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## 2018 PHOTO CONTEST ISSUE

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**ON THE COVER**

Here's our **2018 Photo Contest Grand Prize Winner!** Stuart Sanders submitted this powerful photo of the 2018 CF-18 Demo Hornet, painted in honour of the North American Aerospace Defense Command's (NORAD's) 60<sup>th</sup> anniversary.



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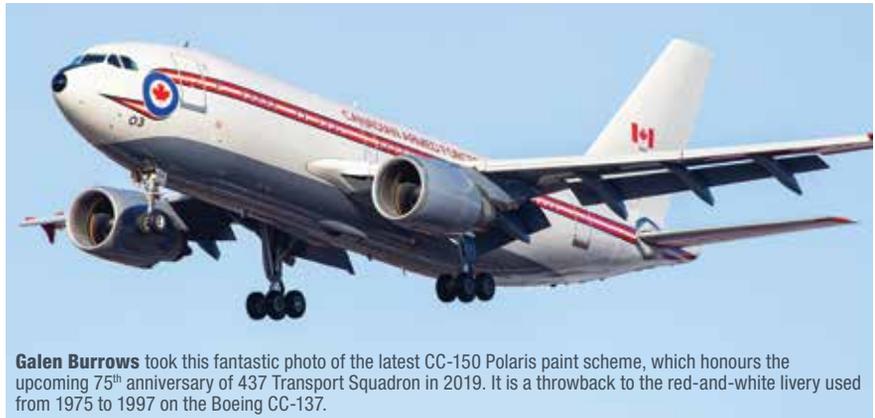
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**SOCIAL SNAP**



Galen Burrows took this fantastic photo of the latest CC-150 Polarispaint scheme, which honours the upcoming 75<sup>th</sup> anniversary of 437 Transport Squadron in 2019. It is a throwback to the red-and-white livery used from 1975 to 1997 on the Boeing CC-137.

Have a great photo to share? We want to see it! Post your amazing aviation photography to [facebook.com/skiesmag](https://facebook.com/skiesmag) or tag it with #skiesmag on Instagram for a chance to be featured here!



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# Column

FROM THE EDITOR  
BY LISA GORDON

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



## Ready to compete?

Operators, look around you. Nearly half of your staff could be looking for another job right now.

That's the surprising fact we discovered in our 2018 Canadian Pilot Compensation Survey, the first comprehensive look at the job market for pilots in decades.

Our survey attracted 1,204 respondents who shared the particulars of their jobs with us, from salaries to non-monetary benefits to insight into their company operations.

We learned that in this labour market, it's all about the offer. So in addition to money, what perks can you give pilots to keep them happy and firmly seated in the cockpits of your aircraft? It's time to get creative about employee benefits.

If you think this doesn't apply to your operation, perhaps it's time to think again. Our survey respondents come from all sectors of the industry and fly all types of fixed- and rotary-wing aircraft, from single-engine trainers to large commercial jets.

In an industry that is still in the early stages of a major pilot shortage, the search for qualified employees will become increasingly intense.

Are you ready to compete for talent? Get started by reading our survey summary on page 28, to see how your company measures up.

This issue of *Skies* also contains one of my favourite features, our annual photo contest. This year, a huge congrats goes to Stuart Sanders, who is the winner of our 2018 grand prize. That's his amazing CF-18 Demo Hornet photo on the cover. Can't you just hear those engines roar? It almost makes you want to cover your ears!

Turn to page 54 to see the rest of our category winners. If aviation photography is your thing, this is sure to be the best collection of images you've seen in a while. And don't forget to check out our digital edition at [www.skiesmag.com/issues](http://www.skiesmag.com/issues), where we've included a wide selection of honourable mentions, too!

Thank you to everyone who entered our fifth annual Skies Photo Contest and, of course, thank you to our sponsors who make it all possible.

On the industry news front, there is so much happening these days! Bombardier's sale of its Dash 8 program to Longview Aviation Capital Corp. (Viking Air's parent company) and the further sale of its Business Aviation Training unit to CAE herald the dawn of a leaner, meaner OEM. Will the CRJ program be up for sale next? Bombardier says it plans to pay the CRJ some much-needed attention, but perhaps the right offer just hasn't come in yet.

As we were going to press, it was announced that Manitoba has officially privatized its aerial firefighting service. The big winner here is Babcock Canada Inc., an engineering support company, which partnered with Air Spray Ltd. in the bid. The contract includes the management, maintenance and operation of Manitoba's fleet of seven CL-215 and CL-415 waterbombers, along with three Twin Commander "bird dog" aircraft.

On the military front, December 2018 marks an historic milestone for the Royal Canadian Air Force (RCAF), as it says goodbye to the venerable CH-124 Sea King maritime helicopter. Originally procured as a sub-hunter in the 1960s, the Sea King—like all RCAF assets—has grown into ever more challenging missions. For 55 years, the Sea King served Canada with distinction. And while the excitement now surrounds the new CH-148 Cyclone, December is all about paying homage to the King. See our digital edition for Heath Moffatt's exclusive photos of the Sea King soaring over Vancouver Island in late November.

Finally, the buzz at the annual meeting of the Air Transport Association of Canada (ATAC) in November surrounded two of the biggest issues impacting commercial aviation in Canada today: impending flight and duty time regulations and, once again, the pilot shortage. President John McKenna told me the dearth of qualified pilots is the biggest challenge facing the industry today.

The association is fighting back with several initiatives, including efforts to make financing for pilot training easier to obtain, and the launch of the website [www.flycanada.org](http://www.flycanada.org).

Which brings me back to my first point, and it's one that is well worth reiterating. Pilot retention is your first defence against the current shortage, because it's so much easier to keep your valuable staff rather than recruiting and training replacements.

If you haven't done so already, now is a good time to take a look at those employee benefits packages. ✚



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# Column

IN THE JUMPSEAT  
◉ BY DR. SUZANNE KEARNS

Dr. Kearns is an associate professor who teaches, researches, and writes about aviation at the University of Waterloo. She is the author/co-author of four books, including *Competency-Based Education in Aviation*.



## Training the next generation of aviation professionals

International aviation is growing at an unprecedented rate.

The International Civil Aviation Organization has projected that by 2036, the global aviation sector will need 620,000 new pilots, 125,000 new air traffic controllers, and 1.3 million new aircraft maintenance personnel. Eighty per cent of this workforce is currently represented by young adults who have not yet begun training.

Education is a key element of meeting the industry's need for competent professionals. Each year, Canadian flight training units produce about 1,200 pilots and college programs produce about 600 maintenance technicians, yet demand is outpacing training capacity.

To produce the professionals required to meet future demand, we need to reflect on existing training practices and carefully consider the integration of new instructional methodologies. One of these is competency-based aviation education.

It is generally recognized that a focus on hours of training (such as a pilot's flight hours) does not necessarily reflect proficiency or skill. Most would agree that some hours can dramatically impact the way you think, act, and feel—while others may have no impact at all. It is logical that what occurs *during* those hours is more important than the *hours* themselves.

So why has the aviation industry historically equated hours of training to competence? We have a long history of regulating a specific number of training hours per licence or certificate. As challenges have arisen and new needs are identified, we often respond by “throwing a few hours of training” at the problem. The advantage of hours is that they are easy to count—and therefore a useful metric that provides a snapshot of experience.

The downside of an hours-based educational system is that it is not as adaptive to individual needs and has limited flexibility for advanced training tools.

Imagine you are a student who has mastered a technique—yet the regulations require you to continue practicing it for five more hours. This is an inefficient use of training resources and it causes frustration from students who may benefit from applying those practice hours to their weaknesses.

Likewise, why would an aviation training unit invest in new technologies (such as simulators) to help students achieve competence more quickly, if those students are still required to complete the same number of training hours?

The challenge of a training system based on “time” is that there is no way to expedite the process. You fundamentally cannot make hours pass more quickly.

However, there is another reference for aviation training and licensing, which is “competence.”

Competency-based training (CBT) uses professional competence as the benchmark for determining when training is complete, rather than hours.

CBT can be a complicated concept. The following three-tiered definition helps to clear up confusion:

- Competence describes the skills, knowledge, and attitude required to function in a professional role.
- Competencies are written statements (usually drafted by a group of experts) that describe competence.
- Competency-based training is an educational program that uses competencies as the primary reference for training completion.

A competency-based approach offers several advantages over traditional hours-based methods, as training becomes more personalized and adaptive. As the “competencies” are the reference for when training is complete, once a student demonstrates competent performance they can progress to the next topic area.

This allows students to move quickly through content they understand—and focus additional time on areas that they find challenging. Training organizations that have advanced equipment, such as flight simulators, can often capitalize on this technology for a greater proportion of a competency-based curriculum.

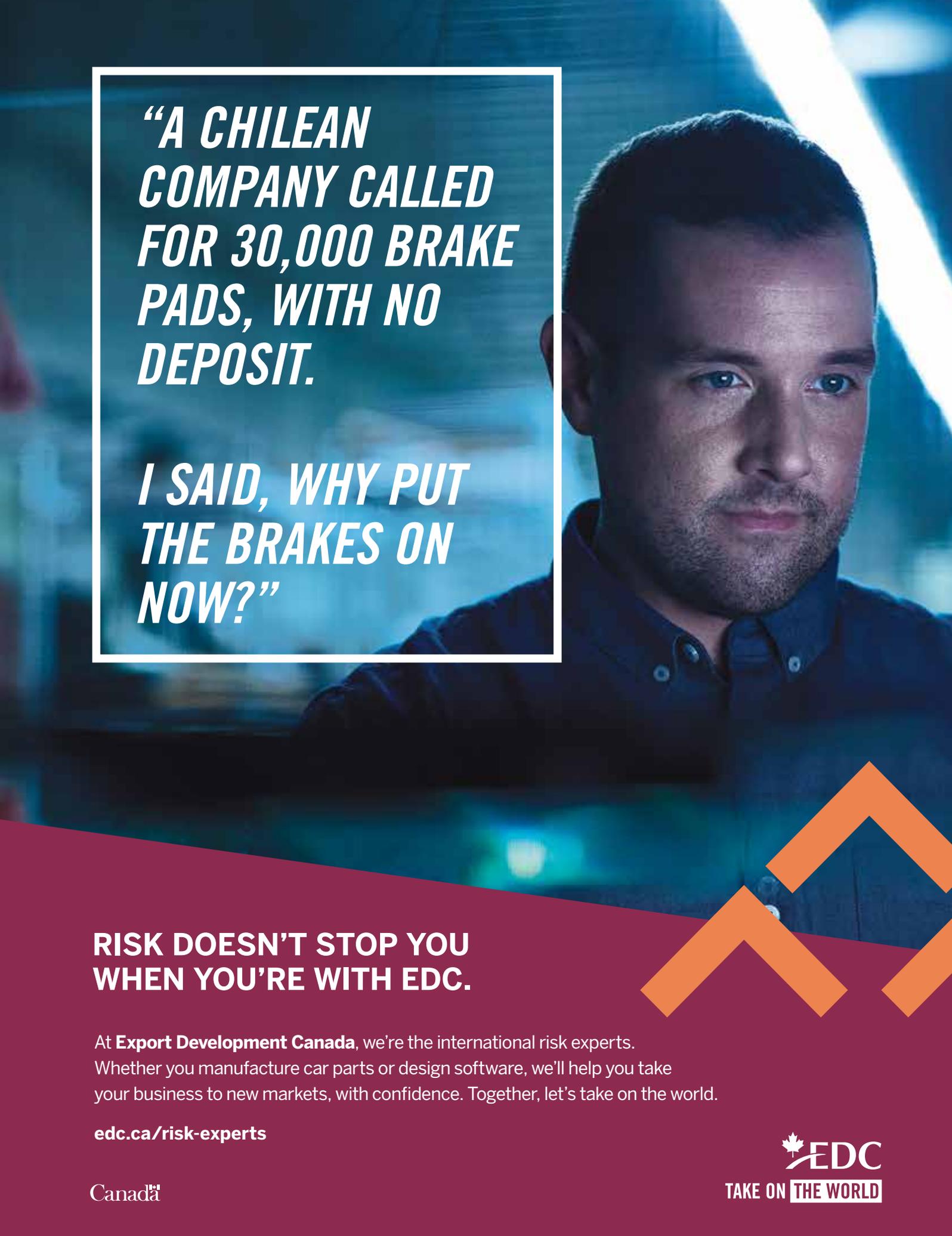
When considering the three-tiered definition, notice that between each level there is an aspect of human interpretation. If you think about your job—and you were asked to write “competencies” (written statements defining all of the knowledge, skill, and attitude-based attributes of your work)—you can imagine that once your pen meets the paper, you are likely to lose some of the intricacies of your professional competence. This creates a gap between actual competence and written competencies.

Likewise, after competencies are written, educational programs are designed that use competencies as the reference for when learners have completed training. The training application also requires a step of human interpretation—as training managers, instructors, students, and regulators may have different interpretations of the meaning of the competencies. This can create another gap in the chain between true competence and CBT.

Overall, competency-based training represents a new licensing and training philosophy that has both strengths and limitations. CBT principles may allow training to be more closely aligned with real-world skills, become flexible and adaptive to student needs, and capitalize on the use of new training tools.

However, this approach must also be applied cautiously to ensure the quality of the existing training system, avoid over-simplification, and ensure the consistency of training. 📌

“A COMPETENCY-BASED APPROACH OFFERS SEVERAL ADVANTAGES OVER TRADITIONAL HOURS-BASED METHODS, AS TRAINING BECOMES MORE PERSONALIZED AND ADAPTIVE.”



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**TAKE ON THE WORLD**

# Column

VIEW FROM THE HILL  
BY KEN POLE

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



## Chicken Little: Is the sky finally falling in aerospace human resources?

It seems that every few years, there are dire forecasts about a looming pilot shortage. These tend to be followed by periods of political hand-wringing and declarations that “something must be done.”

Yet the challenge persists, and it's increasingly evident that cockpits aren't the only aviation workspace affected.

It's a challenge the Canadian Council for Aviation and Aerospace (CCAA) has wrestled with for years, its mission being “to develop, promote and administer a comprehensive and effective human resources strategy” to ensure industry has adequate resources from the ground up. Its focus is industry-wide, from high-school orientation programs through college curricula to on-the-job skills enhancement.

It's clearly no small challenge. Yet it's one which seems to be rendered increasingly Herculean by a bureaucracy mired in the past. Witness Transport Canada's apparent reluctance to let students use “blended learning” to prepare for certification tests.

Blended learning uses all the tools, from in-person classwork to the newest secure online resources for after-hours support. Students can review key concepts, share and compare what they learn, submit assignments and even reach out to subject matter experts. It's not, pardon the expression, rocket science—but there apparently is resistance within institutions such as Transport Canada, where traditional preparation for certification seems to be preferred.

were just sold on the industry, sold on their careers.”

As with any skilled trade, education and certification is a multi-year exercise. Donald agreed with a suggestion that certification in many of the trades can be more educationally demanding than learning to fly.

“There are skill shortages everywhere,” he added. “Companies are turning away work.”

He said Canada, which has tended to rank high in terms of aerospace exports, clearly can compete globally. “There are lower-cost jurisdictions where you can save a little on labour, but we can deal with that: the quality of our work, our on-time performance and our professionalism. But if we don't have the people, what's an employer to do?”

Part of the answer could lie in the industry, either directly or through its sundry lobbyists in Ottawa, to get provincial governments to crack the whip with school boards, and the federal government to be more aggressive in pressing bureaucrats to tailor training requirements to the 21<sup>st</sup> century.

“Aviation touches nearly every aspect of our daily lives,” the CCAA points out in its 2018 labour market outlook. “It's not just about vacation travel and tourism; it's about business travel, trade and enabling global supply chains. It's about saving lives through medevacs, air ambulance services, and search and rescue missions. It delivers food and other essential supplies to remote areas. It enables national defence, global security, and peacekeeping. Aviation is an integral part of our society, and there is an increasingly critical need for qualified people.”

Is it already too late? Do the math: 2025 is only six years away! Will the sky finally fall after decades of cyclical predictions? Would Chicken Little feel any better if it did?

If there's anything which can be predicted with certainty, it's that there will be political backlash in a country so overwhelmingly reliant on air transport if the status quo is allowed to continue. ■

---

“AS WITH ANY SKILLED TRADE, EDUCATION AND CERTIFICATION IS A MULTI-YEAR EXERCISE.”

It's an industry which directly employs some 154,000 and the CCAA says nearly 55,000 new workers are needed—18,144 in manufacturing, 24,695 in air operations and 12,008 in support roles such as maintenance, repair and overhaul (MRO)—by 2025.

Domestic institutions are expected to turn out only 14,000 graduates by 2025, a shortfall of some 41,000 to be filled domestically and from elsewhere. Meanwhile, that “elsewhere” is trying to recruit our graduates and poach current Canadian personnel.

Dubai-owned Emirates Airline, the world's largest operator of Boeing 777s and Airbus A380s, is on the hunt again with seemingly bottomless pockets. And events such as the mid-November Pilot Career Air Show in Singapore, billed as “a runway to the future,” undoubtedly drew Canadian interest.

Then there is the historical preference in many municipal school boards, which have no real provincial standards let alone national ones, to stress academics at the expense of the trades.

Germany has a highly successful policy of work-integrated learning for its skilled trades and the CCAA's executive director Robert Donald, an aviation lawyer formerly with the International Air Transport Association, pointed out during an interview that Employment and Social Development Canada has emulated that with a “hugely successful” subsidy program. For example, a first-year MRO student can work with a company for up to 15 months before returning to college to finish their program.

Donald said that when he attended the “graduation” of the first 60 students who had been at Air Canada and were returning to school, he found that “they

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**910**

# Column

## FOCAL POINTS BY TONY KERN

Editor of the *Controlling Pilot Error* series, Tony Kern is one of the world's leading authorities on human factors training in aviation. A former lieutenant colonel in the U.S. Air Force (USAF), he served as chief of cockpit resource management plans and programs at the USAF Air Education and Training Command. He is the author of three bestselling aviation books: *Redefining Airmanship*; *Flight Discipline*; and *Darker Shades of Blue: The Rogue Pilot*, all from McGraw-Hill.



## Grinders

A few weeks ago, I presented at the Bombardier Safety Standdown, an annual affair I consider to be the finest safety event in the world year after year. They push the envelope there, and new ideas are presented instead of the typical litany of safety management systems, data analysis, and SOP [standard operating procedure] compliance content.

This year's theme was the *Normalization of Excellence*, and I kicked it off with the simple statement that there is nothing normal about excellence.

To make my point, I decided to go out on a limb and use a golf metaphor.

Now, I know you may be thinking, "I don't play golf. I hate golf. It's a stupid game."

If that is how you feel, you have a lot in common with every golfer in the world. It's a supremely challenging game. At some point during each and every round, I tell myself I'm giving up and taking my clubs to Goodwill for someone who will actually enjoy the game. Then, I settle down and hit the next shot.

*Grinders* are golfers who hit a lot of bad shots but find ways to bounce back and stay near the top of the leaderboard.

They inspire me both as a golfer and as an aviation professional. Perhaps the greatest grinder in the game is Phil Mickelson, one of the best players of our generation, but one who also hits quite a few bad shots

for a professional of his calibre.

In the World Golf Championship in Mexico City last year, he hit so many balls into the dense cover that one clever sports writer claimed he discovered three lost Mayan civilizations. Ouch.

Here is what we as aviation professionals can learn from this interesting breed of competitor. Grinders hit bad shots. Sometimes, they hit good shots that go into bad places, and they have learned to *enjoy* it.

Grinders are more than resilient.

Grinders don't just bounce back, they *strike* back from adversity, and they are unique in this regard. Instead of becoming frustrated or cynical about their situation, they see setbacks as familiar markers and know how to navigate back from them. Grinders find focus in failure.

Let's think about that for a minute. How did you feel about the last embarrassing mistake you made or setback you experienced? Did you feel angry, embarrassed, or perhaps try to shift the blame to some external factor? I think we've all been there. But that is not how grinders view misfortune.

Grinders play the ball where it lies without angst. Grinders are almost always successful in the long run because they deal with the reality of the situation and put in the work to overcome the obstacles in their way.

A few weeks ago, I was watching the

Golf Channel late one evening (I know, how lame) and they had two PGA Tour pros talking about grinding and playing out of really bad places. I don't recall who the pros were but I've paraphrased a few pieces of their wisdom.

The first pro said, "The most difficult places I play out of lead to a confidence where I believe I can literally play out of anywhere. I really enjoy these moments. 'Oh crap,' (from hitting a bad shot) quickly becomes 'Oh boy!' (I get to try something creative)."

The second pro followed with this pearl: "I think there is a certain advantage to someone who doesn't think too inwardly and just gets on with it."

They were talking to everyone who has ever hit a tough spot in their flight, task or career.

The PGA pros went on to talk about "professional patience" as not just the ability to wait, but the ability to stay positive and productive while anticipating the next opportunity.

Perhaps that is the big picture of grinding through a long aviation career: the patience to ride out the tough times in a positive frame of mind. If our industry is ever going to achieve the *normalization of excellence*, we will need more grinders who can find focus in failure and persevere and persist through the rough spots on a long career journey.

And then, show others how to do the same. ■

“GRINDERS ARE ALMOST ALWAYS SUCCESSFUL IN THE LONG RUN BECAUSE THEY DEAL WITH THE REALITY OF THE SITUATION AND PUT IN THE WORK TO OVERCOME THE OBSTACLES IN THEIR WAY.”



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# BRIEFING ROOM

AVIATION INDUSTRY NEWS 

# Bombardier sells Dash 8, bizav training programs



Longview Aviation Capital Corp. intends to keep Q400 production in Downsview, Ont., for the time being. **Andy Cline Photo**



**Ben Forrest**

*OEM News*

**B**ombardier has agreed to sell its Dash 8 aircraft program, as well as its Business Aircraft Training (BAT) program, in a pair of blockbuster deals with two other Canadian firms.

Longview Aviation Capital Corp., parent company to Viking Air Limited, is set to acquire the Dash 8 program through an affiliate, at a cost of roughly \$300 million.

The agreement includes the Dash 8 100, 200 and 300 series, as well as the in-production Q400 program.

Meanwhile, Montreal-based CAE has agreed to acquire BAT for an enterprise value of US\$645 million.

The move will allow CAE to address the training market for customers operating Bombardier's more than 4,800 business jets, one of the largest and most valuable in-service fleets of business aircraft in the world.

"With our heavy investment cycle now completed, we continue to make solid progress executing our turnaround plan," said Alain Bellemare, president and chief executive officer, Bombardier Inc.

"With today's announcements we have set in motion the next round of actions

necessary to unleash the full potential of the Bombardier portfolio. During the earnings and cash flow building phase of our turnaround, we will continue to be proactive in focusing and streamlining the organization, and disciplined in the allocation of capital. I am very proud of what we have accomplished, and very excited about our future."

Both transactions are expected to close by the second half of 2019, following the usual regulatory approvals.

The agreements serve to streamline the company, and will allow Bombardier to focus on growth opportunities in

its Transportation, Business Aircraft and Aerostructures segments, the company said. Various measures will also see Bombardier reduce the size of its workforce by approximately 5,000 positions over the next 12 to 18 months.

With the sale of the Dash 8 program and the previous transfer of the C Series program to Airbus, Bombardier's Commercial Aircraft division will focus its full attention on the CRJ program, the company said.

## DASH 8

The sale of Bombardier's Dash 8 program includes rights to the de Havilland name and trademark, and will make Longview Aviation Capital the largest commercial turboprop aircraft manufacturer in North America, according to a news release.

"The Dash 8 turboprop is the perfect complement to our existing portfolio of specialized aircraft, including the Twin Otter and the Canadair CL 215 and 415 series of waterbombers," said David Curtis, CEO of Longview Aviation Capital.

"We see enormous value in the de Havilland Dash 8 program, with these aircraft in demand and in use all around the world."

As part of the agreement, Longview will receive all assets and intellectual property and type certificates associated with the Dash 8 program.

Upon the closing of the transaction, Longview will also assume responsibility for the worldwide product support business—covering more than 1,000 aircraft either currently in service or slated for production.

Longview will continue to independently operate the program at the original de Havilland manufacturing site located at Downsview, Ont., upon closing of the transaction.

Bombardier sold the Downsview site earlier this year but, under the terms of a lease with the new owners and a licence from Bombardier, production will remain on-site until at least 2021, according to Longview.

As part of the transaction, Longview said it "looks forward to welcoming Bombardier employees currently associated with the production, support and sales of the Dash 8 program."

"We are committed to a business-as-usual approach that will see no interruption to the production, delivery and support of these outstanding aircraft," said Curtis.

"With the entire de Havilland product line reunited under the same banner for the first time in decades, we look forward to working with customers, suppliers and employees upon close of the transaction to determine what opportunities lie ahead."

Longview said it will work closely with Bombardier until the closing of the transaction to ensure a seamless transition for employees, customers, suppliers and other stakeholders, with no interruption in production, delivery and support of the aircraft.

This transaction builds on Longview's track record of acquiring and successfully

CAE's acquisition of the Bombardier Business Aircraft Training division includes a modern fleet of full-flight simulators and training devices, including those dedicated to the Challenger product line. **CAE Photo**



operating significant aircraft manufacturing, parts and servicing programs, including the Twin Otter program and the Canadair CL 215 and 415 waterbomber series.

## CAE

CAE's acquisition of BAT includes a modern fleet of full-flight simulators (FFSs) and training devices covering the Learjet, Challenger and Global product lines, including the latest large cabin Global 5500, 6500 and 7500 business jets.

"This transaction represents a win-win for both companies, resulting in enhanced core focus," said Marc Parent, CAE's president and CEO.

"We look forward to having increased addressability in the large market of Bombardier business jet operators, and to providing customers with a world-class training experience."

In addition to the agreement to acquire Bombardier's BAT business, CAE has agreed to pay US\$155 million to monetize its existing future royalty obligations under the current Authorized Training Provider (ATP) agreement with the business jet manufacturer.

This also involves the extension of CAE's ATP agreement to 2038. The monetization represents the discounted sum of royalties payable by CAE over the next 20 years, and the transaction is expected to close by the end of CAE's current fiscal year.

In view of the expected timing of the transactions, CAE said its outlook for its current fiscal year 2019 remains unchanged.

The transactions are aligned with CAE's capital allocation strategy, to balance growth

investments with cash returns to shareholders, while maintaining CAE's investment grade profile and a target return on capital employed of 13 per cent by fiscal year 2022.

"Market fundamentals in business aviation are strong and the business we are acquiring is well-supported by a large installed base," said Parent. "We are expanding our position in the largest and fastest-growing segment of business aviation training at an opportune time."

"We welcome the highly-talented employees of Bombardier Business Aircraft Training. We value your expertise and customer focus; as part of the CAE team, you will continue to provide best-in-class training to pilots and technicians for Bombardier business aircraft."

CAE said the Bombardier BAT business will be integrated smoothly with CAE since its operations are already co-located within CAE's Dallas and Montreal training centres.

With this agreement, CAE will be adding 12 Bombardier business aviation full-flight simulators to its training network (including one deployment already planned for CAE's fiscal year 2021), for a total of 29 business aviation FFSs available for training worldwide, with further growth planned in the near- to mid-term.

CAE operates more than 80 business aviation full-flight simulators in its training network.

The acquisition increases CAE's ability to address the long-term and growing market demand for business aviation professionals. The company estimates there will be a need for 50,000 new business aviation pilots over the next 10 years. ✦

The RCAF has admitted it has less than two-thirds the number of CF-188 pilots needed to meet the government's requirements.  
**Mike Reyno Photo**



# Auditor General critical of DND fighter capability plan



► **Ken Pole**  
*Military News*

Two years after the government acknowledged that the Royal Canadian Air Force (RCAF) did not have the fighter assets needed to meet all operational requirements, Auditor General Michael Ferguson said the government not only seems no closer to acquiring replacements for its Boeing CF-188 Hornets, but also faces a critical shortage of pilots and support personnel.

“National Defence has not done enough to manage risks related to Canada’s fighter aircraft fleet so that it can meet commitments . . . until a replacement fleet is in place,” Ferguson said in his Nov. 20 report to Parliament, which covers the period from January 2014 to July 2018.

The government’s stated need to fulfil its North American Aerospace Defence Command (NORAD) and North Atlantic Treaty Organization (NATO) commitments in addition to domestic roles—notably flying training—had created what Defence Minister Harjit Sajjan described as a “capability gap” in Canada’s defence policy.

The government eventually opted to

spend an estimated \$500 million to buy an initial 18 (subsequently increased to 25) used F-18s from Australia, which is replacing them with Lockheed Martin F-35 Lightning IIs.

Although Ferguson reserves most of his criticism for the Department of National Defence, he also faults “factors outside its control.” Officials in his office confirmed to *Skies* that those factors included defence policy shifts that came with the 2015 change in government, as well as problems within the financial and procurement bureaucracies.

“Uncertainty around when a replacement fighter fleet would be in place and increased operational requirements established by the government in 2016 put National Defence in a position that will make it difficult to manage risks until a replacement fighter fleet is in place,” said Ferguson.

With more than 1,450 military and civilian personnel supporting its remaining 76 CF-188 Hornets, the RCAF plans to focus on recruitment and retention of pilots and technicians. The ongoing cost of keeping the fleet operational is put at some \$3 billion, but Ferguson said “the investment decisions will not be enough to ensure that National Defence can have the number of

aircraft available daily to meet the highest NORAD alert level and Canada’s NATO commitment at the same time.”

DND’s response, included in the report as a long-standing practice, is that its plans would keep the current fleet operational until 2032 and that the RCAF “is conducting [an] analysis to assess necessary combat upgrades that could be implemented to address the growing challenges presented by evolving threats.”

The DND said that analysis, which it expects to complete by next spring, “will take into consideration plans to transition to a future fighter capability in the mid-2020s.”

As for personnel shortfalls, DND said its current Fighter Capability Maintenance Renewal (FCMR) program “will add over 200 technicians to front-line squadrons” and additional recruitment/retention efforts will be completed by next fall.

“In addition . . . Canada’s new defence policy includes an initiative to increase the fighter force by an additional 200 positions.”

Ferguson said that as of last April, eight per cent of technician positions in Hornet squadrons were vacant and 14 per cent were filled by personnel who were not fully qualified. The result was that between



December 2016 and April 2018, on average, 13 aircraft were not operationally ready at any given time.

Departures of experienced CF-188 technicians since 2014 has meant that average maintenance hours per flight hour increased to 24 from 21. The report points out that as the fleet continues to age, maintenance will become even more of a challenge and the number of pilot flying hours will decrease.

CF-188 pilots are expected to fly 140 hours annually to maintain proficiency, but Ferguson's audit team found 28 per cent of pilots fell short in the last fiscal year because of, among other things, the shortage of technicians.

Moreover, the RCAF has admitted it has less than two-thirds the number of CF-188 pilots needed to meet the government's requirements, and Ferguson's report warns that the problem is likely to increase as the current flying training stream cannot even keep pace with retirements, including moves to domestic and foreign airlines.

"Between April 2016 and March 2018, the RCAF lost 40 trained fighter pilots and produced only 30 new ones," Ferguson said, adding that a further 17 have since left or stated their intention to leave. "If CF-18[8] pilots continue to leave at the current rate, there will not be enough experienced pilots to train the next generation of fighter pilots, and National Defence will not have enough pilots to be able to meet . . . the new operational requirement for many years."

In response to the audit, Sajjan said in an email that the government is committed to giving the RCAF "the investments and equipment it needs . . . to meet both its NORAD and NATO commitments without risk-managing one or the other."

In addition to personnel initiatives, which include contracted second-line maintenance, the minister said the current fighter fleet is being upgraded "to meet regulatory and interoperability requirements, and ensure they can operate within North American and international airspace past 2025. . . ." ✈

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# CTA aims for balanced passenger rights regs



**Brent Jang**  
Regulatory News

The Canadian Transportation Agency (CTA) faces a balancing act as it drafts new regulations designed to bolster the rights of air passengers while keeping in mind the airline industry's complex operations.

"The new regulations will set out airlines' obligations towards passengers with respect to communication, delayed or cancelled flights, denied boarding, tarmac delays over three hours, the seating of children under the age of 14, damaged or lost baggage, and the transportation of musical instruments," the CTA said in a statement.

The regulator made the comment as it released its findings in a 32-page report titled "Air Passenger Protection Regulation Consultations: What We Heard."

After Bill C-49 (the *Transportation Modernization Act*) received royal assent on May 23, the CTA embarked five days later on public consultations on protecting air travellers' rights.

That three-month process wrapped up in late August, and included nearly 31,000 visits to the consultation website. As well, 4,923 respondents filled out online questionnaires and 203 travellers gave their feedback at in-person sessions across Canada.

Aviation experts expect the new regulations to be in place by the spring of 2019.

In its report, the CTA said the public and consumer advocates made it known that they want airline employees to engage in clear and regular communications with passengers.

The industry emphasizes that there needs to be a cautious approach. Some airlines told the CTA that "due to the complexity of flight operations and aircraft mechanics, it can be difficult to immediately pinpoint the cause of a delay."

Air passenger rights advocate Gabor Lukacs said in a submission to the CTA that he is concerned about the regulator's ability to enforce any new regulations.

"The Canadian Transportation Agency must adopt a zero tolerance policy with respect to contraventions of the regulations, and direct its enforcement officers to issue an administrative monetary penalty in each and every case that an airline fails to comply with the regulations," Lukacs wrote.

In an interview, he added he fears that passengers will be disappointed with the outcome. "I look forward to the CTA

surprising me, but I'm not holding my breath," he said.

Nevertheless, the CTA is optimistic about turning the input from Canadians into a productive set of rules.

"All the information and suggestions received are being carefully considered as we prepare the regulations," CTA chairman and chief executive officer Scott Streiner said in a statement, adding that the regulator will ensure the new rules will be "clear, transparent, fair and consistent."

The CTA will scrutinize minimum levels of compensation.

Depending on the length of a flight delay, consumer watchdogs are pushing for amounts ranging from \$500 to \$2,000 in compensation. The compensation could be in the form of cash or other payments, such as credit card refunds or e-transfers.

The airline industry counters that while the concept of minimum compensation is sound, there are built-in risks of delays whenever boarding a plane. Airlines worry that setting minimum payouts will lead to the creation of firms that would, for a fee, pursue compensation on behalf of passengers.

Another source of controversy is the topic of passengers who are denied boarding. The public wants airlines to face enough of a deterrent that carriers think

twice before overbooking. The emphasis among consumer advocates is to have airline staff first seek volunteers willing to be bumped from a flight, and have carriers outline minimum compensation.

The airline sector warns that overbooking is a common practice aimed at making operations efficient. But the industry agrees with consumer groups that certain travellers should be exempted from being denied boarding.

"Suggestions include families travelling with children, the elderly, individuals with disabilities, unaccompanied minors and those travelling due to death or illness in the family," according to the CTA's report.

Lost or damaged luggage continues to be one of the areas of disagreement. Consumer advocates say passengers should not face onerous procedures to prove that their bags were damaged, in contrast to airlines that worry about fraudulent claims arising from new minimum levels of compensation.

A gap exists too on the issue of tarmac delays. Travellers complain that three hours is too long to be confined in the cabin while carriers point out that most lengthy delays are out of their control. Complicating factors include weather conditions, air traffic control and lack of gate availability. ✈



Aviation experts expect the new passenger rights regulations to be in place by the spring of 2019. **Andy Cline Photo**

## First engines delivered for Canadian fixed-wing SAR aircraft

**P**ratt & Whitney Canada (P&WC) recently started delivering PW127G engines to Airbus Defence and Space in support of Canada's fixed-wing search and rescue (FWSAR) aircraft replacement project. The engines will be installed on specially-configured Airbus C295 aircraft, which will be designated as the CC-295 in Canada.

The Canadian Department of National Defence (DND) is scheduled to receive the first of 16 CC-295 aircraft by the end of 2019. The DND intends to replace its existing FWSAR aircraft with the CC-295.

"We celebrate this milestone with national pride," said Frédéric Lefebvre, vice-president of regional airlines sales and marketing at P&WC. "We're a company of proud Canadian heritage, and we're honoured to play an important role in maintaining the safety and well-being of our fellow citizens."

Canada has a search area of 18 million square kilometres, making search and rescue operations challenging. With low fuel burn during cruise, the PW127G engine will provide the CC-295 aircraft with exceptional range and endurance for time-critical missions.

P&WC has delivered more than 400 PW127G engines to Airbus Defence and Space for numerous C295 customers and variants. ✂



**VIEW LARGER**



Canada is scheduled to receive the first of 16 CC-295 aircraft by the end of 2019. **P&WC Photo**

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# ATAC adopts flight and duty time resolution

 **Lisa Gordon**  
Regulatory News

At its annual general meeting held on Nov. 14 during the association's conference in Vancouver, B.C., members of the Air Transport Association of Canada (ATAC) unanimously adopted a resolution voicing their collective resistance to pending government regulations concerning pilot flight and duty time.

The resolution was delivered to Transport Minister Marc Garneau, who is spearheading the proposed package of regulatory changes. The new rules were published in *Canada Gazette Part I* on July 1, 2017, but have yet to appear in final form in *Canada Gazette Part II*.

ATAC and its 178 members—including 78 aviation operations across the country—have long maintained that a “one size fits all” approach to managing pilot fatigue does not work in a Canadian aviation

industry composed of many unique sectors.

In his remarks at the meeting, ATAC president John McKenna noted the association has mounted a very aggressive government relations campaign. The goal is to educate elected politicians and bureaucrats about why the same set of regulations cannot be applied to a northern medevac provider and a national commercial airline, for example.

The resolution prepared for the government lists a number of objections to the new regulations. Among them, the association says the new rules “don't provide a measurable gain in safety.”

ATAC also contends that complying with the new rules as written will mean operators will be forced to hire 30 per cent more pilots to maintain the same level of service. This will come at a time when Canada is facing its most severe pilot shortage in decades, and the end result could be increased airfares and/or a reduction in service for many smaller communities.

“These regulations do not appropriately address the realities of Canada's immense size, threaten service to our most remote and northern communities, and undermine the maintenance of safe, affordable and accessible air travel,” reads the resolution document.

It also states that ATAC is not opposed to revisiting flight and duty time regulations and supports a science-based regime. The association is offering to work with government to find viable solutions “which would minimize the impact on service and safety to Canadians.”

The resolution calls upon government to delay the implementation of revised flight and duty time regulations until industry consultation and further analysis can be completed, and a new set of draft regulations prepared. ✈



According to ATAC, pilot fatigue in the Canadian aviation industry (composed of many sectors) cannot be managed by a “one size fits all” approach. **Andy Cline Photo**

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# Homegrown escrow

New Canadian agency aims to simplify aircraft transactions



◻ Lisa Gordon

Industry News

Each year in Canada, about 6,000 aircraft change hands.

But while some ownership transfers are simple, increasingly complicated transactions involving multiple parties, extensive documentation, searches and registrations have necessitated the use of third-party intermediaries.

Traditionally, Canadian deals have been overseen by one of the big aviation escrow agencies concentrated in Oklahoma City, Okla., where the American title registry is located.

These firms collect and hold all documentation and purchase funds, in escrow, until all conditions are met. Once the deal is finalized and closing occurs, documents and funds exchange hands, and the necessary registrations are made.

But while these agencies can guarantee a clean title to the aircraft in a U.S. deal—and even issue title insurance—they can only perform “perfunctory” Canadian title checks due to differences in our legal system.

It’s a void that has nagged at Toronto aviation lawyer Bill Clark for most of his 50-year career.

“In my decades of doing this, I’ve never certified title to a Canadian aircraft,” Clark told *Skies* during a recent interview. “We will search provincial registries and the Canadian Civil Aircraft Registry maintained by Transport Canada [TC]—but that is strictly a custody and control registry. So it is impossible in Canada to give anybody a definitive opinion on title.”

Clark, the founder of aviation law firm YYZlaw, traced the history back to the *British North America Act* of 1867, which was passed before the dawn of aviation in this country. While general property rights are included in the *Act*, those rights come under provincial jurisdiction, so a national title registry was never created.

The difficulties involved with certifying a clear title is one reason why there has never been a Canadian escrow agency to oversee aircraft purchases.

Now, Clark and fellow YYZlaw counsel Ehsan Monfared feel the time is right to launch a homegrown escrow service that will cater to the intricacies of Canadian aircraft transactions.

“The reality is there is currently no Canadian escrow agency,” said Monfared. “As a law firm, we are asked all the time to act as escrow agents. But this is not legal work as we cannot certify title.”



Aviation lawyers Bill Clark, left, and Ehsan Monfared, far right, are launching EscroAir in January. The all-Canadian escrow agency will be staffed by Joanne Rodriguez, second from left, and Kellie-Ann Machete. Asaf Hussain/Seven Skies Studio Photo

To remove that implication, Clark and Monfared are launching EscroAir Canada Inc., an independent operation that will specialize in aircraft transactions involving Canadian parties. Its main clientele is expected to be the business aviation community. With services provided on a fixed-price basis, EscroAir will remove the uncertainty of using a law firm to do this type of work.

“We have hired an escrow agent with significant experience. It will be set up separately, located separately, have separate trust funds, everything,” said Clark. “Ehsan and I will be involved, but it’s not part of our law practice. The staff we are hiring will be responsible for it.”

EscroAir is expected to launch in January 2019. Its website, [www.escroair.ca](http://www.escroair.ca), is now in the final stages of development.

When asked about the size of the market they expect to service, Monfared said, “It’s a customer service-oriented business, so if we’re able to do that aspect of it well, I think it will grow.

“Bill has a lot of industry credibility,” he continued. “We also hired Kellie-Ann Machete as our escrow agent; she has a lot of aviation transactional experience and general industry knowledge, having previously worked at TC and the predecessor to the Transportation Safety Board.”

Typically, the escrow process for an

aircraft sale can take one to three months. From the initial letter of intent to the pre-purchase inspection and subsequent action items negotiated between seller and buyer, Clark and Monfared said EscroAir will provide a neutral depository for all relevant documentation as well as all deposits.

EscroAir will also offer International Registry (IR) services. While all IR registrations are voluntary, they are essential for securing an interest in an aircraft, and are now the norm in the aircraft market.

“If the aircraft is on the IR, it documents the chain of ownership,” explained Monfared. “Essentially, the IR solves the problem of not having a central title registry in Canada. We do expect our IR service will be popular.

“There are other opportunities to add value by assisting with aircraft registrations, for example.”

Ultimately, EscroAir aims to simplify the aircraft transaction process.

Instead of sending paperwork to Oklahoma City, the parties to an aircraft transaction need only look to Toronto for a homegrown solution to their escrow agency requirements.

“There’s no reason why a \$5 million jet that’s moving from Halifax to an operator in Toronto needs to go through the U.S. system,” concluded Clark. ✚

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# Former Toronto Aerospace Museum secures new airport home



By Kenneth I. Swartz  
General Aviation News

After seven years circling the skies in search of a safe haven, the former Toronto Aerospace Museum has finally touched down with its historic aircraft collection at Edenvale Aerodrome, some 100 kilometres (63 miles) northwest of Toronto.

The first truckloads of aircraft and artifacts started to arrive at Edenvale in early November and the museum's full-scale Avro Arrow replica will move from Toronto Pearson International Airport to Edenvale at a later date.

This is good news in Canada's air and space heritage community since it confirms that the non-profit museum has overcome major existential threats and can now focus on the future.

The Toronto Aerospace Museum had been located in the original de Havilland Aircraft of Canada Limited (DHC) factory first opened at Downsview in 1929. Between the museum's four walls, DHC employees once built DH 82C Tiger Moths during the war and the prototype DHC-1 Chipmunk train-

er and DHC-2 Beaver bushplane.

Unfortunately, the museum's charitable activities were disrupted on Sept. 20, 2011, when a dozen tenants in the heritage building had their leases cancelled so the factory could be vacated and the building could be torn down and built into a private hockey rink. (Centennial College subsequently raised \$72 million to selectively renovate the building as its new Downsview Campus).

The museum finally left Downsview in 2013 after packing its aircraft collection onto flatbed trucks and into almost 50 40-foot shipping containers.

## NEW BEGINNINGS

Many politicians and community leaders in Ottawa and the Toronto area offered to help the museum find a new home, but big metropolitan cities have hundreds of worthwhile projects competing for limited government funds, observed Ian McDougall, the chairman of the museum.

"The circumstances demanded that we focused on asset conservancy as the core mission of the museum, knowing the unlikelihood of securing viable and stable

display space in the short term."

Pearson airport generously provided an outdoor storage site for several years and later a large air cargo warehouse and office to store the collection indoors.

Now, as the museum moves to Edenvale, it has been rebranded as the "Canadian Air & Space Conservancy."

Along with the Arrow replica, its collection includes a wartime RCAF de Havilland DH 82C Tiger Moth trainer, and post-war Canadair CT-133, Canadair CT-114 Tutor and Beechcraft CT-134 Musketeer trainers, de Havilland CS-2F Tracker, and Bell CH-136 Kiowa helicopter. Civilian aircraft include a Fleet 80 Canuck, a Zenair CH 200 homebuilt and the UFM Easy Riser ultralight flown by "Father Goose" Bill Lishman.

It also includes historic archival material and exhibits reflecting major developments in Canada's aviation history, most of which took place in the Ontario region.

Edenvale is an ideal site to display the museum collection and host special events. The airport has three runways (up to 4,000 feet in length) and is already home to two aviation heritage groups. ✈



The new Canadian Air & Space Conservancy collection, now based at Edenvale Aerodrome, includes this full-size Avro Arrow replica constructed by museum volunteers. Here, it is trucked away from the former home of the Toronto Aerospace Museum at Downsview airport. **Kenneth I. Swartz Photo**

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Assistant



**Ehsan Monfared**  
Aircraft Transaction  
Advisor



The new stretcher system is expected to go into service with Ornge in early 2019. Dayna Fedy Photo

# New Powered Aero Loader stretcher system to be installed in Ornge helicopters

Ornge, Ontario's provider of air ambulance and related services, and HeliMods, an Australian aerospace technology company, have reached an agreement for the installation of an enhanced stretcher system in the Ornge fleet of Leonardo AW139 helicopters.

The new system features a self-loading power cot with an equipment bridge, which will be able to hold all medical devices in all phases of flight. The system will also allow Ornge to enhance its current bariatric transport capabilities without reconfiguring the aircraft, as it currently does.

The centerpiece is the Powered Aero Loader (PAL), a zero-lift, push-button operated powered stretcher loader system for rapid loading and unloading of land ambulance stretchers into air ambulance helicopters.

By significantly reducing the need for paramedics to manually lift or transfer patients between different stretchers and vehicles, the PAL improves safety and efficiency and allows for faster response times while significantly reducing the risk of patient and paramedic injury.

"When our crews arrive for an on-scene response or at a hospital, our patients expect us to be able to perform their transport in a timely, efficient and safe fashion," said Andrew McCallum, president and CEO of Ornge. "The Powered Aero Loader will enhance our ability to achieve this mission, while at the same time ensuring our paramedics have the best and safest possible work environment in which to deliver their life-saving care."

"This agreement represents a great partnership between two organizations who are well respected in their fields and both committed to the highest standards of quality and safety," said Will Shrapnel, managing director of HeliMods. "We're happy to be providing Ornge this great technology that will benefit not only patients, but also the deserving paramedics who will be using it every day to save lives."

The main elements of the integration can be carried out by Ornge's engineering team during major services, with training and support provided by HeliMods technicians.

Installation will take place on an aircraft-by-aircraft basis and the first PAL-equipped Ornge helicopter is expected to go into service in early 2019. ✈️

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# Farewell to

◊ BY LISA GORDON  
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SKIES Magazine



**I**n December 2018, the Royal Canadian Air Force (RCAF) celebrated the end of the 55-year reign of the Canadian Sea King. The CH-124 Sea King maritime helicopter has been one of the hardest-working aircraft in the RCAF since the first two of an eventual 41 aircraft arrived at the naval air

station in Shearwater, N.S., on Aug. 1, 1963. Originally acquired as a Royal Canadian Navy (RCN) anti-submarine warfare weapon system, the Sea King served aboard Canada's only aircraft carrier, Her Majesty's Canadian Ship (HMCS) Bonaventure, as well as on St. Laurent-class destroyer escorts and Iroquois-class

destroyers, auxiliary oiler replenishment ships, and Halifax-class frigates. It was Canada's efforts to deploy a large aircraft on a small flight deck that led to the revolutionary "beartrap" helicopter haul-down device that safely secures the aircraft on a pitching flight deck, even in rough seas. The RCN's beartrap was perfected



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for use with the CH-124 Sea King, and it was an invention that revolutionized the concept of naval air support.

As time went on, Canada's fleet of CH-124 maritime helicopters received periodic avionics and mission system upgrades. Combined with Sikorsky's sturdy airframe, the result was a legacy ship that served multiple generations

of Navy and RCAF aircrews.

On Jan. 26, 2018, 423 Maritime Helicopter Squadron at 12 Wing Shearwater, N.S., conducted its final operational flight of the CH-124 Sea King. A trio of helicopters completed a flypast over Halifax Harbour and Shearwater, marking the end of the type's service on the East Coast.



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# Survey SAYS

Skies Magazine conducted the first comprehensive Canadian pilot compensation survey in decades. Here's what we found out.

BY LISA GORDON | DATA ANALYSIS BY PMG INTELLIGENCE

skiesmag.com

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SKIES Magazine

What are Canadian pilots thinking? Are they happy with their jobs, or are they looking elsewhere? Our survey answers this question and many more. **Jan Jasinski Photo**

**M**ost people working in Canadian aviation and aerospace felt the pinch of an impending labour shortage long before the Canadian Council for Aviation and Aerospace (CCAA) confirmed it with a market study published in March 2018.

Nevertheless, the results of the report shocked many because it quantified the magnitude of the perfect storm now bearing down upon the industry.

The numbers are sobering. The CCAA predicts that by 2025, the Canadian aviation and aerospace industry will need to hire 55,000 new workers to meet growth demands and replace those who are leaving the workforce.

Canadian schools will turn out only one quarter of the needed workers, leaving about 41,000 additional employees to be recruited from other industries and outside of Canada.

Of all occupations in this country's aviation and aerospace landscape, there are two that are predicted to feel the most acute labour shortage: pilots and aircraft maintenance engineers.

Shortly after the CCAA study was released, the *Skies* team decided to embark

upon the first comprehensive Canadian Pilot Compensation Survey in decades.

Our goal was to find out what existing Canadian pilots are thinking. Are they happy with their jobs, or are they looking elsewhere? How much money do they make and do wages vary by region? What other perks have they received over the past year?

We also wanted to know if their employers are currently hiring and if they have taken any other measures to deal with the pilot shortage.

Finally, what matters most to Canadian pilots? Is it work/life balance, or perhaps access to the latest aircraft and equipment? Is it a company's maintenance and safety culture? Or does money talk the loudest when it comes to hiring (and retaining) today's pilots?

Our survey was promoted on *Skies'* social media channels (Facebook, Twitter and Instagram), emailed three times to more than 33,000 people on our mailing list, and advertised on the website [avcanada.ca](http://avcanada.ca). In addition, we ran ads in our print magazine and posted links in our *Skies Daily News* e-newsletter.

Responses were collected and evaluated

by PMG Intelligence, an independent third-party market research and data intelligence company in Waterloo, Ont.

We were absolutely thrilled with the response! A total of 1,204 pilots participated in the survey, completing the questionnaire between Sept. 17 and Oct. 17, 2018. In order to qualify for the survey, pilots needed to hold a Canadian commercial licence or higher and be currently employed as a pilot.

One respondent chosen at random by PMG Intelligence received a \$100 Visa gift card for completing the survey. Chris Murphy of Niverville, Man., was our lucky winner. Congrats, Chris!

## DRUM ROLL, PLEASE...

In an industry where operators are already competing hard for available talent, the 2018 *Skies* Pilot Compensation Survey delivers valuable insight into the minds of today's pilots. This information will help employers attract—and also retain—pilots in the years to come.

So without further ado, let's take a look at our survey results.





Most respondents (35 per cent) fly commercial airliners, with 25 per cent piloting twin-engine turboprop aircraft. **Jason Pineau Photo**

### WHO RESPONDED?

Of our 1,204 respondents, 88 per cent fly fixed-wing aircraft and 10 per cent helicopters, with just one per cent qualified to fly both. (Numbers were rounded and may not add up to exactly 100 per cent.)

In the fixed-wing category, 62 per cent of respondents said they hold a Canadian airline transport pilot licence (ATPL).

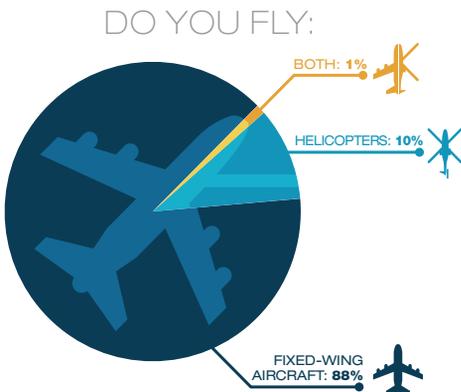
On the rotary side, four per cent of respondents hold an ATPL.

The majority of respondents (80 per cent) said their primary job title was

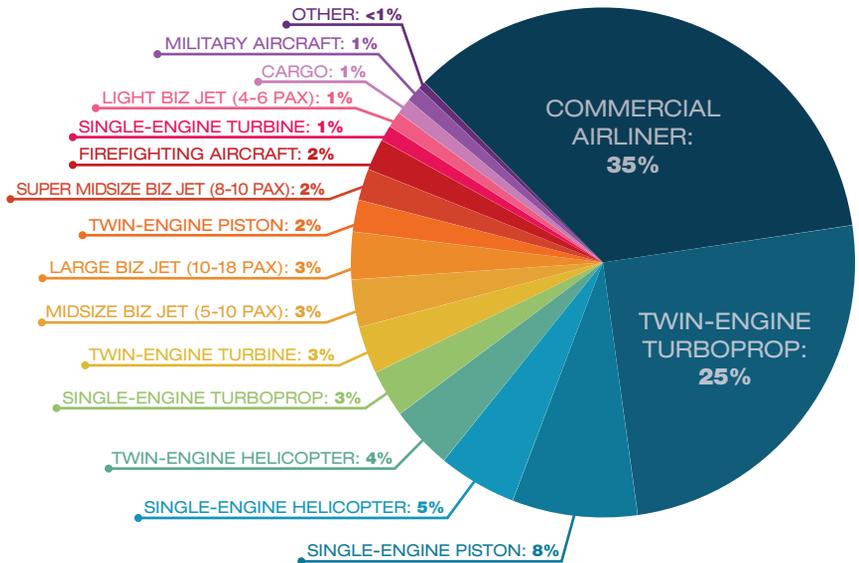
simply “pilot.” Most (35 per cent) fly commercial airliners, with 25 per cent piloting twin-engine turboprop aircraft. The rest of the responses fall into various other type categories.

Nearly half of all respondents (48 per cent) have earned a college diploma, while 27 per cent and 22 per cent reported having a high school diploma and a bachelor’s degree, respectively.

### WHAT TYPE OF AIRCRAFT DO YOU PRIMARILY FLY?

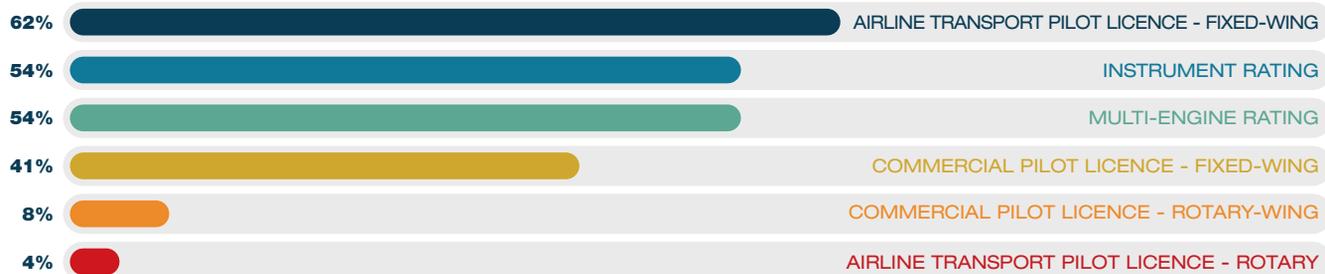


VIEW LARGER



VIEW LARGER

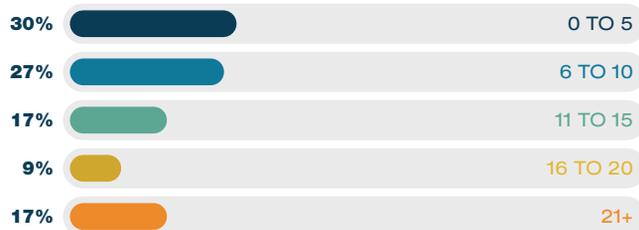
WHAT PILOT LICENCES AND RATINGS HAVE YOU OBTAINED? (RESPONDENTS CHECKED ALL THAT APPLIED)



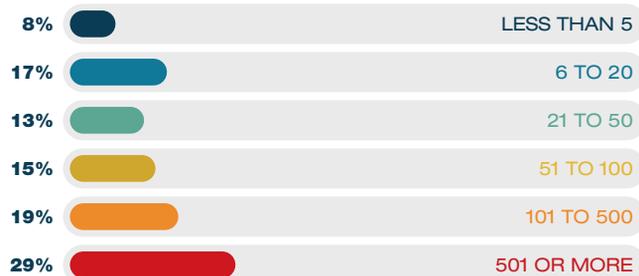
WHAT IS YOUR PRIMARY JOB TITLE?



HOW MANY YEARS HAVE YOU WORKED AS A PILOT?

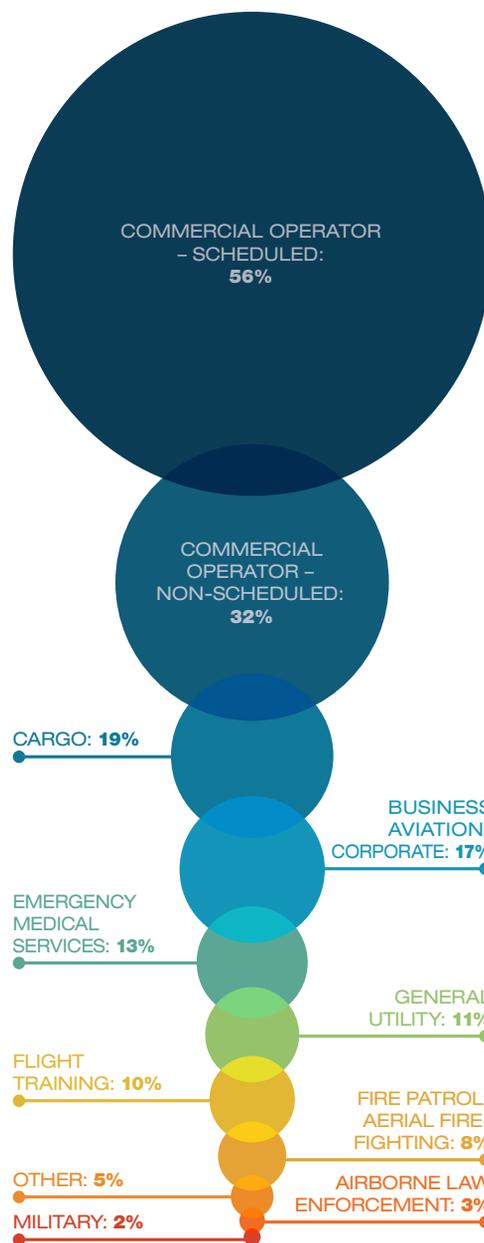


APPROXIMATELY HOW MANY PILOTS WORK AT YOUR COMPANY?



WHAT SECTOR(S) DO YOU CURRENTLY WORK IN?

(RESPONDENTS CHECKED ALL THAT APPLIED)  
\*SECTOR NUMBERS REPORTED REPRESENT A TOTAL OF FIXED- AND ROTARY-WING RESPONSES.





Canadian flight schools are struggling to keep qualified instructors. Many work at a school for just months before they are hired away by a larger operator. In the meantime, demand for training has never been higher. **Mike Reyno Photo**

## LET'S TALK MONEY AND BENEFITS

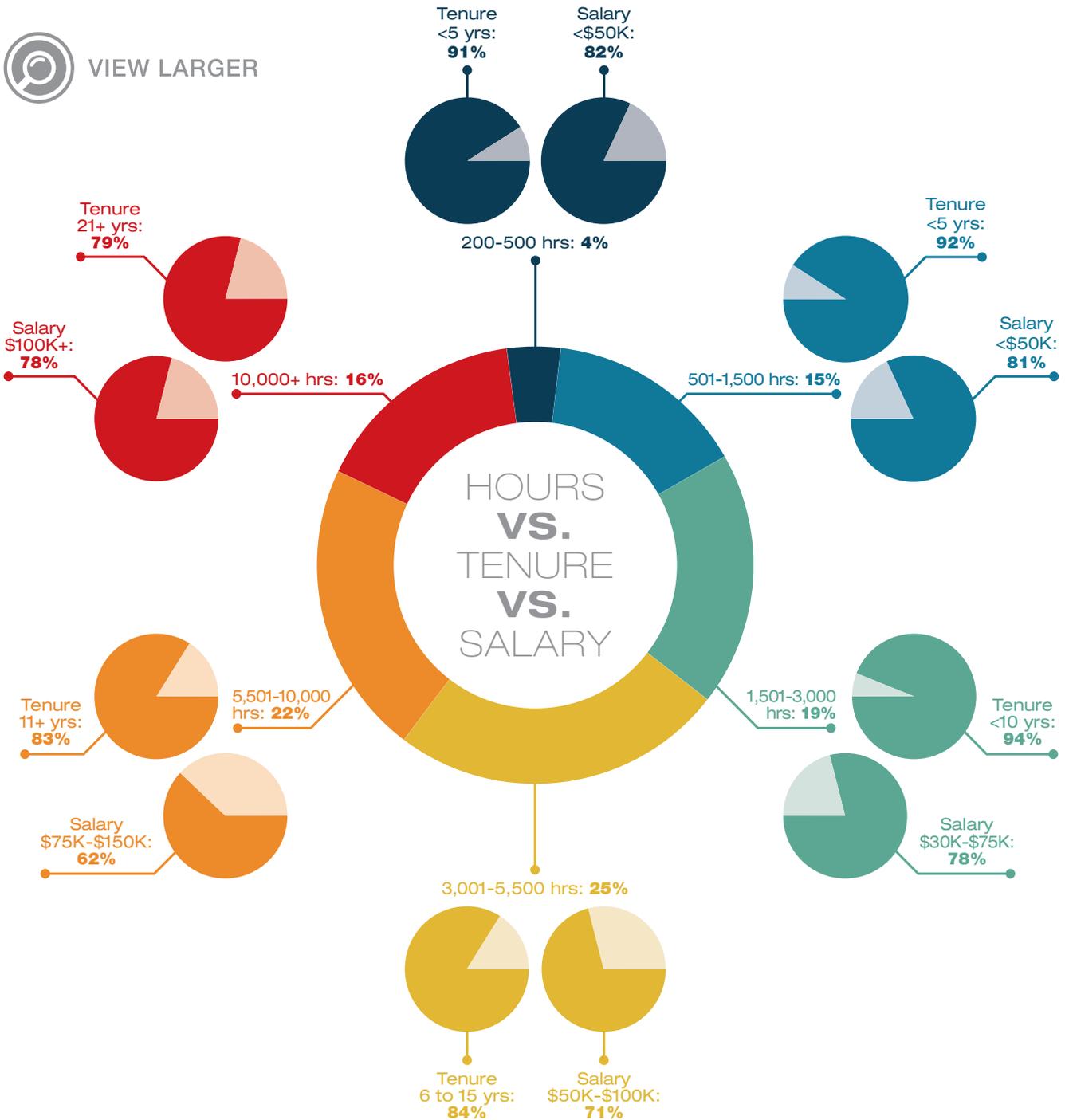
Not surprisingly, as a pilot builds hours in his or her logbook, their salary climbs as well.

Our survey revealed a gradually increasing income curve for Canadian pilots. On the low end, 82 per cent of those with 200 to 500 hours experience earned less than \$50,000 per year.

Salaries increase gradually with experience. Seventy-one per cent of respondents with 3,001 to 5,000 hours are earning between \$50,000 and \$100,000 annually, while 78 per cent of those with 10,000-plus hours earn in excess of \$100,000.



VIEW LARGER

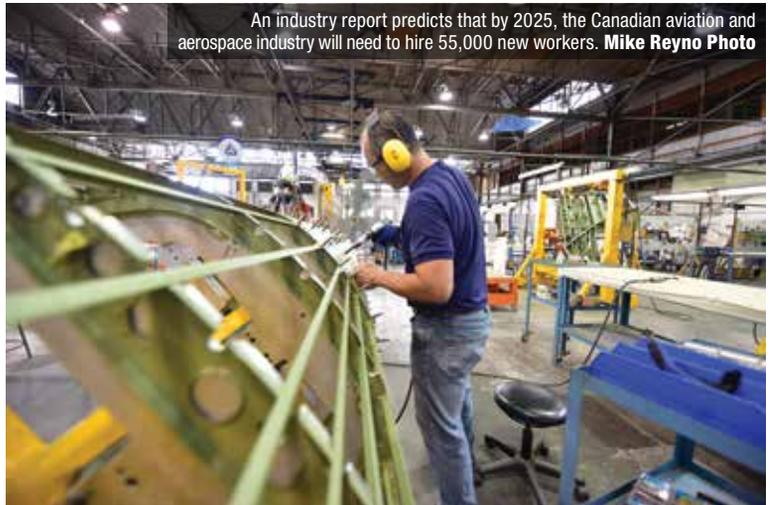




Over the past year, 36 per cent of pilot respondents reported receiving a pay raise. **John Chung Photo**



Salary and benefits matter most to pilots, followed by a balanced schedule. **Simon Blakesley Photo**



An industry report predicts that by 2025, the Canadian aviation and aerospace industry will need to hire 55,000 new workers. **Mike Reyno Photo**



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Over the past year, 36 per cent of respondents reported receiving a pay raise. This trend was relatively consistent across company size.

But money isn't the only thing keeping today's pilots in their jobs. Other factors, such as work/life balance, health benefits, RRSP plans, and maintenance culture were cited as key considerations.

### DOES YOUR EMPLOYER OFFER A RETIREMENT SAVINGS PLAN?



As the number of pilots working at a company increases, so does the likelihood of that organization offering RRSP savings/matching programs or additional benefits and/or compensation. As salaries increase, so does the likelihood of pilots receiving additional perks.

For example, 31 per cent reported receiving retirement savings or an RRSP matching plan, while 20 per cent received a bonus in the last year.

The data also indicate that companies currently hiring pilots were more likely to offer retention programs to their existing pilots over the past year.

However, while an overall 36 per cent of our respondents received a pay raise in the last 12 months, a corresponding 36 per cent received no additional benefits or compensation in the same time period.

When it comes to health benefits, 86 per cent of pilots surveyed said they were covered by a work plan. The numbers were fairly consistent across the country, ranging from 86 per cent in the West to 90 per cent in Ontario and 82 per cent in the East. The Territories had the lowest percentage of employers offering health care plans at 69 per cent.

Retirement savings/matching programs are more prevalent in Ontario (71 per cent) and Quebec (72 per cent), while the Territories, Central and Western Canada average 57 per cent.

Of those pilots who do have an RRSP program of some type, 40 per cent said they were looking for another job. However, 55 per cent of respondents who do not currently have an RRSP program are looking elsewhere for employment.

### DO YOU HAVE HEALTH BENEFITS THROUGH YOUR WORK?

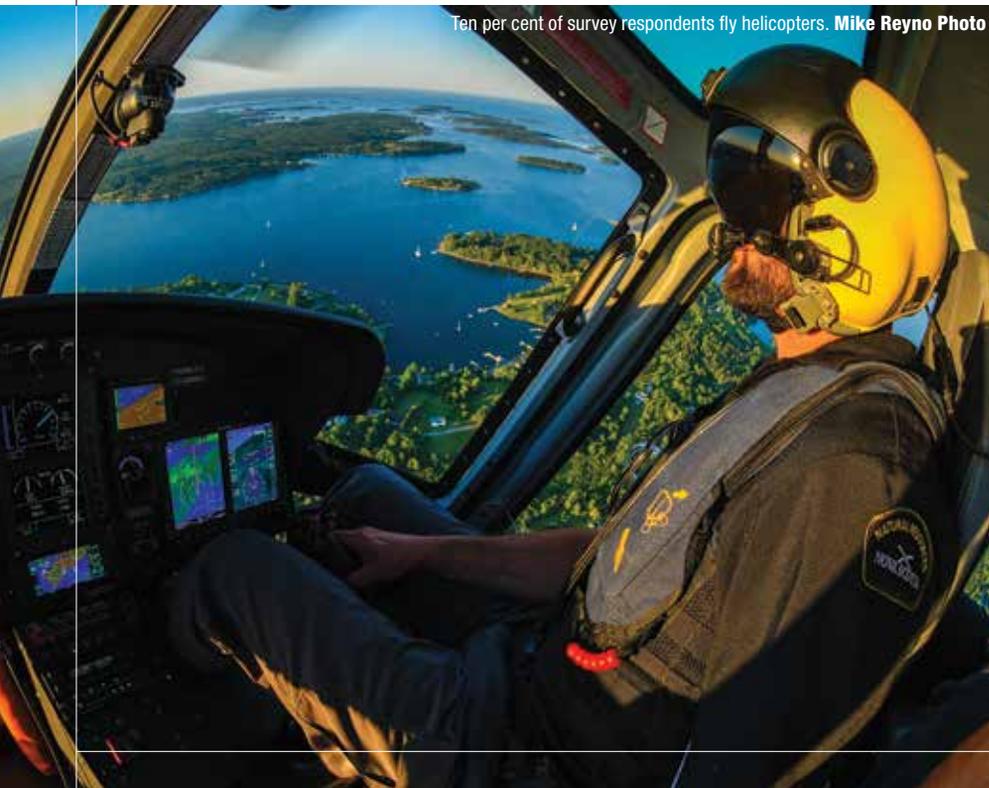


### ADDITIONAL BENEFITS AND COMPENSATION

OVER THE PAST YEAR, HAVE YOU RECEIVED ANY OF THE FOLLOWING? (RESPONDENTS CHECKED ALL THAT APPLIED)



Ten per cent of survey respondents fly helicopters. Mike Reyno Photo



As a pilot's salary increases, so does the likelihood they will receive other perks, such as an RRSP program or additional benefits/compensation. Rich Hulina Photo

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# CITATION TEAM CANADA

**HELP WANTED**

We asked our 1,204 respondents if their companies are currently hiring pilots. A resounding 81 per cent said yes, while only 12 per cent said no and 7 per cent were unsure. It appears that operators in

Ontario, Quebec and Central Canada are doing the most hiring.

Companies are dealing with the pilot shortage in a few different ways.

Seventy-five per cent of fixed-wing pilots surveyed said their company has lowered the qualification threshold for new candidates, but only 27 per cent

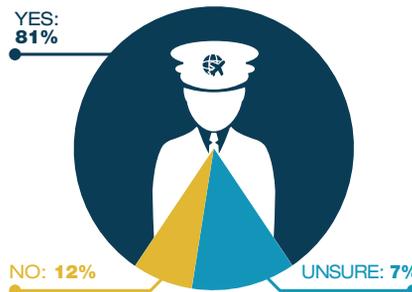
of their rotary-wing counterparts said the same thing. Trends indicate that the larger the company, the more the qualification minimums have been reduced. On the flip side, pilots at smaller operations were more likely to indicate their employer is doing nothing or is unaware of the pilot shortage.



ARE YOU CURRENTLY LOOKING FOR ANOTHER JOB?



IS YOUR COMPANY CURRENTLY HIRING PILOTS?

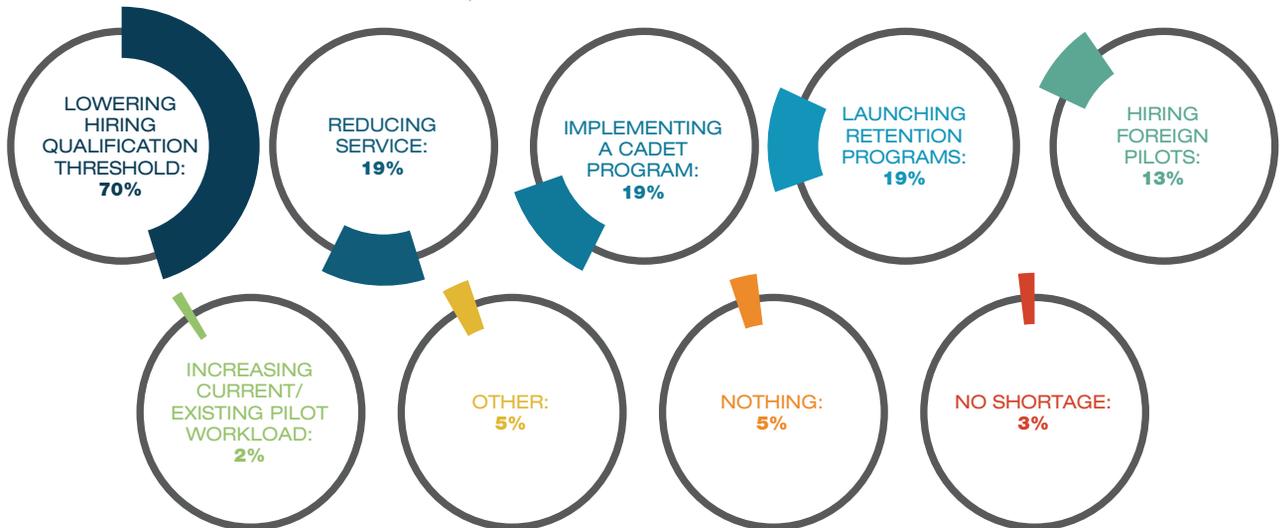


WHICH OF THE FOLLOWING JOB FACTORS MATTER MOST?



DEALING WITH THE PILOT SHORTAGE

OVER THE PAST YEAR, HAS YOUR COMPANY DEALT WITH THE PILOT SHORTAGE BY:



Pilots surveyed told us that two things matter most when it comes to their job satisfaction: salary and benefits, and a schedule that permits work/life balance.

Of a number of other factors presented to survey participants, those ranking less important (in order from least to more important) were age of aircraft fleet and equipment; learning and career development opportunities; a positive work environment, job security and maintenance and safety culture.

Roughly half of Canadian pilots surveyed

(45 per cent) said they were looking for another job. The remaining 55 per cent were not looking to change at the time of the survey. Pilots in Central Canada are most likely to be looking for another opportunity.

Overall, the 2018 *Skies* Canadian Pilot Compensation Survey revealed several illuminating industry facts. The predominant message is that money and schedules are high on the priority list, and nearly half of pilots are currently looking for a better job offer.

It's a good time for operators to review their pay and benefits packages to ensure they

attract—and retain—their share of our very limited pilot supply. If the CCAA predictions are even close to reality, the competition for talent is only starting to heat up.

Interested in knowing more? Complete survey results are available for purchase. Contact Tim Muisse, tim@mhmpub.com or (519) 748-1591.



**LISA GORDON**

Lisa Gordon is Editor-in-Chief of *Skies* Magazine. Contact her at lisa@mhmpub.com.

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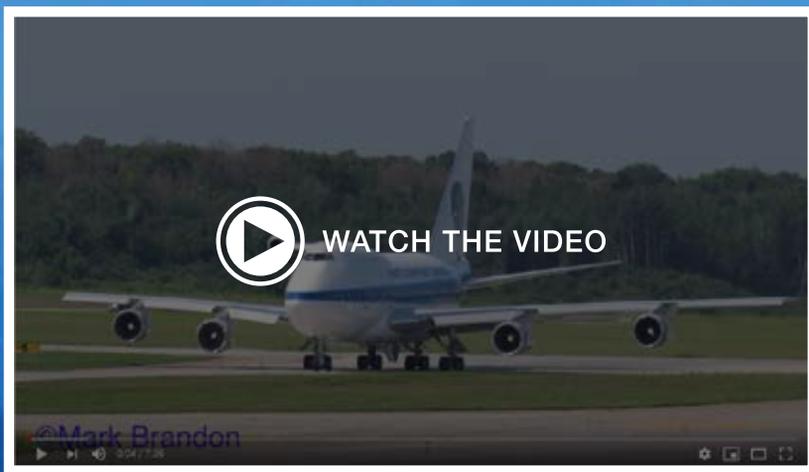


*Skies* visits the personnel and aircraft that support the development of Pratt & Whitney Canada's turbine technology.

BY FREDERICK K. LARKIN | PHOTOS COURTESY OF P&WC

As P&WC's product line expanded with more powerful engines, it became apparent that a larger aircraft would be better for the flying test bed (FTB) role. Today, the company operates a pair of rare Boeing 747SPs based at Mirabel, Que. **Jean-Charles Hubert Photo**

# Performers



**B**efore a new aircraft turbine engine model can be certified and enter service, it must undergo a series of stringent tests in a ground-based test cell. In order to validate its performance metrics, the engine also has to be tested aloft.

This is achieved by attaching the prototype engine to an aircraft that has been specially modified with electronics that monitor the powerplant's behaviour in various situations. These planes, known as flying test beds or FTBs, have included numerous types. Over the past

five decades, the trend has been to use ever larger aircraft.

Flight testing has proven to be a more accurate way of assessing an engine's operational characteristics, structural integrity and durability. The engine's status is monitored and measured while the FTB climbs, descends, banks, accelerates and decelerates. These exercises are performed in a variety of conditions that include altitude, temperature and weather.

**HISTORY**

Pratt & Whitney Canada Corp. (P&WC) of Longueuil, Que., the world's leading producer of light to medium turboprop and turbofan engines, has been utilizing FTBs for over 57 years. In 1960, P&WC borrowed a Beech 3T Expeditor from the Royal Canadian Air Force (RCAF) and converted it into a tri-motor. In addition to the two P&W Wasp Junior radials on the wings, the prototype PT6A turboprop was installed on the aircraft's nose.

That flight test program began on May



In 1986, P&WC took delivery of a Boeing 720B quad-jet (and later another of the same type) for use as a flying test bed. In 2012, the engine manufacturer indefinitely loaned C-FETB to the National Air Force Museum of Canada in Trenton, Ont. Its flight into Trenton was also the world's last flight of a 720B. **Jean-Charles Hubert Photo**

30, 1961, and led to the certification of what has become the world's best-selling light turboprop engine. More than 47,500 PT6As have been built to date, as well as thousands of larger derivative models.

With its first turbofan engine, the JT15D, P&WC needed an FTB that could replicate the flight envelope of the first aircraft that it would eventually be powering—the Cessna 500 Citation. The company turned again to the RCAF in November 1967 and borrowed an Avro Canada CF-100 Canuck Mk 5 jet interceptor. Because it sat high on its landing gear, the test engine could be fitted to the fuselage's underside.

As P&WC's product line expanded with more powerful engines, it became apparent that a larger aircraft would best accommodate the more sophisticated electronics required, as well as the heavier engines being tested. Subsequent to Air Canada retiring its fleet of Vickers Viscounts, P&WC purchased one of them

in 1972 and converted it into an FTB. On May 10, 1974, it made its first test flight with the prototype PT6A-50 turboprop attached to its nose.

The Expeditor was eventually replaced with a Beech 200 Super King Air and a Gates Learjet 36 served alongside it for about 15 years.

P&WC's flight test department entered a new era on Oct. 8, 1986, when it took delivery of a Boeing 720B quad-jet. The company had been given the responsibility of flight testing International Aero Engines' V2500 engine. The 720B's performance matched that of an Airbus A320, the type of aircraft that would eventually be fitted with the new engine.

It made its first flight as an FTB on May 7, 1988, with a V2500 on the number three engine's pylon. A second 720B would later join the team and was operated by both P&W out of Plattsburgh, N.Y., and by P&WC out of Longueuil, Que.

## TODAY'S FTBs

P&WC Flight Operations' current fleet consists of a pair of rare Boeing 747SPs based at Mirabel, Que. "SP" stands for Special Performance, and the type has a special story.

Back in the early '70s, Boeing decided to develop a variant of its Jumbo Jet that would have record-breaking range capability. It took the wings and P&W JT9D engines of the original 747-100 and attached them to a 48-foot-shorter fuselage.

The result was the 747SP. With its maximum payload, the SP could fly 25 per cent further than the 747-100. Airlines could now offer non-stop service between New York and Tokyo; London and Johannesburg; or Los Angeles and Sydney. Despite this exciting attribute, it struggled to find buyers and only 45 examples were built. Today, fewer than 10 are thought to be airworthy.

When asked why the 747SP was selected as an FTB, Marc Kirner, P&WC's





The 747SP's speed, range, service ceiling and sizeable cabin make it a perfect platform for engine test missions.

“IN ADDITION TO GROUND TESTING, ABOUT 150 TO 200 HOURS OF FLIGHT TESTING IS NORMALLY NEEDED TO CERTIFY A NEW ENGINE MODEL.”

director of Flight Operations, explained that the aircraft's speed, range, service ceiling and sizeable cabin made it a perfect platform for engine test missions.

“The stability of the aircraft makes it very predictable and reliable and most importantly, it has nice lines,” he said.

In order to see how the aircraft have been modified for the mission, *Skies* was given a tour of P&WC's first 747SP.

The cockpits of both aircraft have been updated with Electronic Flight Instrument Systems (EFIS) and the latest navigational equipment, including a Wide Area Augmentation System (WAAS). Their cabins have been converted into airborne laboratories. The rows of passenger seats have been replaced by several rows of tall racks that contain computers and instruments that gather and analyze performance data from the test engine.

Aft of those cabinets are three rows of work stations. Each row features a trio of arm chairs that face an array of large display screens. During a mission, these chairs are occupied by flight test engineers (FTEs) and technicians who monitor and measure the constant flow of information.

Only one of these work stations has a throttle lever. The FTE in that position is

in communication with the cockpit and can gain control of the test engine as required during the flight.

The first SP acquired (C-FPAW, aka FTB3) has had its number two engine pylon modified with extensive instrumentation that enables the measurement of the test engine's performance during a mission, from start-up to shut-down.

Engines that produce up to 90,000 pounds of thrust can be hung off that pylon.

The second SP (C-GTFF aka FTB4) has a short airfoil protruding from the starboard side of the upper deck, aft of the cockpit. Engines that produce up to 20,000 pounds of thrust can be attached to the stub wing. Interestingly, that tiny airfoil not only contains the required wiring and cables for data communications, but also a fuel line that runs up from the main tanks below.

Both aircraft are certified as “Experimental” and as a result fly under flight permits.

Despite the significant modifications made for their current role, both 747SPs carry some history from their previous careers. The forward cabins in the nose of each aircraft retain the original first class seats and decorative wall coverings dating back to their days with Air China and Korean Air, respectively.



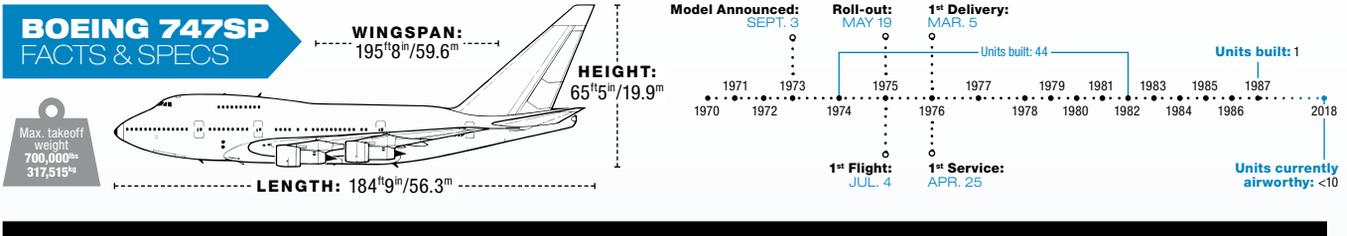
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### ENGINE FLIGHT TEST BASICS

While it typically requires 1,000 hours of ground test cell work leading to the certification of a new engine model, 150 to 200 hours of flight testing is normally needed as well.

A typical flight test mission is six to seven hours long and can be flown at altitudes up to 45,000 feet. Speeds during the flight vary, depending on what exercises are being performed on the test powerplant. For example, during a recent mission one of the 747SPs cruised at 390 knots at FL410 (41,000 feet), then later on at 520 knots at FL450 (45,000 feet).

Many of the test flights are conducted over Quebec, particularly northwest of the base at Mirabel. However, when specific conditions are required they will visit

Iqaluit, Nunavut, for cold weather tests, Arizona for hot and dry conditions and Colorado for high elevation airport work.

### THE TEAM

Approximately 80 individuals comprise P&WC's Flight Operations team at Mirabel. This roster includes pilots, flight engineers, flight test engineers, instrumentation technicians, aircraft maintenance engineers and administrators.

For anyone looking to become a member of the team, the prerequisites include:

- Knowledge of engine test processes and test bed operations;
- Understanding of engine control systems used in engine test cells;
- Five years experience in engine build and testing;
- Experience in flight testing;
- Knowledge of aircraft maintenance, aircraft engines, hydraulic systems and mechanical assemblies;
- Data management skills;
- A demonstrated ability to work well within a team environment under pressure and to adapt quickly in the face of unexpected changes;
- An ability to interact effectively with a diverse group of stakeholders, including those in authority, suppliers and customers; and
- A proven ability to innovate while not being content with the status quo.

C-GTFF, aka FTB4, has a short airfoil protruding from the starboard side of the upper deck, aft of the cockpit. Engines that produce up to 20,000 pounds of thrust can be attached to the stub wing. **Mark Brandon / Threshold Images Photo**



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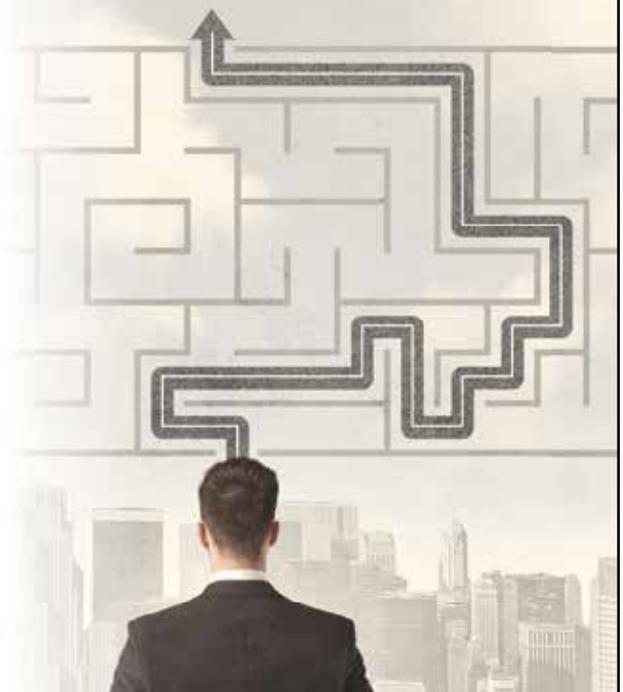
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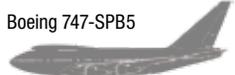
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VIEW LARGER

PRATT & WHITNEY CANADA'S FTB FLEET HISTORY

AIRCRAFT TYPE	SERIAL NO.	REGISTRATION	PERIOD*
 Beech 3T Expeditor	5828	HB109 / CF-ZWY-X	1960-1971-1980
 Avro Canada CF-100 Canuck	660	18760 / 100760	1967-1970-1982
 Vickers 757 Viscount	384	C-FTID-X	1972-1989
 Beech 200 Super King Air	BB-2	C-GARO	1979-1997
 Gates Learjet 36	36-001	C-GBRW	1981-1997

AIRCRAFT TYPE	SERIAL NO.	REGISTRATION	PERIOD*
 Boeing 720-023B	18024	C-FETB (FTB1)	1986-2010
 Boeing 720-023B	18021	C-FWXI (FTB2)	1995-2000
 Boeing 747-SPJ6	21934	C-FPAW (FTB3)	2009-
 Boeing 747-SPB5	22484	C-GTFF (FTB4)	2010-

\*on the Canadian Civil Aircraft Register. Some of these aircraft operated with Pratt & Whitney while on the U.S.C.A.R. before and after the period shown.



Both of P&WC's 747SP aircraft are certified as "Experimental" and therefore fly under flight permits.



Pratt & Whitney Canada Corp. of Longueuil, Que., has been utilizing flying test beds for over 57 years.

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As one might imagine, the team is tightly knit and there is a culture of confidence, without arrogance. Turnover is low.

When *Skies* asked Kirner for characteristics that would best describe his team members, he replied they are "proud, very dynamic, highly motivated and equipped with unique skill sets."

### THE FUTURE

With the continuing demand for turbine engines that are more fuel efficient, produce fewer emissions and are quieter, evolving technologies are expected to result in the creation of new engine models.

The latest *Boeing Commercial Market Outlook* forecasts deliveries of 42,730 turbofan-powered airliners (including regional jets, single-aisle models, wide bodies and freighters) during the next 20 years.

In addition, the latest Jetcraft market forecast calls for approximately 8,700 business jets to be delivered over the next decade.

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P&WC's two Boeing 747SP aircraft fly approximately 250 hours each per year. They should be able to perform their duties for another 20 years.

**Jean-Charles Hubert Photo**



When asked what his major concern is, the group's leader Marc Kirner replied that it is the team. Having the right people in place to do the required tasks is mandatory. He looks for candidates who "have imagination, are team players, and have a sense of wanting to have fun in a fast-paced organization."

It takes special talents because, "We do things that people normally don't do."

He sees his unit as an aviation technology laboratory. Besides performing intensive research on turbine engines, it has the

resources to do work on related technologies such as fuel management systems.

What about the two 747SPs? Given that their annual utilization is approximately 250 hours per aircraft, the pair should be able to perform their duties for another 20 years. Both airframes have relatively low cycles and they are in impeccable condition.

Given the expected global demand for commercial air travel and the interest in ever more efficient powerplants, it is safe to assume that the company's product

offerings will continue to grow. That should mean continued work for the "Special Performers"—the people and the planes of Pratt & Whitney Canada at Mirabel. 



**FREDERICK K. LARKIN**

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

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TEXAS

# TRAINING

The Lone Star State's Sheppard Air Force Base is home to an international fighter pilot training program that tests the mettle of young Canadian aviators destined to eventually fly the CF-188 Hornet. ◉ **BY RYAN HEALY**

*Four newly-minted pilots, each roughly a year or less removed from receiving their coveted Royal Canadian Air Force (RCAF) wings, now face the toughest course of their careers to date.*

*Like all aspiring fighter pilots, they must prove their mettle on a fighter lead-in course, mastering flying and fighting in a training jet before they can earn a shot at a front-line fighter. But unlike most of their RCAF peers,*

*the aircraft they strap into each day isn't the CT-155 Hawk. Instead, they spool up the dual J-85 engines of the USAF's T-38 Talon—a legendary trainer capable of reaching 1.3 times the speed of sound.*

*Their proving ground is not the skies over Saskatchewan or Alberta but over Sheppard Air Force Base, five miles north of Wichita Falls, Texas. Here they'll spend the next nine to*

*10 months enrolled in the Euro-NATO Joint Jet Pilot Training Program, or ENJJPT. This program will refine them into even more capable pilots; and, most importantly, get them ready to make the big jump to the CF-188 Hornet.*

*But ENJJPT is a course unlike anything they've seen up to this point in their careers, and getting to the finish line will be the challenge of a lifetime.*



A three-ship formation of T-38C Talons breaks over Sheppard Air Force Base, home to the 80<sup>th</sup> Flight Training Wing and ENJJPT. **Soren Nielsen Photo**



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SKIES Magazine

A T-38C Talon of the 88<sup>th</sup> Fighter Training Squadron, part of the 80<sup>th</sup> FTW, passes by Sheppard Air Force Base. The parked transport aircraft outside the hangars are used for maintenance training.

**Soren Nielsen Photo**

**T**he Euro-NATO Joint Jet Training Program is hosted at the 80<sup>th</sup> Flying Training Wing (80<sup>th</sup> FTW) at Sheppard Air Force Base. It provides flight training to student pilots from nine NATO partners: Canada, Germany, Italy, the Netherlands, Norway, Belgium, Turkey, Denmark, and the United States. Greece and Spain provide instructors, and the United Kingdom, Portugal, and Romania act as non-active signatories. While hosted at an American base and having an American commander, 80<sup>th</sup> FTW staff is quick to point out that

ENJJPT is not an American program, but an international one managed by all the participating nations. While there are other NATO flight training programs, such as NATO Flying Training in Canada (NFTC), ENJJPT's fully international management structure is unique.

The program's seeds were planted in the mid-1960s when the West German Air Force purchased a small fleet of T-37 and T-38 training jets and began sending pilots to train at Sheppard to make use of the relatively pristine weather—averaging 244 sunny days per year. Based on the success



of that German training initiative, the expanded ENJJPT program as it is known today was formally stood up in 1981. Since then, the program has pinned wings on over 7,400 pilots and counting.

The ENJJPT syllabus consists of a number of phases flown on the T-6A Texan II and T-38 Talon. New students begin with Undergraduate Pilot Training (UPT), the longest portion of the course consisting of three phases. The first phase of UPT is five weeks long and involves 134 hours of ground training and six simulator sorties to prepare students for their initial



Lt Tim Boettcher of Calgary, a Canadian 2018 ENJJPT graduate, with one of the T-38 Talons on the Sheppard flight line. Photo courtesy Lt Tim Boettcher



Maj Phillippe Turcotte, right, the Canadian senior national representative, and Lt Zac Belanger, a Canadian 2018 ENJJPT graduate, get ready to head to the flight line. 80<sup>th</sup> FTW Photo

training on the T-6. Phase two takes place on the Texan and involves a further 204 hours of ground training, 34 sim missions, and 78 sorties totalling 105 hours. Once students have conquered the T-6, it's on to the T-38. Phase 3 spans a further 24 weeks, with 137 more hours of ground training, 36 sim sorties, and 79 trips in the Talon, totalling 90 hours in the air.

Upon completion of phase 3 on the T-38, students are awarded USAF pilot wings—and they're hard earned. When all is said and done, students who complete the full UPT program will have pounded out 475 hours of ground training, 99 hours in sims, and 195 hours in the air, all in roughly a year. That's intensive, to say the least. It also isn't the end of the line.

Students selected to move on to fighters then go on to fly the Introduction to Fighter Fundamentals (IFF) course, where

they'll begin learning the actual fighting component of being a fighter pilot. That nine-week course consists of another 80 hours of academics, nine sim sorties, and 16 intense sorties in the air.

The IFF portion of the ENJJPT syllabus is likely to be the most demanding part of the course for most students. Not only are the days long and the flow of information relentless, but the missions the students fly are also incredibly physically demanding, thanks to the constant Gs they pull while trying to get the best of the instructors flying as their opponents.

This is the first time the students will strap into a jet with the intention of learning to use it as a weapons delivery platform, the sole reason a fighter jet exists. That's a serious responsibility, and the students don't take it lightly, spending hours preparing, briefing, and debriefing their missions in

## “SINCE 1981, THE ENJJPT PROGRAM HAS PINNED WINGS ON MORE THAN 7,400 PILOTS.”

addition to the time they actually spend flying, Lt Tim Boettcher, a recent Canadian IFF grad, outlined what an average day might look like for an IFF student.

“Your schedule on IFF could vary greatly depending on what time of day your mission would be scheduled for, and what type of mission; however, most often I would be scheduled on the first of four waves per day,” said Boettcher. “This would entail waking up around 04:15, heading into work at 05:00, prepping a briefing room, getting the latest weather, NOTAMs, and co-ordination with the range (if a surface attack mission), and being all set to brief with your flight lead and back-seater (two instructors) for 06:10.

“You’ll brief until 07:10, at which time you will step to your flight’s jets for a 07:45 takeoff. The flights last anywhere from 40 minutes to 65 minutes. After which, you will set up the debrief rooms, and debriefs generally last anywhere from 1.5 to 3 hours.

The balance of your days will be spent reviewing, studying for the next mission, simulator missions, simulator practices, working out at the gym, or receiving classroom training.”

Not every student at ENJJPT completes the full syllabus, as some of the international students receive varying levels of equivalent training at home. Canadian pilots, for instance, bypass the T-6 phase of ENJJPT and go right to the T-38, as they’ve already completed their RCAF wings course on Canada’s T-6 variant, the CT-156 Harvard II (and yes, that does mean that Canadian ENJJPT grads are the proud owners of *two* sets of wings.)

Additionally, pilots of all nations selected to fly platforms other than fighters do not complete the IFF course. They fly a modified final few weeks of their UPT course in order to prepare them for the environments they’ll be moving on to, most often multi-engine platforms.

## INCREASED PARTICIPATION

The first two Canadian ENJJPT students arrived at Sheppard in October 2009. At that time, they flew the entire UPT syllabus, including the T-6 portion. While there were some years in which no Canadian students attended, for the most part two Canadian students have headed south each fiscal year.

For 2018, that number was bumped to six slots. That beefed-up enrollment is planned to be the standard for the next three to four years, setting a new high-water mark for Canada’s participation in the program.

The ramp-up at ENJJPT comes as a solution to the problem of increasing age and heavy flying on the small fleet of CT-155 Hawks that service the NFTC program. Canada’s Hawk fleet, which entered service in 2000, is one of the most heavily flown in the world, having surpassed 100,000 flying hours in 2016.

Older planes and high hours mean greater maintenance requirements and fewer aircraft available on the flight line. By increasing the yearly ENJJPT contingent, the RCAF can lighten the load on the Hawk without having to reduce annual fighter pilot production.

The increase in students heading south also comes with a corresponding increase



A T-38C breaks right from line abreast formation in the skies over Wichita Falls, Texas. The 80<sup>th</sup> FTW training area also extends across state lines, well into southern Oklahoma. **Soren Nielsen Photo**

Maj Turcotte visually demonstrates a manoeuvre in a pre-flight brief with Lt Belanger. **80<sup>th</sup> FTW Photo**



The last T-38 airframe rolled off the line in 1972, but the modernized C-models flown at ENJJPT all have upgraded avionics and propulsion. **Ryan Healy Photo**



Four ENJJPT instructor pilots (IPs) step to their aircraft in advance of a two-ship currency flight. **Ryan Healy Photo**



in Canadian instructor pilots. Whereas historically the RCAF would send an instructor to act as the senior national representative along with one additional instructor pilot (IP), currently there are two additional IPs—one instructing on the T-38 portion of the UPT syllabus and one instructing on the IFF course. Canada plans to continue sending three instructors in total as long as the student enrollment stays at its current elevated rate, as IP contribution is generally proportional to student loading.

## EQUAL, BUT DIFFERENT

The vast majority of newly-winged RCAF pilots streamed for fighters stay at 15 Wing Moose Jaw for their initial jet training. There, they join Dragon flight, which is their home for NFTC's Phase IV transition course on the CT-155 Hawk.

This course is designed to teach students to fly the Hawk proficiently, much like their earlier courses on the Harvard. Upon completing their stay with Dragon, pilots then move on to 419 Tactical Fighter Training Squadron to fly NFTC Phase IV, known as Fighter Lead-in Training, or FLIT. FLIT is all about learning to fly the Hawk as a weapons delivery platform, in both the air-to-air and air-to-ground capacity. The aim is to get students ready to move on to 410 Tactical Fighter Operational Training Squadron, where they'll get their first shot at the CF-188.

Students who find themselves at Sheppard flying the T-38 follow a similar structure, first learning to fly the T-38 on the UPT phase of ENJJPT prior to receiving their USAF wings, and then learning to fight it on the IFF course. The IFF course at ENJJPT has various streams tailored to the roles of the front-line fighters that students will eventually find themselves in depending on their home nations' fleets. Canadian pilots go through Track B, which focuses on the type of multi-role flying to which the CF-188 is ideally suited. Air-to-air and air-to-ground specific IFF tracks also exist for countries that fly fighters specializing in those areas.

While ENJJPT and NFTC do diverge in the order in which certain fundamentals are taught, by the end of each their graduates will have covered the same material, including clearhood flying—or 'contact' as it's known at ENJJPT, instrument flying, basic and advanced two-ship formation, four-ship formation, low-level navigation, basic fighter manoeuvres (BFM), air combat manoeuvring (ACM), close air support (CAS), and air-to-ground weapons delivery.

By the time they get to 410 Squadron, there will be no discrepancy between the training that an ENJJPT pilot and an NFTC pilot have received, putting both groups on equal footing as they start their Hornet training.

But while ENJJPT and NFTC may cover the

same course material, that doesn't necessarily mean that the two courses offer the same challenges or produce identical pilots.

"The T-38 itself is more challenging to fly than the Hawk," noted Maj Phillippe Turcotte, the Canadian senior national representative. "It's a more complex machine—afterburner, two engines—so it expands your horizon a little bit more. It's an old aircraft so it's not as easy to fly. It's not very forgiving at low speed. Around the landing area, it's pretty sporty. So, I think the difficulty level is maybe a little bit higher here because of that."

Turcotte also explained that the T-38's U.S. origins can help smooth the transition for pilots moving on to fly the Hornet, but that the Hawk offers its own unique benefits as well.

"[The T-38] is an American aircraft, so the design flows really easily to the F-18,"

he said. "Very similar cockpit, symbology is very similar, versus the Hawk, which may be a little bit more of an adaptation when you get to the F-18. The Hawk is a more modern flying platform, so a bit easier to fly, but it flies a bit more naturally as well. I don't think it's a disadvantage to be easier to fly; I think you can do some different manoeuvring with the Hawk that we cannot do with the T-38."

In addition to the benefits the T-38 provides, Canadian ENJJPT students gain some unique experience thanks to the program's location and structure. Turcotte identified three major areas that he felt were notable examples of how training at Sheppard benefits Canadian participants.

The first, and potentially most obvious, is the international nature of the program.

"The vision of ENJJPT and one of the

missions of ENJJPT is to build partnerships, and that's one thing they do at a really young state in their career," said Turcotte. "Nowadays with Maple Flag, Red Flag, all those multi-national exercises, plus all the coalition operations right now, there's a significant chance that in a few years down the road, maybe just two, three years, they're going to be working in a squadron, flying with American F-16s, and, 'Oh, there's a guy that I was at ENJJPT with.'"

Turcotte also believes the quick pace of training is a major upside to training in Texas, comparing Sheppard to Moose Jaw and its harsh Prairie winters. "The course is really challenging and fast-paced, so it prepares you really well for the next phase of training. The weather here is excellent throughout the year, so once you start flying, it's non-stop. So that's a different pace than we're used to in Canada with the bad weather, where sometimes you're only flying once or twice a week."

Finally, Turcotte cited the exposure to new flying environments as a unique experience that ENJJPT students can carry into their initial Hornet training at 410 Squadron. "They're learning one more environment compared to staying in Moose Jaw. They're still going to go to Cold Lake, but they'll be used to flying U.S. procedures, which we do quite a bit of with the F-18," he explained. "Because for the students that go from flying the T-6 in Moose Jaw, the only change from Phase 3 to phase 4T is the machine, and not really the procedures. Everything is the same, the environment is the same. Here, at the same time, the change is not only the airfield, but the rules around the airfield, the communications, some of the ways we fly are a bit different. It's never a very big



Lt Zac Belanger of Ottawa, Ont., performs pre-flight checks on his T-38C in preparation for a solo flight during the UPT phase of ENJJPT. **80<sup>th</sup> FTW Photo**

An 80<sup>th</sup> FTW T-38C, identifiable by the EN tail code and NATO marking, performs a touch-and-go with an F-15 Eagle and A-10 Warthog on the ramp in the background. **Soren Nielsen Photo**





difference, but they're enough and there are enough of them in numbers to make it more challenging."

While these benefits all specifically apply to the pilots' development as they progress through their flight training, the benefits to the RCAF as an organization are clear as well. The Air Force is only as strong as its leaders, and exposure to the unique interoperability and officer development opportunities that an international exchange like ENJJPT provides can only help ensure a deeper, more well-rounded corps of young officers.

## GRASPING THE TALON

The T-38 Talon is a fighter lead-in trainer that first entered service in March 1961. That makes it a similar vintage to the RCAF's CT-114 Tutor, which first flew in 1960 and, aside from the famous red and white jets flown by the Snowbirds, was retired from service as a training aircraft in 2000.

Unlike the Tutor, the T-38 is still hard at work around the USAF, with 546 jets still actively employed. The Air Force's T-X program is currently looking for a replacement more suited to getting pilots ready for fifth generation fighters and beyond, but it's a testament to these planes that they're still being successfully employed in large numbers so many decades after they were designed and built.

That isn't to say that ENJJPT's fledgling fighter pilots are flying around in the same jets that their grandparents' generation learned to fly on. The current T-38 fleet being used at ENJJPT is composed of C-models, with some significant upgrades installed beginning in the early 2000s. The airframes are the same—no new T-38 airframes have been produced since 1972—but engines and avionics have been revamped. Today's C-model features a propulsion upgrade that improves engine reliability and increases thrust at low altitudes. The avionics were also modernized with the addition of a

head-up display (HUD), glass multi-function displays, a GPS, traffic collision avoidance system (TCAS), and more.

With a maximum speed of Mach 1.3 at altitude and Mach 1.08 at sea level—or approximately 1,306 kilometres per hour—the T-38's most notable feature is its speed. There are only a small handful of supersonic jet trainers currently in operation around the world, and the T-38 is the only one flying for a Western air force. That means the NATO pilots that head to Sheppard to participate in ENJJPT are the only ones out of all their peers that will break the sound barrier before they get to a front-line fighter (at least in level flight). An ENJJPT pilot's ability to push the T-38's throttles past MIL power and into afterburner is sure to be a source of at least a little jealousy for other pilots flying subsonic lead-in trainers.

That speed can mean a huge adjustment for the student pilots. "Initially moving on to the T-38 from the Harvard II, the speed at which things occur in the jet is considerably quicker, making it very easy to get 'behind the jet,'" said Boettcher, the recent Canadian program graduate. "The T-38 is also the fastest-landing aircraft in the United States Air Force fleet, with our approach speed varying from 160 knots to 200 knots depending on configuration and fuel weight at time of landing, making for more challenging landings, at least at first."

The T-38's turning ability isn't quite as impressive as its speed. The Talon has tiny wings and the jet is definitely at its most comfortable at higher airspeeds. Being optimized to fly fast means the T-38 needs to maintain higher speed in turns, and RCAF pilots flying the Hawk—with its better low-speed performance and combat flaps—hold a pretty decent edge in turn radius as a result.

The T-38's two afterburning J85-GE-5 engines are also fairly fuel-hungry compared to the Hawk's single Rolls-Royce Mark 871, and the T-38 falls well short of the Hawk in the range category.

Each jet certainly has its own unique strengths and weaknesses, and Turcotte made it clear that neither one is superior to the other, each offering different advantages to the pilots that learn on them, and each equally capable of getting those pilots ready to take on the CF-188.

## TRAINING FOR THE FUTURE

From the Gulf War, to Bosnia, to Libya, and most recently Operation Impact in Iraq, there has never been a combat deployment of CF-188s in which the pilots and the RCAF didn't work as one important piece of a larger international team.

The same holds true for Canada's NATO and NORAD missions, where Canadian fighter pilots work and fly alongside American and European pilots regularly.

Interoperability with allied nations is at the core of what the RCAF does for a living, and that's especially true of the fighter force. With that in mind, there is no reason to think that the ENJJPT program won't continue to be a valuable training option for Canada's young fighter pilots long into the future. In addition to the world-class flight training they receive from the program's corps of international instructors, the students also gain valuable exposure to environments outside of Canada and to working with partner nations in a setting very different from the ones they've become accustomed to in the Canadian training pipeline.

That unique experience can only benefit the small handful of RCAF pilots that head to Sheppard every year, helping to hone their skills as leaders in an international environment, and adding to their readiness to answer the call to arms when it eventually comes. **S**



### RYAN HEALY

Ryan Healy is a Toronto-based freelance writer, aviation enthusiast, and 1997 Mississauga Roller Hockey League peewee house league bronze medal champion. When not working, he can often be found relaxing. (Pictured here with dinosaur.)

Calling itself an “extension of the airline,” JD Aero aims to provide a maintenance experience unlike any other in the industry, from start to finish.



# Running down a DREAM

JD Aero is a world-class maintenance facility and fixed-base operator rooted in the ambitions of two like-minded engineers.

► BY BEN FORREST | PHOTOS COURTESY OF JD AERO



**I**n the mid-1990s, when they were both flight test engineers in Bombardier's Dash 8 program in Toronto, Julian Chin and Don McNabb would sit outside the hangars at lunch and watch aircraft manoeuvre around Downsview Airport.

They were both new to the city, and far from home. Chin was born in Guyana and moved to Canada to study at Centennial College's aircraft maintenance engineer (AME) program before joining Bombardier.

McNabb, a fellow AME, is from the small northern Ontario town of Geraldton, about a 13-hour drive from Toronto. They were paired together frequently at Bombardier and became close friends, thanks in large part to their shared work ethic, high personal stan-

dards and deep trust in one another's work.

"We would never duplicate," said Chin, who later joined forces with McNabb to create JD Aero, an elite maintenance, repair and overhaul (MRO) and fixed-based operator (FBO) in Sault Ste. Marie, Ont.

"We would always know what the other one is doing instinctively and trust that they will do it the right way. So I would go on to the next step, and so forth.

"We never had to worry—'Hey, did you do that?' No, it's already done and it's all completed, ready to go ... It was very rare. A lot of people don't get that."

In their Bombardier days, Chin and McNabb talked about how they would run their own company. A series of layoffs—first at Bombardier and later at Field Aviation,



Don McNabb, left, and Julian Chin, both aircraft maintenance engineers, launched JD Aero in 2003.



The Bombardier Q400 is a common sight in the JD Aero hangar. The company maintains the type for Porter Airlines, WestJet Encore and Horizon Airlines.

where they also worked—nudged them toward their dream.

“When you’re gainfully employed it seems like a nice idea,” said McNabb. “But you don’t want to jump out of the nest and take something on.”

Still, they were young, ambitious, and had enough money saved to take the leap. In the mid-2000s, just as the industry was beginning to recover from the post-9/11 downturn, they decided to chase their dream.

“And here we are today,” said Chin. “A dream that is reality, that is bigger than anything that we would anticipate.”

## STEADY GROWTH

The dream did not become reality overnight.

After they were laid off from Field Aviation in 2003, production was beginning to ramp up again at Bombardier.

Flybe, a low-cost airline based in the United Kingdom, had placed a large order for Q400s and needed someone to represent them for quality assurance purposes. Chin and McNabb put together a proposal and won the contract.

Soon, they were doing the same type of work for Qantas Link, Air New Zealand Link, and Hydro Quebec at Bombardier’s Downsview facility, and several other airlines.

In addition, they started supporting E-Jet representation for Flybe, BA City Flyer and LAM Mozambique at Embraer’s facility in São José dos Campos, Brazil. Their company, then known as JD Aero Maintenance, was beginning to take off, with clients all over the world.

But Chin and McNabb were still AMEs at heart, and they wanted to get back to their roots. They decided to start their own MRO facility in Sault Ste. Marie, in the former NorOntair hangar at the local airport.

JD Aero started with just three employees and gradually added clients until it received a contract for heavy maintenance on Porter Airlines’ entire fleet of Q400 aircraft.

As the company built a reputation for exceptional work, word got around. Other major airlines took note, and signed on for similar work.

Today, the company completes heavy maintenance, line maintenance, modification and installation work for the Q400 fleets at Porter, WestJet Encore and Horizon Airlines. It also completes heavy maintenance for Nav Canada’s Dash 8 and CRJ aircraft.

JD Aero’s workforce in Sault Ste. Marie has grown to over 130, working out of 81,000 total square feet of hangar space. The business is thriving, and beginning to break new ground.

“I’ve sometimes got to sit back and pinch myself a little bit,” said Chin. “Sometimes

you need to step back ... just think about what we have done, not only as a singular person but as a group.”

## BUILT ON VALUES

JD Aero has worked hard to build a culture based on mutual respect, innovation, safety, accountability, excellence and dedication to its work.

The company places a high value on relationships, working with clients to build the best possible solutions. The goal is to provide an experience unlike any other in the industry, from start to finish.

“We’re an extension of the airline, essentially, when they have an aircraft at our facility,” said McNabb. “We instill into the people that we work on these airplanes like they were our airplanes.”

“There’s a lot of pride amongst the group when we finish an airplane that was all taken apart for heavy maintenance, it goes together, and it flies away.”

A great deal of the company’s growth has to do with relationships and word of mouth. There is no sales team at JD Aero; its contracts are a product of its reputation and referrals from clients.

“It comes down to the fact that we have good experience on the products we work



The company's workforce has grown to over 130, working out of 81,000 total square feet of hangar space.

Based in the former NorOntair hangar in Sault Ste. Marie, JD Aero completes heavy maintenance, line maintenance, modification and installation work for various airlines.



on, our price point is good, the quality of work is excellent," said McNabb.

"But word of mouth, and customers supporting us in turn, has been very fruitful for us."

JD Aero is an approved maintenance organization (AMO) for Bombardier's entire Dash 8 Series, as well as the CRJ Series 100, 200, 700 and 900.

Its original 30,000-square-foot hangar is complemented by a second 30,000-square-foot hangar built in 2011.

In 2016/2017 the company completed an addition to the original hangar that allows it to run four lines of Q400 heavy maintenance simultaneously. All renovations were supported by the Sault Ste. Marie Airport Development Corporation.

"There's a lot of pride in the work that goes into the everyday here," said Marcus Labelle, a long-time employee who serves as JD Aero's production manager.

"And it's true craftsmanship."

### CULTURE AND CAMARADERIE

While culture can be hard to define, Labelle noted the extraordinary camaraderie that exists among JD Aero employees.

"It's very friendly on the floor," he said. "I think that's reflected in every aircraft that we deliver.

"It's everybody's individual efforts and

teamwork and co-operation that allow us to do what we actually do here."

Many of the employees are friends as well as colleagues, and the company leadership actively invests in its people, seeing them as their biggest asset.

"I truly believe that: You look after the employees, and they will look after the business," said Julian Chin.

"And in return, that's where you see your efficiency and your profit margins."

### FBO FACILITY

JD Aero's new Avjet FBO opened in January 2018 and is a key part of a diversification strategy aimed at moving the company into an even more prosperous future.

This is Avjet's first FBO foray into Ontario, with most of its other facilities located in Quebec and the Maritime provinces.

In addition to jet fuel sales for heavy maintenance and business aviation customers, the facility has a contract to provide fuel for all Canadian military and federal government aircraft that fly through Sault Ste. Marie.

Its hangar can accommodate aircraft up to the size of a Boeing 737, as well as separate lounges for passengers and pilots, a cafeteria, flight planning area, shower and laundry facilities and two executive conference rooms.

“THE COMPANY PLACES A HIGH VALUE ON RELATIONSHIPS, WORKING WITH CLIENTS TO BUILD THE BEST POSSIBLE SOLUTIONS.”



JD Aero hopes to diversify its maintenance offerings to include multiple aircraft types.



JD Aero opened its new Avjet FBO in January 2018. It is Avjet's first location in Ontario.

“THERE IS NO SALES TEAM AT JD AERO; ITS CONTRACTS ARE A PRODUCT OF ITS REPUTATION AND REFERRALS FROM CLIENTS.”

Canada Customs clearance is onsite, with Canadian Border Services available 24/7. De-icing services, on-call maintenance, catering, car rental arrangements and hotel reservations are all part of the customer experience. “Avjet’s been an excellent partner,” said McNabb. “They have great connections. So in addition to actually supplying us with the fuel, they’ve been very positive in helping us with the business development of the FBO. “And customers that have come to us now—the feedback on the quality of service, the facility we have—has been very positive.”

**FUTURE GOALS**

While the FBO is a key part of JD Aero’s future, the company also hopes to diversify its maintenance operation to include aircraft other than Q400s and CRJs. Key possibilities include Boeing 737-series aircraft, and Embraer E-Jet airliners from existing customers. “It only makes sense for us to go with the type series that our current clients have, or are asking us to look at to help them with their fleets,” said Chin. Other goals include growing the employee base to as many as 160 people, which would

allow the company to operate four lines of maintenance full-time at the current facility. JD Aero is considering expanding its current location to add a fifth and sixth bay for maintenance and/or opening a second location, possibly in Western Canada, to support customer demand. A paint shop, GTA-based composite/sheet metal shop and component overhaul facility are all business development ideas currently being explored. They have also floated the possibility of launching a small charter airline, following in the footsteps of Voyageur Airways and Avmax, which both have roots in the world of MRO. The dream they hatched on lunch breaks and at other gatherings nearly 25 years ago is brimming with potential. “Nothing is unachievable,” said Chin. “You have to be a company that is innovative, always constantly thinking, always putting back into the employee system.”



**BEN FORREST**

Ben Forrest is a freelance writer who graduated from Western University’s Master of Arts in Journalism program.



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Photo by Mike Reyno

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# Droneville

Kitchener-Waterloo has emerged as a hub for UAV operations and expertise.

◊ BY NORM MATHEIS

**T**he Kitchener-Waterloo (K-W) area, about 90 kilometres southwest of Toronto, has matured into a global centre for technology and innovation. Tech companies are on a high in Canada, attracting funding and initial public offering (IPO) traction in hubs like K-W.

I take certain liberties with the K-W short form; arguably, it's growing beyond the tri-cities of Kitchener, Waterloo and Cambridge, and is perhaps really a corridor extending back to Toronto.

Southern Ontario centres are among the most successful examples of fertile territory for the Canadian entrepreneurial spirit. BlackBerry and

Research in Motion (RIM) are no longer the only big names to call the K-W region home.

Some believe the Toronto-Waterloo corridor has the potential to become Canada's first technology supercluster. Local post-secondary institutions are generating graduates who may see being an entrepreneur, and a disruptive entrepreneur at that, as a viable out-of-the-chute career path.

You can feel the energy in the downtown area pubs, just listening, as I did.

I shamelessly admit the title of this piece spins off "Fightertown U.S.A.," the colloquial name of U.S. Naval Air Station (now Marine Corps Air Station) Miramar, home of the flight school

Drones are set to revolutionize major industries such as mining, insurance, agriculture, infrastructure, and e-commerce. **Avidrone Aerospace Photo**

# Canada

immortalized in the movie *Top Gun*.

I just don't remember having seen a faster-developing sector of aviation, with greater potential for producing new jobs and growth—and frankly, more exciting—than unmanned aircraft (or “drones”).

Unmanned aircraft generally may include large aircraft similar in size and complexity to manned aircraft, all the way down to very small consumer electronics aircraft.

“Unmanned aerial vehicle,” or UAV, is another common term used today in conversation about drones. “Unmanned aircraft system” (UAS) or unmanned aircraft (UA) are terms perhaps used more often in the United States than by Canadians.

But we're all talking about the same thing.

Drones are here to stay. They can perform hazardous work, like inspections of the normally inaccessible spaces of a nuclear reactor plant. In civil construction, they are used to survey sites and gather data for progress reports for investors.

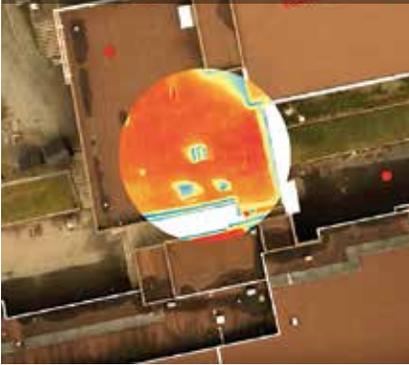
The cost of maintenance inspections for tough jobs like wind turbines, hydro transmission lines and pipelines can be halved when compared to traditional means. Add in deliveries and airborne 3D printing repairs—the list of what is being done today is longer than we have room for here.

The global incremental opportunities for drones are seemingly limitless. Drones are set to revolutionize major industries such as mining, insurance, agriculture, infrastructure, and e-commerce.

Delivery by drone is a disruptive technology that may set new benchmarks for the traditional shipping business. A common theme in conversations with people who know this exploding industry well, is the growth seen in the last five years.

In 2016, consulting firm PricewaterhouseCoopers (PwC) estimated the global market for business services using drones at an astounding \$127 billion.

Industrial SkyWorks specializes in UAV thermographic structural inspections. **Industrial SkyWorks Photo**



Avidrone's niche is based on a few factors, including its proprietary flight control and autoflight system. **Avidrone Aerospace Photo**



Skies met up with Industrial SkyWorks' UAV pilots for a field demonstration. **Industrial SkyWorks Photo**



Avidrone designs and manufactures fully-automated drone systems for commercial applications. **Avidrone Aerospace Photo**



**FIRST-HAND EXPERIENCE**

I spent some time recently taking the UAV ground school course at the Waterloo Wellington Flight Centre (WWFC), located at the Region of Waterloo International Airport (CYKF).

You could feed off the energy in the classroom, and it seems applications for drones in Canada are limited only by our imaginations.

A father-and-son duo in real estate plan to shoot their own aerial video for property listings, bringing a crucial marketing capability in-house instead of hiring someone to do it for them.

A man with his own roofing business wants to introduce thermographic imaging via drone to help with inspections. Another man from Environment Canada was exploring drone use for soil erosion surveys.

The most intriguing or unique idea was from a woman with a local conservation authority. They have a drone now and want to use it for such missions as looking for beaver dams and the associated damage, substituting a camera on a drone for slogging it on foot.

So why has K-W become such a hub for drones? To find out, *Skies* spoke with Sarah Spry, WWFC's UAS business manager and one of its UAV ground school instructors.

"It's a technology hub and such a talented pool of people," said Spry. "And we're close to Toronto. Communitech is here and helps tech start-ups. And, it's a great quality of life here."

K-W has an extremely high density of technology workers and start-ups, second only to California's Silicon Valley.

Communitech was founded in 1997 by a group of entrepreneurs wanting to make Waterloo Region a global innovation leader. It has since grown into a public-private innovation hub helping start-ups grow and succeed, supporting a community of more than 1,400 companies.

WWFC's UAV training works hand-in-glove with the flight school's well-established fixed-wing pilot training. UAV training classes run once a month, and specialized courses are offered in conjunction with local community colleges at their request.

Real estate boards and insurance companies have also benefited from custom courses. Insurance companies are working to understand the industry. Companies and individuals providing home inspections are being trained to use drones, as some inspectors may have challenges with climbing.

*Skies* spoke with Scott Gray, a K-W-based UAV entrepreneur and president and CEO of Avidrone Aerospace.

Avidrone recently moved its drone technology research and development offices and manufacturing centre to Chartright Air Group's 50,000-square-foot Hangar 53 at CYKF.

Gray launched the company with his wife in 2007, designing and manufacturing fully-automated drone systems for commercial applications around the world. He moved

into this from a mechanical engineering background and also spent time as a sponsored demonstration remote control model pilot.

Gray feels Avidrone's niche is based on a few factors, including its proprietary flight control and autoflight system; range, efficiencies and control algorithm software; and the ability of Avidrone UAVs to lift heavier-than-normal and multiple payloads.

A current focus is on aerial delivery. A tandem-rotor UAV nearing completion in Avidrone's final assembly hall can lift a 50-pound payload with arms that can fold down and grab a box.

It's interesting that this particular model has a synchronizing drive shaft scheme, similar to that of a Boeing Chinook helicopter.

When asked about the possibility of having the good folks at Amazon deliver to your door, with you putting a big X on your front lawn to mark the spot, Gray predicted: "That's the part that is a little far-fetched. More likely is delivery along predetermined corridors, hub-to-hub or hub-to-smaller hub. The driver is speed and often there are places where the trucks can't go."

Military applications are broad, too, and a consideration driving military planners is the fact a drone might be costly, but it's ultimately expendable for missions in non-permissive environments.

Avidrone's future lies in the provision of smart UAVs that don't require such a high level of skill to operate. Gray also spoke highly of the help the Communitech hub provides in support and mentoring.

So, why K-W?

"It's a cool place to be, and this is the view we have every day," said Gray, gesturing at Chartright's busy hangar.

Avidrone's products are all custom-built to solve customer needs and specific missions, with turnaround times ranging from around six months to more than a year from agreed concept to delivery.

"We're spending a lot of time talking customers through what *can* be done; the industry is still so new, there is no norm," said Scott. "All these vehicles are tools to carry out a task."

A turbine engine originally used as an aircraft auxiliary power unit (APU) rests on a pallet in the Avidrone shop, ultimately destined for a large-scale helicopter drone.

Another model has a spray tank fitted and can fly all day long, singly or as a swarm, along pre-programmed tracks to spray pesticide or other agricultural products. In these cases, the octocopter form of a UAV—which has become the common image in the media—makes sense because it doesn't have to fly far or fast.

Scott said he could comfortably operate a UAV from the Region of Waterloo International Airport to Toronto autonomously, today.

What's the strangest task for a drone operation he's heard about?

"Carrying people," said Grey. In other words: Uber by air.

## FUNDING AND SUPPORT

There are other UAV players in the K-W area.

*Skies* also spoke with Bruce McPherson, dean of unmanned systems training at Clarion Drone Academy in Kitchener.

When asked the reason for the growth in this geographic area, McPherson said: “The politicians here really get it. The funding and support, it’s all here. And the people, the universities.”

He described typical clients participating in Clarion’s core training offering, saying: “Clients come to us either already operating commercially or needing to make a decision about whether to do so. After they train with us, we realize we can do more together. We often wind up assisting with things like developing standard operating procedures (SOPs).

“We walk them through the aviation side of what they are doing or are thinking about doing. And work to educate them that training isn’t just a one-time thing; rather, it is continuing education. We also would really like to work to bring more women into the industry.”

McPherson said they are happy to recently provide more First Nations students with UAV training.



Waterloo-Wellington Flight Centre offers a UAV operators ground school program. **WWFC Photo**

Aeryon Labs, also based in Waterloo and previously profiled in *Skies*, designs and builds high-performance drones for military, public safety, and commercial customers around the world.

To have a look at the operations side, *Skies* was invited to observe a real-world mission, courtesy of UAV inspection services provider Industrial SkyWorks.

Five years in operation, this company provides the oil, gas and petrochemical industries and building owners with asset inspection drone technology solutions.

*Skies* met up with Industrial SkyWorks' UAV pilots and thermographers, Chris Spagnola and Jordan McPhail, early one evening as they were setting up for a UAV thermal inspection of structures at the Highland Creek Wastewater Treatment Plant in Toronto.

When asked to describe the job that night, Spagnola said: "The client [a consulting engineering firm] has hired us to assess [within this project] over 700 buildings, taking still thermal images of the facades

associated fall risk, doing this with handheld thermal imaging equipment.

Safety was clearly paramount for the flight operation itself as the drone takeoff and landing site was carefully prepared with pylons and flashing beacons in a parking lot outside the plant perimeter.

Preparation time was ample and allowed for powered paraglider enthusiasts in the vicinity to head home for the night, and for the winds to calm down.

A sustained wind speed of 40 kilometres per hour was the pre-set wind-warning limit for the Aeryon SkyRanger R60 UAS equipped with a thermal imaging camera. A thorough safety briefing by McPhail was followed by Spagnola's pre-flight inspection of the drone.

No-fly zones had previously been programmed. "We block off certain areas and we'll also program a ring boundary where if we lost control it would have to stop," said McPhail. "But we've never experienced that."

Checklist completion and takeoff and climb-out to 75 metres looked ultra-smooth, with

The deliverable for the night's work was a series of around 45 thermal images stitched together to form a mosaic.

## REGULATORY FRAMEWORK

Make no mistake: Our regulator, Transport Canada, treats UAVs as *aircraft*. They are unmanned aircraft, plain and simple.

Changes are coming to regulations covering drone operations in Canada.

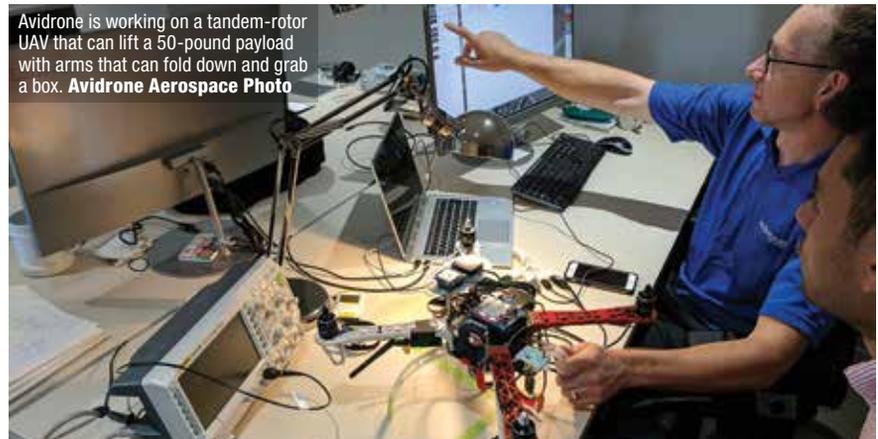
Transport Canada continues to work on developing the regulatory framework to ensure that drones will be used in a safe, secure and business-friendly way. Regulatory changes targeted to hit *Canada Gazette Part II* are expected to remove any remaining distinction between recreational and commercial use.

When contacted by *Skies*, Transport Canada could not confirm a date for publication of the new regulations.

It's anticipated there will be a minimum threshold centred on weight, below which operators can go fly and have fun. Beyond



Avidrone's products are all custom-built to solve customer needs and specific missions.  
**Avidrone Aerospace Photo**



Avidrone is working on a tandem-rotor UAV that can lift a 50-pound payload with arms that can fold down and grab a box. **Avidrone Aerospace Photo**

and roofs and doing some post-processing. What we actually do is stitch the individual images together to form a single large image. They are looking for any type of defect: cracked mortar, spalling brick, efflorescence. We've probably been here six or seven times and this will be our last visit [to this site]. Tonight we are doing rooftops."

Both Spagnola and McPhail are bullish on Industrial SkyWorks' BlueVu software.

"No one wants to go through thousands of images," said Spagnola.

BlueVu, while not being used on this evening's tasking, can automatically organize, analyze and select the most relevant images. When asked what else differentiates their company, both pilots stressed safety.

"They love the safety aspect," said Spagnola. "They are huge on that. It's giving them the opportunity not to go up on the roof. Just to give you an idea, we scanned 3.5 million square feet of roofing inventory in three hours."

Previously, this might have taken three to four weeks of climbing on roofs with

McPhail acting as pilot-in-command and Spagnola as the spotter, a typical arrangement with Spagnola in constant contact with McPhail, calling out clearance to roads, people, an active railway line and other areas to avoid.

Spagnola, as the spotter, had to ensure he always had the drone in sight as this was a visual line of sight (VLOS) mission. McPhail controlled the drone using a stylus and a tablet running Aeryon's Mission Control Station (MCS) software.

Control of the drone was through a combination of manual inputs for altitude, heading and airspeed, via modem to the drone.

Dragging the drone icon to a pre-planned grid around the largest plant structure launched the autoflight segment.

Return to the landing site was manually controlled and equally smooth. A mission like this can last around 15 minutes and wrapped up with a check of the sensor's SD card files on a laptop to ensure the imagery was captured.

"We were the first to get a night approval," said McPhail.

that threshold, it's expected there will be delineation between simplified and complex airspace operations.

Simplified will simply mean, "stay away from an airport." It won't matter if the [airspace] is controlled or uncontrolled. The definition of built-up areas will go away, replaced by the restriction to stay 100 feet away from people not involved in the flying operation. This category will require a mark of 80 per cent on an online exam. Requirements for liability insurance will go away.

Complex operations will require passing a different exam and a practical flight test. The currently all-important Special Flight Operations Certificate (SFOC) may go away for the most part, with exceptions such as operations beyond visual line of sight (BVLOS), and extraordinary operations like dropping explosives.

SFOCs have been used in a somewhat random way up to now. Originally, they were meant to be used to document the

approval of airshows and other special operations of manned aircraft.

Operators will be allowed to fly near an airport, still following all the necessary cautions, guidance and planning as with SFOCs. Drone registration is also likely on the horizon.

## WHAT'S NEXT?

The final outcome of proposed new drone regulations for operations in Canada will to some degree pace the industry in the coming years. How the potential for an ADS-B Out mandate for Canada will affect drone operations remains to be seen.

Miniaturization of ADS-B Out avionics won't likely be the determining factor. We're already seeing ADS-B Out avionics developed that are small enough to be packaged inside a replacement position light for general aviation aircraft.

Transport Canada recently initiated a beyond visual line-of-sight (BVLOS) pilot project with multiple industry partners, to develop risk models. BVLOS will be pivotal to the expansion of commercial drone operations and a key to these operations will be viable detect-and-avoid technologies.

BVLOS has the potential to reinvent commercial drone operations, enabling data gathering, for example, over much larger areas without the pilot or the spotter needing to see the drone. We will need to trust the technology.

Lighter, longer-endurance battery development is a pacing item for further drone development and expansion of operational possibilities. Drone detection and warning systems for aircraft and air traffic control are under consideration.

An incident endangering the operation of a manned aircraft involving a drone is an offence under the Canadian Aviation Regulations. Penalties for violations include maximum fines of \$3,000.

Insurance unknowns and privacy challenges are still to be addressed. A recent U.S. proposal would make encroachment over another person's land by a UAS a form of trespassing that conveys a presumption of damages, so long as the altitude of the flight was 200 feet or below.

We're witnessing a business re-spin as drone technologies shake up business models in sectors ranging from filmmaking to crop-spraying.

In the very near future, clients in all areas of the economy will begin to see the impact of drones on their operational processes—from the way they receive deliveries to how they interact with their insurers. ■



### ◻ NORM MATHEIS

Norm Matheis is the Canadian regional sales manager for Universal Avionics Systems Corporation.



The final outcome of proposed new drone regulations for operations in Canada will to some degree pace the industry in the coming years.

**Industrial SkyWorks Photo**



# 2018 SKIES PHOTO CONTEST

Wow! It's hard to believe this is already our fifth annual *Skies* Photo Contest.

Every year, we invite our readers to submit their best aviation photos. And every year, we are amazed at the top quality imagery that comes flooding into our office.

The 2018 contest is no exception. Always one of our favourite editions of the magazine, this issue delivers more of the jaw-dropping, attention-riveting aviation imagery that is a hallmark of *Skies*.

This year's entries showcased the full scope of Canadian aviation, from single-engine training airplanes to giant Royal Canadian Air Force transport aircraft.

The *Skies* Photo Contest was open to both amateur and professional

Canadian photographers over the age of 18. Photos were submitted in three categories: Commercial, General Aviation and Military.

Once the contest closed on Sept. 26, the *Skies* team had the difficult task of narrowing down the entries in each category.

Then, we called in our 11 contest sponsors. Representatives from Bose, Cascade Aerospace, Columbia Air Services, Daher, FlightPath International, Hamilton Watch, Innotech-Execaire,

Keystone Aviation, Levaero Aviation, Pratt & Whitney Canada, and Universal Avionics Systems Corporation voted for their favourite photos in each category, as did MHM Publishing staff.

As you'll see on the cover and here on this spread, our 2018 Grand Prize goes to photographer Stuart Sanders.

It's not unusual to see Stuart's stunning photography in the pages of *Skies*. This time, he travelled to the 2018 Abbotsford International Airshow to capture this unforgettable photo of 2018 CF-18 Demo Team pilot Capt Stefan "Porcelain" Porteous demonstrating the capabilities of the CF-18 Hornet. Congratulations on winning our grand prize, Stuart!

The first, second and third place winners in each of the three categories appear on the following pages. While it's impossible to print all of the incredible photos we received, we hope you enjoy the winning entries. For a selection of honourable mentions, please see our digital edition at [www.skiesmag.com/issues/](http://www.skiesmag.com/issues/).

The *Skies* team thanks all photographers for their submissions. Of course, we also recognize and thank our contest sponsors for supporting the fifth annual *Skies* Photo Contest. 🇨🇦



# GRAND PRIZE

2018 CF-18 Demo Team pilot Capt Stefan "Porcelain" Porteous demonstrates the CF-18's incredible power and agility during his performance at the 2018 Abbotsford International Airshow.

Fascinated with aviation for as long as he can remember, **Stuart Sanders** picked up his first camera at the age of 17. Naturally, the first subject matter he wanted to photograph was aviation. The result was a merger of his two passions, aviation and photography. Stuart strives to capture unique and dynamic imagery, saying, "If an image of mine can evoke a certain emotion with someone, I know I've done my job."



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# FIRST PLACE

## MILITARY

A 20-second time exposure captured this Royal Canadian Air Force 429 Squadron CC-177 Globemaster III as it prepared to depart Erik Nielsen Whitehorse International Airport on a -35 C morning.



• **Simon Blakesley** is an aviation photographer living in Whitehorse, Yukon. A former Royal Canadian Air Force aircraft technician, Simon continually strives to combine his love of aviation with the Yukon's stunning scenery.



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# THIRD PLACE

## MILITARY

“Close Encounter”—The Canadian Armed Forces Snowbirds’ dynamic four-way cross captured at Fort Erie, Ont., over the Niagara River.



Joe Letourneau is a private pilot, radio control aircraft enthusiast, engineer, entrepreneur and experienced photographer from Brantford, Ont. He has been shooting airshows internationally for over 20 years while photographing everything else since an early age. He says his passion is driven by his determination to “capture every spot of light and shadow with imagination, and his desire to create beautiful, unique pictures.”



# SECOND PLACE

## MILITARY

CF-188 Hornet on final during the early morning hours at 19 Wing Comox, B.C.

📍 **Derek Heyes**, who lives in Nanaimo, B.C., developed a passion for aviation photography at an early age and his photos have been published in major aviation magazines since 2004. A full-time surgical nurse for the past 10 years and father of three girls, Derek enjoys his diverse passions, whether helping the sick or photographing that moment in time during military aircraft operations. Derek has been fortunate to have had many unique photo ops flying with the RCAF and the Royal Australian Air Force, taking him around the globe to shoot military operations and airshows, all of which have been showcased on his successful website [www.hazersflightline.com](http://www.hazersflightline.com) since 2003.



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# FIRST PLACE

## GENERAL

It was a chilly September night in Yellowknife. First ice had begun to form on the shoreline and photographer Daniel Acton was sitting around the fireplace, when he looked outside to see a spectacular show of aurora. He quickly gathered his camera gear and headed to the dock, where C-FOED was tied up. She was one of the last floatplanes to come out of the water this season.



◀ Growing up flying with his uncle around Yellowknife sparked **Daniel Acton's** interest in aviation. He is very proud to share the beauty of northern aviation and landscapes, often mixing them together in his photography.



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# THIRD PLACE

## GENERAL

A Hearst Air Service de Havilland DHC-2 Beaver on floats poses alongside a dock in the early morning calm.



● **Melanie Veilleux** was raised on a floatplane base in Hearst, Ont. She says that operating a charter operation with her family has allowed her to meet amazing people, from international tourists to First Nations families ... all sharing the same passion for aviation.





# SECOND PLACE

## GENERAL

A Grumman Goose heads out for the return flight to Port Hardy on northern Vancouver Island. Wilderness Seaplanes is a lifeline for people living and working in remote areas on B.C.'s central coast.

Bill Campbell says he is "just a guy with a camera and a keen interest in all things aviation on the West Coast."



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# FIRST PLACE

## COMMERCIAL

Capt Mark Ogle and Capt Mike MacDonald give the thumbs up during an Air Canada photo shoot with the Boeing 737 MAX 8 over Vancouver Island on May 10, 2018.



• **Brian Losito**, a commercial photographer based in Montreal, has been Air Canada's corporate photographer since 1987. He maintains a busy shooting schedule travelling the Air Canada network and is a regular contributor to *enRoute*, *Navi* and *aircanada.com*. Brian is credited with many magazine covers and is responsible for much of the photography showcasing Air Canada's brand.



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# THIRD PLACE

## COMMERCIAL

On a brisk late December evening, an Air Canada 787-9 Dreamliner makes an appearance in the glowing winter sky.



Jan Jasinski is currently a commercial pilot working towards a career in the aviation industry. Despite his focus on flying, he is actively pursuing aviation photography and takes many exciting new images during his travels.



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# SECOND PLACE

## COMMERCIAL

A Harbour Air Beaver, dressed in Canadian flag livery, taxis away from the company's Green Lake docks with passengers bound for a scenic glacier tour high over Whistler, Garibaldi Park and the surrounding peaks.

◉ **Peter Hunsinger** is a Victoria, B.C.-based graphic designer with the Harbour Air Group. Peter worked on the team that created Harbour Air's Canadian Flag liveried Otter and Beaver to commemorate Canada 150 in 2017. The aircraft are still flying in the special livery today.





# HONOURABLE

## MENTIONS



Adam Tetziuff Photo



Gary Molenkamp Photo



Rob Davis Photo



Andrew George Photo





Eric Dumigan Photo



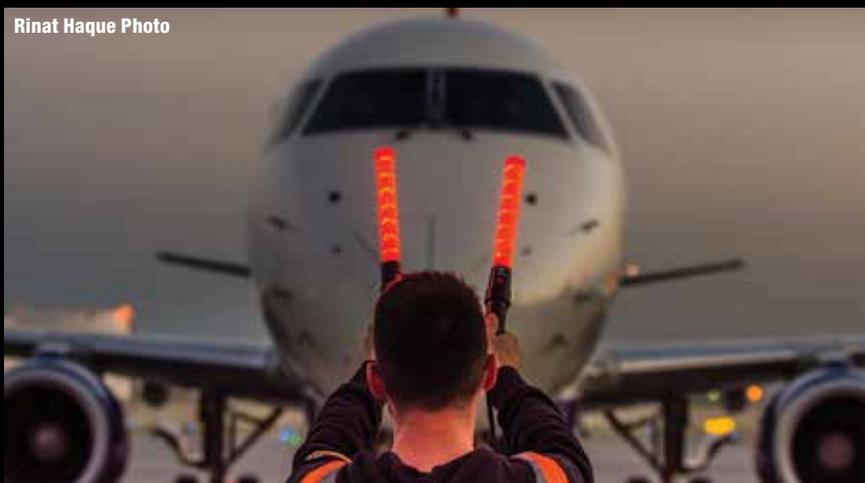
Martin Couturier Photo



Jan Jasinski Photo



Stuart Sanders Photo



Rinat Haque Photo



Eric Dumigan Photo



Steve Bigg Photo



Stuart Sanders Photo



Mike Luedey Photo



Jean-Charles Hubert Photo



Jean-Philippe Richard Photo



Michael Piper Photo



Dave P Mills Photo



Kelsey Firkus Photo



Mark Taylor Photo



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Caroline Bergeron Photo



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# Room to ROW

Montreal Saint-Hubert Longueuil Airport is poised to become a regional hub for Quebec's largest market. **BY BEN FORREST**

**I**n late August, a Boeing 737-200 airliner from Chrono Aviation, painted in the Quebec-based charter carrier's matte-black livery, landed on the newly-resurfaced main runway at Montreal Saint-Hubert Longueuil Airport (CYHU).

It was a major milestone for Chrono, which planned to base the newly-acquired airliner at CYHU and offer charters for cargo and up to 120 passengers in the fall of 2018.

But the bigger story was the runway itself, which for the first time could accommodate larger aircraft like the 737 and the Airbus A319, A320, A321 and A220 family.

It was a key step in a plan to transform CYHU from a general aviation airport with a large contingent of flight schools to a regional hub and a secondary option for passengers flying out of Montreal-Pierre Elliot Trudeau International Airport.

"We're actually closer to downtown Montreal than Trudeau is," said Jane Foyle, general manager of Développement de l'aéroport Saint-Hubert de Longueuil (DASH-L), the not-for-profit corporation that operates CYHU.

"We're not looking in any way to compete with Trudeau, because that wouldn't make sense. We consider ourselves being able to offer a complementary service for Quebecers and Canadians."

It's a lofty goal, and CYHU must clear several hurdles before the dream becomes reality.

As it stands, the airport has no passenger terminal building, no Canadian Air Transport Security Authority screening

services, and only has Canadian Border Services Agency services for 15 people.

Still, as passenger traffic increases and ultra-low-cost carriers (ULCCs) take off, CYHU has the potential to grow dramatically in a span of a few years.

"As we develop the airport, I think St. Hubert will be the place that ULCCs will turn to," said Foyle.

"Trudeau is a different element—a big, international airport. And we're so strategically located on the south shore, as well as 15 to 20 minutes from downtown Montreal."

CYHU is one of Canada's key aviation educational centres, with four flight schools: Air Richelieu, Cargair Inc., CPAQ-Aero and École nationale d'aérotechnique (ENA).

"We're a very good contributor to the development of the aeronautical industry," said Foyle, who joined CYHU in the spring of 2018.

"We see ourselves as—I don't like to use the term hub in this case, but a centre for the development of the aviation industry in Canada and abroad."

ENA is part of Quebec's CEGEP system and has the capacity to train 1,200 student technicians each year, said Foyle. The airport also has three fixed-base operators (FBOs) selling fuel: Pascan Aviation, Avjet Aviation and AvFuel H-18.

Two additional FBOs are also in the works: Lux FBO, a division of Chrono Aviation, and Aeroparc H-19.

Pascan offers regular flights out of CYHU to various parts of Quebec, and Regional Sky is planning to offer an

air taxi service five days per week to Providence, R.I., starting next spring.

CYHU also offers chartered flights from Chrono Aviation, Max Aviation, Aeroclub de Montreal and Univair, an Air Richelieu subsidiary.

Aero Teknic, a diversified maintenance shop and avionics dealer, is also based at CYHU, along with Handfield Aviation, a business and private aircraft maintenance company.

Other tenants include Aeromedic, the only privately-owned air medical provider in Quebec, and 438 Tactical Helicopter Squadron of the Royal Canadian Air Force.

CYHU is said to be the first civil airport built in Canada, tracing its history back to 1928. It became a base for the first air travel route between Canada and the United States, according to airport documents.

During the Second World War, the airport served as an Air Force training base, under the administration of Canada's Department of National Defence (DND). It was transferred to Transport Canada in 1968 and then again in 2004 to DASH-L.

DASH-L is now trying to push the airport into an exciting new phase of growth.

CYHU saw 144,235 aircraft movements in 2017, an increase of 49 per cent from the year before. As of late October, DASH-L was projecting additional growth of five to 10 per cent in 2018.

The airport aims to have a new terminal in place by 2020-21 and is determined to provide a good financial offering so airlines will locate there. If all goes according to plan, CYHU will become a regional hub in less than a decade.

It might also keep travellers from the Montreal region from crossing the border and then flying further south.

"I would like them to be able to come back to Canada and to Quebec, particularly," said Foyle.

In the past CYHU has been overlooked by large commercial carriers, but that may soon change. A steady buzz is building about that new runway and the potential it holds.

"We think that if the service was there, the population would certainly want to fly out of our airport," said Foyle.

"So that's where we are, and that's where we want to go." ■



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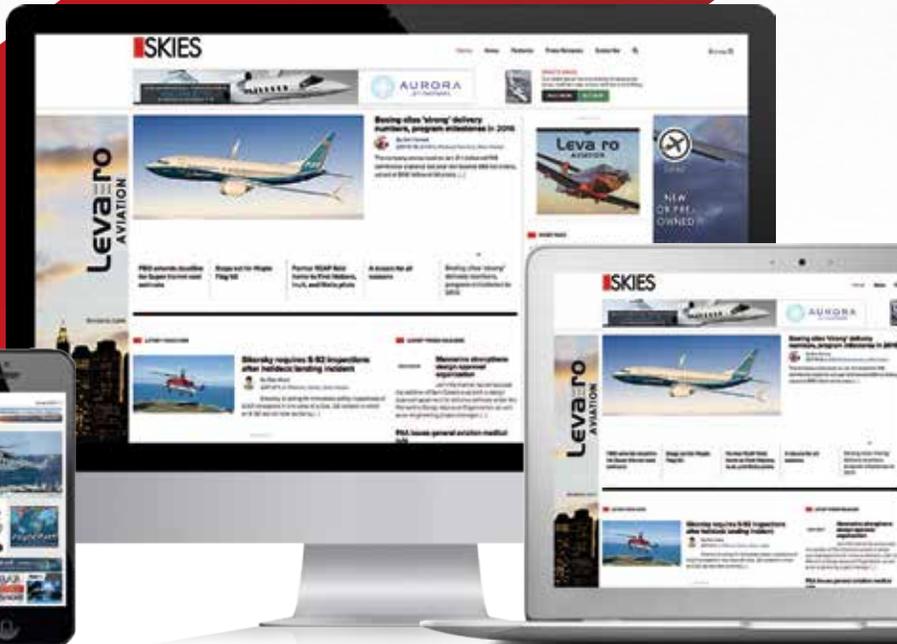
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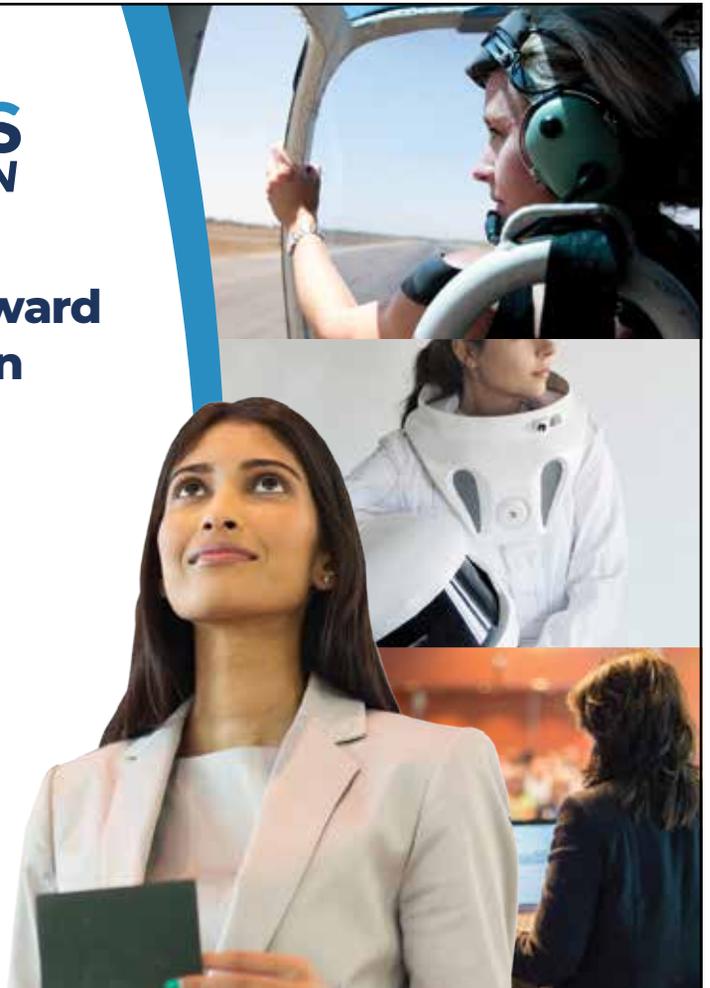
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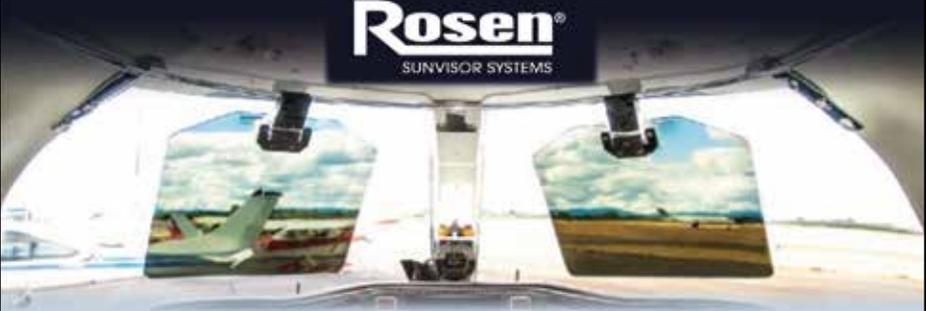
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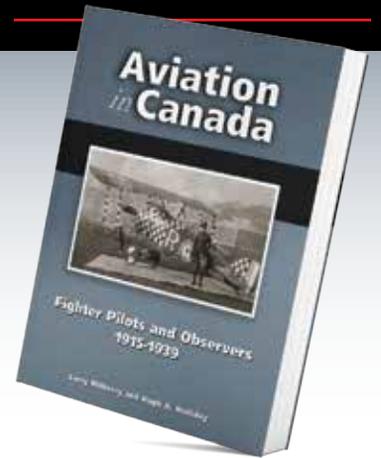
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# Column

## INSTRUMENT IQ BY JOHN MONTGOMERY

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@proifrc.com.



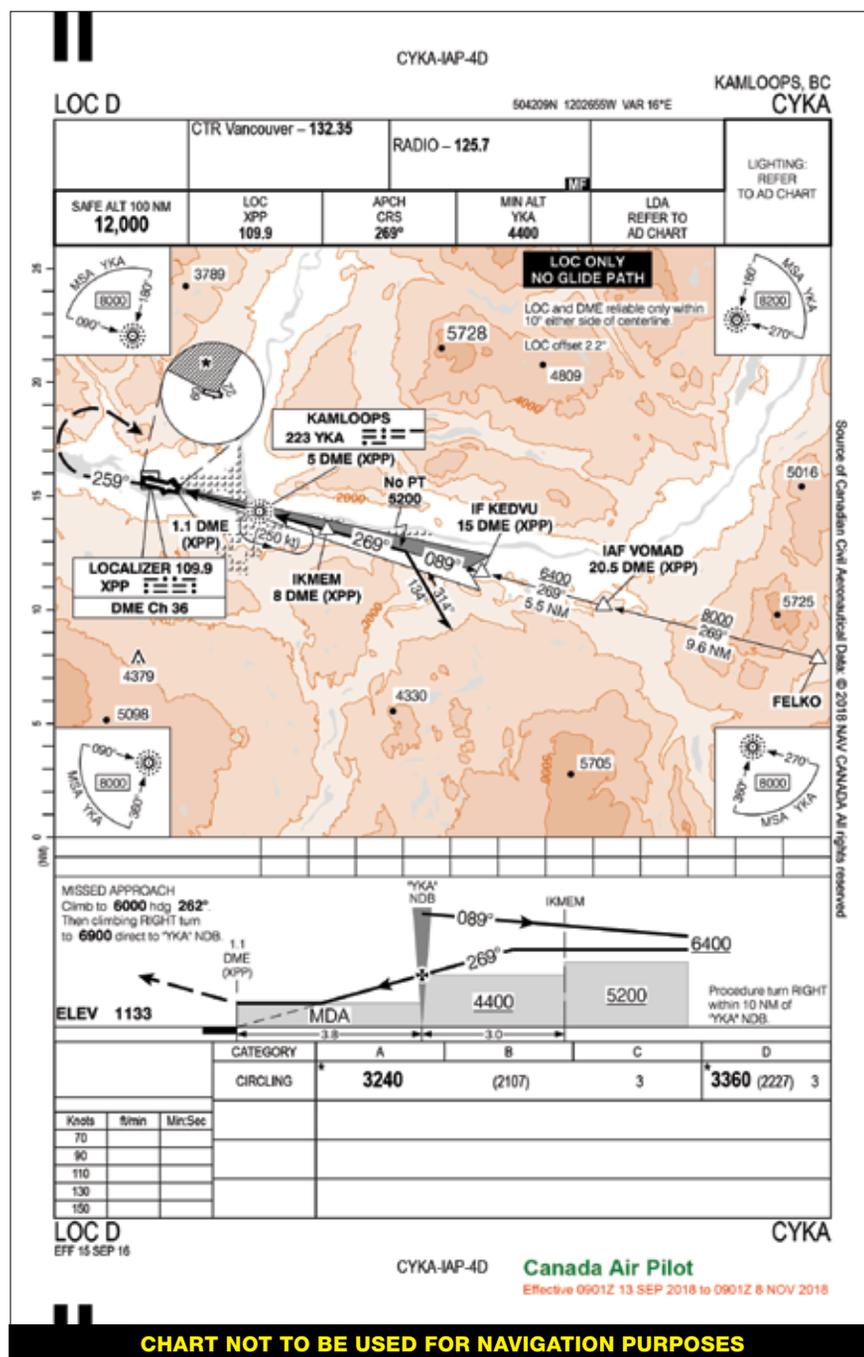
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6. What would be the best means of confirming that the aircraft remains within the procedure turn “envelope” if conducting a full procedure approach?



# Column

FACES OF FLIGHT  
BY LISA GORDON



## Meet Peter Murray President, Talon Helicopters

If Peter Murray's wife won \$60 million, he still wouldn't retire—and his company, Talon Helicopters, will never be for sale.

That's how much the 57-year-old helicopter pilot and entrepreneur loves going to work every day.

To Murray, flying is much more than a job. It's a way of life that gives him a sense of purpose through helping others.

Whether that's using a longline to rescue a hiker trapped on a rock ledge, battling a wildfire from the air, or lining up just the right aerial shot for a new movie, Murray has modelled his business on being the small niche operator that is both fast and flexible.

Based at Vancouver International Airport, Talon Helicopters was founded in 1997.

Today, Murray's operation boasts a total of five helicopters: two Airbus Helicopters AS350 B2 AStars, one AS355 F2MAX Twin Star, a Bell 206L4 LongRanger operated for CTV News, and its newest addition, an AS365 N2 Dauphin. Each aircraft flies around 400 hours per year.

Talon Helicopters focuses on five main revenue sectors: film, rescue, transport, fire and utility work.

"The main thing we're doing is everything," Murray told *Skies* in a recent interview.

"We're in a niche market where there is some film work, but not enough. It comes and goes, just like fires and aerial construction. We're set up to do all of it."

Talon's team of 11—including pilots, maintenance and support personnel—is comprised of seasoned professionals who know their jobs inside out. Staff turnover is never a problem.

"People stick around," said Murray. "We're not looking to get pilots for just the summer. Because of the precision work we do, we need the full complement of traits for a pilot, especially longlining skills. It

takes at least a year before a new pilot can do a Class D rescue [involving human external cargo] with a team."

He added that 95 per cent of Talon rescue missions involve a 250-foot longline dropped through a hole in the trees or alongside a cliff face.

"It's challenging; but we do it all the time, so we've become accustomed to it."

Safety is top priority at Talon, which takes care to maintain its accident-free record.

Murray, who has logged about 9,500 hours of helicopter time, has been working with B.C.'s volunteer-driven North Shore Rescue Team (NSR) for many years.

Talon partnered with two NSR volunteers, who founded Boost Human External Cargo Systems, to develop a dual-hook system that is billed as the new standard in human external cargo (HEC) carriage.

"It is airworthy, legal, and carries up to 1,350 pounds and as many as five people," said Murray. "The pilot can control the jettison in an emergency. You don't have to rely on a spotter in the back to do it. We use it all the time; it's a great system."

Growing up in North Vancouver, the young Murray hiked the trails of the Lynn Valley. Today, he prefers soaring over the rugged North Shore landscape in one of Talon's helicopters. He finds the rescue missions most rewarding.

"The search and rescue work is incredibly rewarding when you find them and they are healthy. But it tears off another piece of you when you can't find them—just a little piece each time it goes bad."

Murray remembers a 2006 mission, when he responded to a long line rescue call to help a kayaker who had been trapped underwater in Callaghan Creek, near Whistler, B.C., for six minutes. The unconscious man, an orthopedic surgeon

from Alberta, was pulled from the water by his friends, a group of doctors.

They were on the side of the creek that did not have road access.

The only way to medical help was a helicopter HEC flight across the creek to a waiting ambulance. With darkness approaching, Murray had only five minutes to lift the kayaker to safety. Working with Whistler Search and Rescue volunteer Scott Aitken on the longline, they moved the man across the creek, where he was taken to hospital. The prognosis was not good; he was not expected to live.

"With that news, my heart sank. We had all worked so hard to try to help this man survive, and it still wasn't enough. It was a crushing feeling," recalled Murray.

That feeling of sadness persisted for days afterward, until he received a phone call. The rescued man had regained consciousness and was expected to make a complete recovery!

"That is why we do what we do; to use our skills to help others, and save lives."

From his first flight in 1977, Murray knew he was destined to be a helicopter pilot. With the support of the Talon Helicopters crew, he's become a successful entrepreneur, too.

"It just doesn't get any better than this. The reason I can juggle managing, marketing and flying is our team. It's like a finely-tuned Swiss watch and when I walk in, I'm like that one extra gear. I don't get involved in everything anymore."

And, of course, support from his family—wife Oga, and kids Tyson, 11, and Talia, 7—is invaluable.

Next up for Talon Helicopters is the integration of the new AS365 N2 Dauphin medium helicopter.

"Where we are going now is NVG [night vision goggles] and being able to do rescues at night," said Murray. "What I see is opening up the medium side—firefighting, initial attack, bucketing."

"We also think the Dauphin will be a great movie machine. It will also be a VIP transport aircraft—more like a Ferrari. It will look fast, because it is fast."

Like he already said, Murray's not going anywhere. There's a lot more flying to do. ■

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