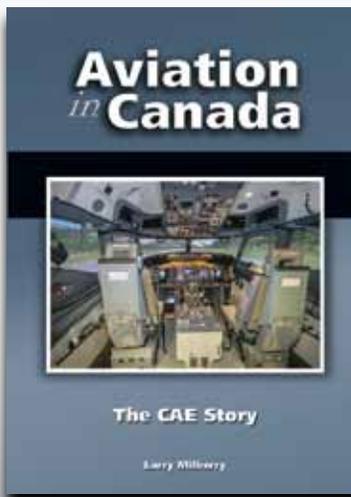
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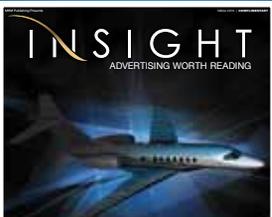
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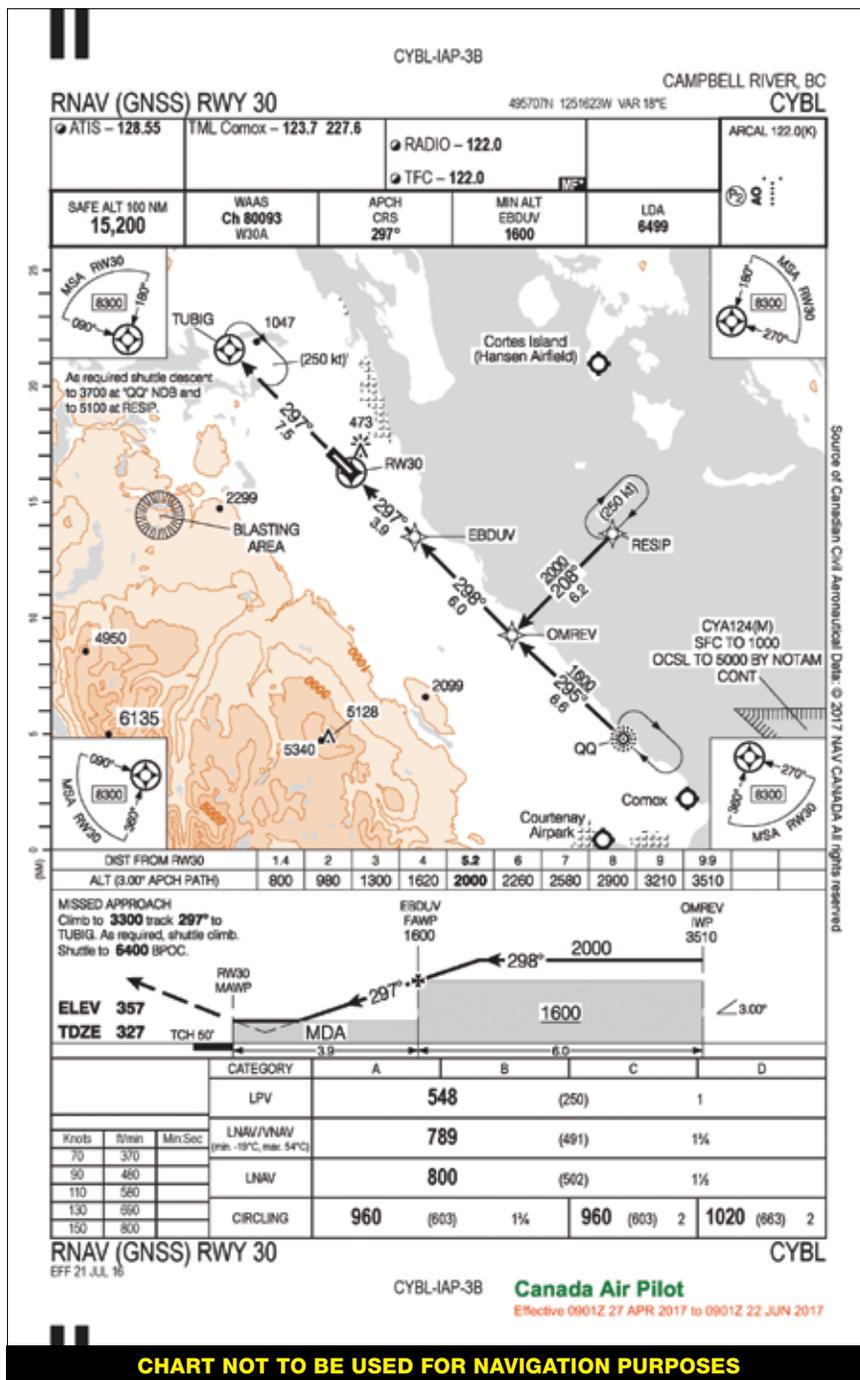
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BY JOHN MONTGOMERY



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Examine the following approach plate and take your best shot at the accompanying questions—answers can be found at www.skiesmag.com/iq.

CAMPBELL RIVER, B.C. (CYBL) RNAV RWY 30 APPROACH

1. Is the local weather and altimeter setting available on a 24-7 basis?
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3. If flying the RESIP transition for the straight-in approach, what is the bearing and distance between RESIP and OMREV? Also, what is the minimum allowable altitude between these fixes and the obstacle clearance provided when cleared for the approach?
4. While flying the LNAV approach, you are established on final at 2,000 feet and are planning on conducting the CDFA approach. At what point should the descent be initiated?
5. Relative to the above, your groundspeed is 100 knots, what should be your target rate of descent and target FAWP crossing altitude?
6. Name the fly-over waypoints within this procedure.

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 Kathy Fox, TSB chair

BY LISA GORDON

Fifty years ago this summer, Kathy Fox took her first flying lesson at the Calgary Flying Club.

She was just 15 at the time, but the experience—a gift from her uncle—only solidified a passion for flight that goes back as far as she can remember.

“I always wanted to fly. As I was growing up I wanted to be an astronaut, a fighter pilot, and an airline pilot. But whatever I did, I wanted to fly,” said Fox, who today is chair of the Transportation Safety Board of Canada (TSB).

Born in Montreal, Fox moved around the country as a child. Her father worked for CP Rail, so the family relocated to Vancouver, then Saint John, N.B., and finally back to Montreal, where Fox attended high school and then earned a science degree at McGill University.

“While I was at McGill, I took up skydiving [in 1968] because it was a cheap way to get up in the air,” Fox told *Skies*. “When I graduated from McGill, I still wanted to fly, but I didn’t have the money to get my licence.”

To stay involved with aviation, she decided to pursue a career as an air traffic controller, accepting a position with

Transport Canada in 1974. Fox worked at various control towers in Quebec before taking the reins of an innovative air traffic control (ATC) training program from 1982 to 1986, offered through a partnership between Transport Canada and the Quebec Ministry of Education. The job provided her with both the money and the time to pursue her dream of flight.

“During that same period, I got my private licence up in Sept-Îles [in 1978]. Then I was transferred back to Montreal, where I volunteered with a flying club, and then ran my own company with three partners. That was Dynamair Aviation.”

Dynamair represented the start of what Fox calls her “parallel career,” which saw her go on to obtain her airline transport pilot licence as well as her flight instructor rating. While working in ATC, she also taught flying at Dynamair and flew air taxi, executive charters and medevacs. To this day, Fox maintains her flight instructor credentials, having taught countless students and logged more than 5,000 hours of flight time throughout her piloting career.

As she looks back at five decades in the aviation industry, Fox is most appreciative

of her wide variety of experiences.

“I took some calculated risks with my career in terms of what would be considered maybe nontraditional or sideways lateral moves, to get experience in different areas.”

She said those moves gave her new skills, pushing her outside her comfort zone and displaying her capabilities and potential to senior management.

In 1992, Fox took a job at air traffic services headquarters in Ottawa, transferring to Nav Canada in 1996, where she ultimately became vice-president of operations before her retirement in June 2007.

Days later, she was appointed a member of the TSB, subsequently assuming the chair’s role in August 2014.

“What I like about the work that we do as an organization is the ability to influence meaningful change that can actually improve people’s lives,” said Fox. “We can’t undo the accidents that have happened. But I think the work that we do can really advance transportation safety by reducing risk So it’s very meaningful and engaging work.”

As a woman in a predominantly male industry, Fox said she hasn’t really come up against significant barriers to success. Throughout her career, she had several mentors who opened doors and encouraged her to reach for the next rung on the ladder.

Today, Fox thinks many young women are simply unaware of aviation-related career possibilities.

“And I think there are still challenges for women trying to manage a family and a career,” she continued. “Finally, I think the other thing is that there are so many more opportunities for women generally in other careers. Are the [aviation] pay scales keeping pace with other fields? I think there’s a combination of factors.”

As for her own career, Fox isn’t sure what she will do when her term at the TSB ends in 2018. She’s keeping her options open, but in the meantime she has no regrets.

“I’ve seen [the industry] from all perspectives,” she said. “I’ve jumped out of airplanes. I’ve flown airplanes. I’ve controlled airplanes. I think all of that has really converged to prepare me for the role that I have today.”

Fox also volunteers her time with the Eastern Ontario chapter of the 99s and has assisted the Rockcliffe Flying Club with offering free flights to women and girls during Women of Aviation Worldwide Week. She has received a number of industry accolades and was inducted into Canada’s Aviation Hall of Fame in 2016.

Her advice to young people considering an aviation career?

“Go for it. Be open to possibilities, go beyond your comfort zone, and you never know where life will take you.”

As chair of the TSB, Kathy Fox is passionate about advancing transportation safety by reducing risk. **TSB Photo**



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