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**Issue 1/2025**

# AVIATION SAFETY LETTER

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## TIPS AND TOOLS

# Risks and Danger for Helicopter Pilots

by Patrick Lafleur, Bell Textron test pilot, leader of the Rotary Wing Working Group (RWWG)

*This is the first of a series of articles on the typical dangers for helicopter pilots. In this series, we will explore the risks involved with takeoff and landing, weather, approaches and night flying.*

### Dynamic rollover

What makes the helicopter such a versatile vehicle is its ability to take off and land vertically. But that capability can turn out to be one of its biggest vulnerabilities. Taking off and landing vertically implies that there's a moment in the maneuver when the pilot needs to delicately balance the dynamic forces of the aircraft while it is very close to the ground and to possible obstacles. The slightest unwanted drift can result in contacting the skid or wheel into an obstacle like a rock, a tree stump or any other asperity and can create a roll that, if not promptly corrected, can flip the helicopter over. Not the greatest way to start your day!



*Credit: Patrick Lafleur*

Another possibility is that the skids or wheels have sunk into soft ground, mud, snow or are caught in ice. In that situation, the undercarriage is already snagged by the ground, and this necessitates a perfect vertical takeoff without the slightest drift. Needless to say, takeoff and landing are critical maneuvers and must be executed delicately and precisely. A good preventative technique is for pilots to make a habit of taking more time for every takeoff and landing (not just on uncertain ground) so for that one occasion where the skids get unexpectedly caught, they will have some time to correct the situation. If you get used to expediting every takeoff, you give yourself much less of an opportunity to recognize the rare situation that necessitate a very slow maneuver. Think of the takeoff this way: instead of lifting the aircraft up in the air, slowly bring it floating up on the cushion of air building up between the ground and the rotor disk.

### Takeoff techniques

The first step is done even before sitting in the helicopter. While you're walking to it, take time to evaluate the surroundings. During your walk around, inspect the surface close to the parking area for anything that could

interfere with the undercarriage during takeoff. If deemed necessary, you could prepare the surface by removing the rocks, shoveling the snow or breaking the ice. When ready for takeoff, take a second to evaluate the cyclic and pedals position, then slowly bring the collective up. Once light on (the) skids, pause the power application and yaw the aircraft left and right a couple of times to release the bond with the ground. A very slight left and right roll with lateral cyclic can tell you that you're free, and you can continue to slowly raise the collective up into the hover. If at any time during the maneuver you feel something's not right, reduce power and reassess the situation.



*Credit: Patrick Lafleur*

### **Landing precautions**

It's always important for the pilot to evaluate the touchdown area before proceeding to land, especially if it's an unfamiliar area. In a stable hover, look for obstacles and terrain conditions and plan accordingly. Try to land as far as possible from obstacles. Maintain a very stable hover and execute a perfectly vertical descent to the ground. If landing in loose rocks or uneven ground, ensure that the aft part of at least one skid is well supported. Very slowly lower the collective, correcting with cyclic for every change in attitude, until the undercarriage is properly supported and there is minimal chance for further shifting. You can also gently move the collective up and down during the power reduction to help you feel the weight transfer to the ground and make fine adjustments with cyclic and pedals. If any doubt arises during the landing phase, apply power and ease back up to reassess. Landing in deep snow can also be a problem. Most of the weight of the helicopter is resting at the back of the skids. During the weight transfer, if you're not equipped with bear paws, the aircraft will sink deeper in the back, putting the tail rotor very close (to) or even touching the surface. Proper technique to land in snow is the following: right after skid contact, gently swing collective down then back up in an increasing fashion while pushing the cyclic forward. That way, it sinks in the deep snow in a controlled motion with a proper attitude and not pitching tail low. Keep in mind the risk of not knowing the surface hidden under the snow blanket, which could create a hazardous landing. Obviously, use a proper technique (like discussed previously) to take off from that snow-covered terrain.

Flying is a perishable skill that should be practiced regularly, especially maneuvers that apply in rare situations throughout the year. Don't hesitate to hire a flight instructor to brush up on these techniques at least once a year.

On any other surface (other) than a flat and prepared one, treat every takeoff and landing as though the helicopter may be stuck or can become snagged. It's always good practice to be smooth and gentle at the controls of a helicopter. At cruising altitude, you might be 1 500 ft away from any obstacle, but during takeoff and landing, you're just 15 mm from the biggest obstacle of all: the earth! Because of that fact, it's the most crucial time to exercise that fancy flying. △

# Safe Aircraft Operations and Maintenance Starts with Understanding Aircraft Owners' Responsibilities

by Nathalie Fortin, Pilot Training and Licensing, Standards, Civil Aviation, Transport Canada

You have completed your flight training and have now jumped into the world of aircraft ownership to expand your horizon with exciting new flying adventures. Congratulations! Throughout your training, on one of the school's aircraft, your instructor provided valuable information on how to ascertain an aircraft is airworthy before going flying. But do you know enough to shoulder the responsibilities that come with owning an aircraft? There is more to it than just relying on your aircraft maintenance engineer (AME). We will explore some of the aircraft owner responsibilities and offer guidance on where to find information. *(This article is not aimed as a complete guide to aircraft ownership, but as an overview of some things to consider for the safe continued operation of your private aircraft.)*



Credit: Transport Canada

When you buy an aircraft, it is the seller's, or registered owner's, responsibility to notify Transport Canada in writing no more than seven days after the change of ownership (*Transport Canada Aeronautical Manual (TC AIM)-LRA 4.4*). For more information, visit the [Web site](#).

Although there is only limited elementary maintenance work on a certified Canadian aircraft that can be performed by the owner, and most of the work has to be performed by an AME (CAR 571.02(3)), it is the responsibility of the owner to ensure the proper maintenance is done which includes looking up airworthiness directives (TC AIM-LRA 5.6.1).

*Approximately 27% of CADORS events associated to Recreational Aviation occurrences between 2018 and May 2024 were related to maintenance (Source: CADORS).*

## Maintenance release

*No person shall conduct a takeoff in an aircraft, or permit a takeoff to be conducted in an aircraft that is in the legal custody and control of the person, where that aircraft has undergone maintenance, unless the maintenance has been certified by the signing of a maintenance release. (TC AIM-LRA 5.4.1, CAR 605.85)*

This means that as an owner and pilot of an aircraft, you are responsible for ensuring that when work has been done on your aircraft, the proper maintenance release has been signed by someone who is qualified. Unless it is elementary work, which does not require a maintenance release by an AME, but pursuant to CAR 571.03, any elementary work performed on a certified aircraft must be detailed in the technical records and accompanied by the signature of the person who performed the work.

Owners should periodically review the maintenance schedule to ensure that it meets the requirements.

## **Maintenance schedules**

*CAR 605.86 prescribes, in part, that all Canadian aircraft except ultralight aeroplanes or hang gliders shall be maintained in accordance with a maintenance schedule that has been approved by the Minister and that conforms to CAR Standard 625.*

*Appendices B, C and D to CAR Standard 625 are applicable to the development of maintenance schedules. Owners of non-commercially operated small aircraft and balloons may choose to comply with Part I or II of Appendix B, as applicable, and Appendix C to CAR Standard 625. They need not submit any documents to the Minister for formal approval. The maintenance schedule is considered to be approved for their use by the Minister. Owners need only make an entry in the aircraft technical records indicating that the aircraft is maintained pursuant to the maintenance schedule. Owners should periodically review the maintenance schedule to ensure that it meets the requirements. (TC AIM-LRA 5.6.2 Maintenance Schedules)*

CAR Standard 625—Appendix B is for maintenance schedules and is of particular interest for private aircraft owners. It lists inspection items to be included, a supplement to any guidance from your aircraft's Pilot Operating Handbook (POH) or aircraft flight manual (AFM) and the manufacturer.

## **Elementary work**

What is considered elementary work? See CAR Standard 625, Appendix A here: [Standard 625 Appendix A: Elementary Work—Canadian Aviation Regulations \(CARs\) \(canada.ca\)](#)

## **Group aircraft ownership**

When an aircraft is owned by multiple individuals, or a corporation with multiple directors, the same applies as to a single-owner aircraft. There are no specific regulations on who can perform elementary work on privately registered aircraft, only how the work shall be done and how to record it. The owner of the aircraft, however, is responsible for who may perform elementary work on their aircraft. They should also ensure that those persons are knowledgeable of the work being performed and that it is performed to the correct standard.

## **What are the technical records?**

Technical records for an aircraft are comprehensive logs that include a journey log, records for the airframe, engine, and propeller, and an empty weight and balance report, ensuring compliance with maintenance standards. (CAR 605.92)

There are significant differences from a certified to an owner-maintenance, amateur-build or ultralight aircraft. For example, when an aircraft is operated under a special certificate of airworthiness in the owner-maintenance or amateur-build classification, all entries in respect of the technical records may be kept in the journey log (CAR 605.92(3)).

## Airworthiness Directives and Service Bulletins

TC endeavours to notify owners of Canadian registered aircraft of the issuance of any applicable Airworthiness Directives (ADs) or mandatory Service Bulletins (SBs). Aircraft owners are responsible for obtaining the relevant continuing airworthiness information applicable to the type and model of aircraft—including installed equipment, engine, propeller(s) (if any)—that they own. You may look them up [here](#), if you own a certified aircraft (TC AIM-LRA 5.7.2).

ADs are issued by Transport Canada and are mandatory, whereas SBs are issued by manufacturers and are generally recommendations rather than requirements. In aviation, both ADs and SBs are important for maintaining the safety and reliability of aircraft, but they serve different purposes and come from different sources. Here's a breakdown of each:

### AD in Canada:

1. Issuing authority: In Canada, ADs are issued by Transport Canada, the Canadian aviation regulatory authority.
2. Purpose: Like in other jurisdictions, Canadian ADs are mandatory and address safety issues that need to be corrected to ensure the safety of aircraft, engines or components.
3. Content: Canadian ADs detail the problem, the required corrective actions and the compliance timeline. They are legally enforceable, and aircraft operators must comply to maintain airworthiness.
4. Enforcement: Transport Canada enforces compliance with ADs, and failure to comply can lead to penalties or grounding of the aircraft.

### SB in Canada:

1. Issuing authority: SBs in Canada are issued by the aircraft or component manufacturer, just as in other countries.
2. Purpose: SBs are recommendations or suggestions for improvements, maintenance or repairs that are not mandated but are intended to enhance safety, performance or reliability.
3. Content: SBs from manufacturers provide guidance on actions such as inspections, modifications or other updates. They are generally recommended but not compulsory.
4. Enforcement: Compliance with SBs is usually voluntary in Canada, though operators may choose to follow them to prevent issues or improve performance.

Finding SBs typically involves accessing information directly from aircraft or component manufacturers or through various aviation resources. Here are some common ways to locate SBs:

1. Manufacturer's website:
  - Aircraft manufacturers: Visit the official website of the aircraft manufacturer. Component manufacturers: If you're looking for SBs related to specific components (e.g., engines, avionics), check the manufacturer's website for those components.
2. Customer support portal:
  - Many manufacturers offer customer support portals or online services where registered users can access technical documents, including SBs. You may need to log in with credentials or be an authorized customer to access certain documents.

3. Aviation maintenance and operations manuals:
  - Some SBs are included in maintenance manuals or operational handbooks provided by manufacturers. These documents may be available through subscription services or on manufacturer websites.
4. Aviation regulatory authorities:
  - While SBs themselves are not issued by regulatory authorities, they may be referenced or summarized in publications or databases managed by agencies like Transport Canada, the FAA or the European Union Aviation Safety Agency (EASA).
5. Third-party aviation information providers:
  - Services like aviation software platforms (e.g., Jeppesen, Aviall or FlightSafety) may provide access to a wide range of technical documents, including SBs.
6. Aviation industry forums and networks:
  - Sometimes, industry forums, professional networks or user groups may share or discuss SBs. However, for official and up-to-date information, always refer to the manufacturer's direct sources.
7. Contact the manufacturer directly:
  - If you are having trouble finding a specific SB, contacting the manufacturer directly via email or phone can often provide you with the document or direct you to where it can be accessed.

By using these resources, you should be able to locate the relevant SBs for your aircraft or components.

You can also subscribe to e-news on the Transport Canada Web site to keep up to date on what's new in transportation from the Government of Canada. You can choose the topics that are important to you. Visit [e-news](#).

### Clean aircraft concept

Part of the maintenance work is to clean the aircraft. Dirt might foul the controls but also hide defects that will not be visible with your regular pre-flight inspection. It also affects flying performance as it disturbs the flow of air in flight. Cleaning your aircraft regularly is part of a healthy maintenance schedule (CAR Standard 625, Appendix B, Part I).

### Conclusion

Just as staying informed about your aircraft's performance, airspace changes and checking NOTAMs are essential, regular recurrent training is equally valuable. This same principle applies to maintaining your aircraft, ensuring countless safe and event-free hours in the air with friends and family. △

## Take Five... for Safety—Personal Minimums Checklist for Maintenance

Ask yourself these questions before beginning the task and after completing it!

# The Silent Ally: Using Oxygen While Flying Pilot-in-Command

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by Chris Horsten, Director, [Canadian Light Sport Aircraft Association](#)

*Chris Horsten is the founder and director of the Canadian Light Sport Aircraft Association ([clsaa.org](#)) and the owner of Sport Aircraft Canada ([sportaircraftcanada.com](#)), a company that sells aeroplanes and accessories. Chris holds both a Canadian and an American Private Pilot license, with over 800 hours of flight time in general aviation and light sport types of aeroplanes, including tail-wheel and retractable gear. Chris is part of several Transport Canada working groups, together with his wife Melaya. Between them, they are members of all major associations and active within them, exhibiting at many shows and promoting the light sport aircraft industry.*

Flying a small airplane offers unmatched freedom and adventure, but as altitude increases, so do the physiological demands on the body. Hypoxia—a condition caused by insufficient oxygen in the bloodstream—can silently impair a pilot’s judgment, reaction time and decision-making long before noticeable symptoms arise. Using supplemental oxygen, even below Transport Canada (TC) or Federal Aviation Administration (FAA) mandated altitudes, provides a significant edge in maintaining peak mental clarity, physical performance and overall safety. Whether you’re cruising at 10 000 ft or tackling a night flight at lower altitudes, oxygen is a simple yet powerful tool to enhance situational awareness, reduce fatigue and ensure that every flight remains as safe as it is enjoyable. This article is geared towards pilots of unpressurised general aviation aircraft.

*Canadian Aviation Regulation (CAR) 605.32 states that above 10 000 ft but not exceeding 13 000 ft ASL, crew members must wear an oxygen mask for any portion of the flight exceeding 30 minutes. For operations above 13 000 ft ASL, both passengers and crew are required to use supplemental oxygen. The Federal Aviation Regulations (USA) (FARs) mandate similar yet reduced requirements.*

This is similar to the US requirements for general aviation (14 CFR § 91.211). The required minimum flight crew must use supplemental oxygen for any portion of the flight exceeding 30 minutes at altitudes above 12 500 ft Mean Sea Level (MSL) up to and including 14 000 ft MSL. Above 14 000 ft MSL, the required minimum flight crew must use supplemental oxygen during the entire flight time at these altitudes. And above 15 000 ft MSL, each occupant of the aircraft must be provided with supplemental oxygen.

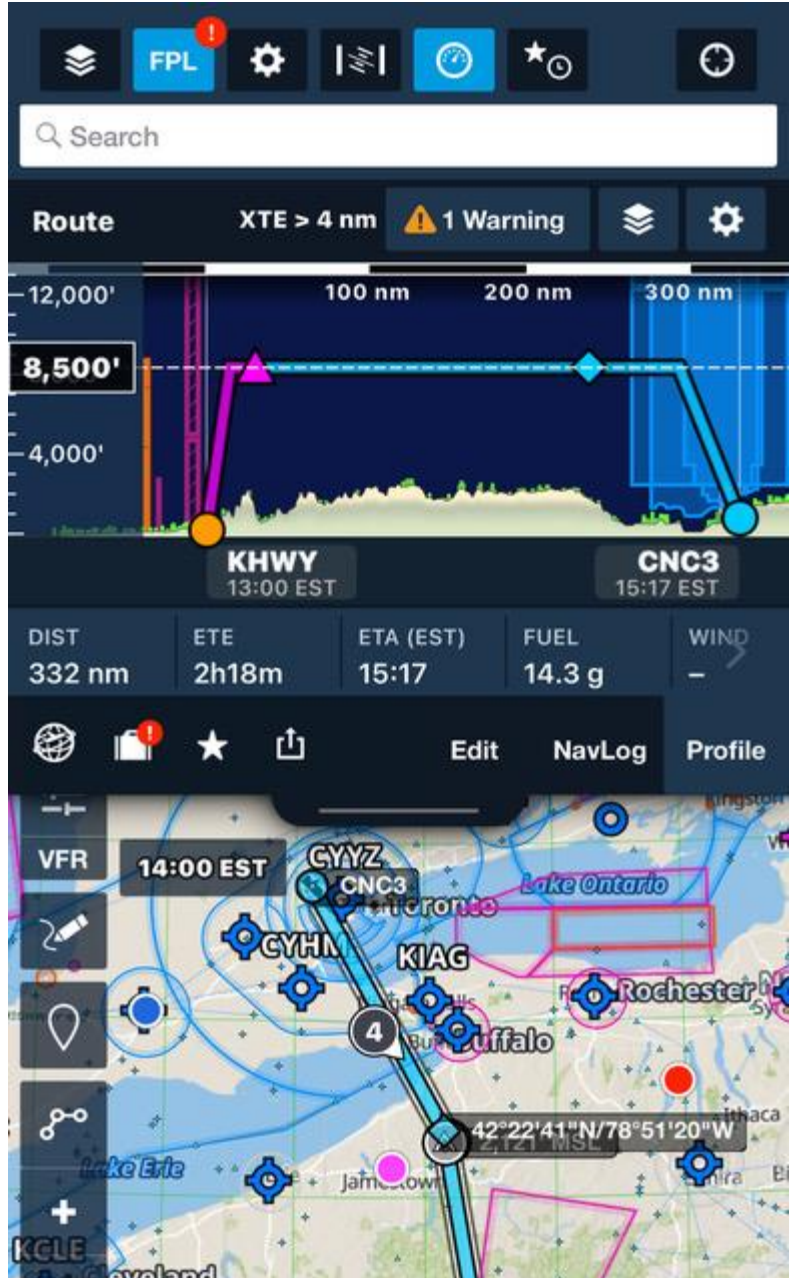
Unfortunately, the stories for oxygen deprivation incidents that didn’t result in a fatal accident doesn’t always make it into the usual social media or news outlets. There are likely thousands of situations which ended well but could have resulted in a preventable incident. If running out of fuel is an embarrassing cause for an accident, then hypoxia due to deliberate or even accidental neglect is likely a close second. It is no laughing matter when it results in injury, aircraft damage or death.

Some possible factors that may contribute to a hypoxia situation include:

- many new higher flying aircraft designs utilizing turbo-charged engines;
- increased range due to efficient engines and airframes;
- Electronic Flight Instrument System (EFIS) and autopilots;
- modern Instrument Flight Rules (IFR) equipment;
- pilots with unknown physiological conditions;
- heart disease, high cholesterol and high blood pressure;
- smoking or vaping;
- alcohol or drug use; and
- age and overall fitness.

For general aviation (GA) pilots of new small unpressurized aircraft, the opportunity for making use of the added range and altitude is compelling. Recreational aircraft become real tools for personal and business travel. The regulations are designed to mitigate the risks of hypoxia and ensure the safety of flight operations at higher altitudes. However, under what circumstances might these requirements be inadequate for your specific situation?

For this article, let's focus on the physiological impact of oxygen deprivation compared to the demands of flying at high altitude.



*Foreflight showing flight plan at 8 500 ft*

An FAA study reported the following results for pilots of good general health. The study included 20 private pilots divided into a test group and a control group, and it simulated cross country flights at altitudes of 8 000, 10 000 and 12 500 ft. The hypoxia group breathed a lower oxygen mix to simulate higher altitudes, while the control group were given compressed air.

Their findings showed that pilots in the hypoxia group made significantly more procedural errors during cruise flight at 10 000 ft and during descent and approach phases from 10 000 ft and 12 500 ft, compared to the control group. These errors included incorrect altitude and heading changes, improper checklist usage and miscommunications with air traffic control (ATC).



*Shark 600 at 6 500 ft*

Significant differences were observed between the hypoxia group and the control group in oxygen and carbon dioxide partial pressures, heart rate and blood oxygen saturation, confirming the physiological impact of mild hypoxia.

Research shows that cognitive impairment begins at even lower altitudes. At even 8 000 ft, the partial pressure of oxygen in the blood is reduced, leading to mild hypoxia in some individuals. Early symptoms, such as subtle cognitive impairments, reduced reaction time and diminished decision-making ability, can occur without the pilot being fully aware of them. Tasks requiring vigilance, multitasking or rapid problem-solving (common in aviation) are especially vulnerable to these effects. Thanks to the availability of ATC recordings, there are recordings that show the gradual cognitive decline of a pilot.

There are many compelling reasons to consider using oxygen at 8 000 ft when acting as Pilot-in-Command (PIC). These include enhanced safety, cognitive performance and physiological well-being.

1. Individual variability in hypoxia susceptibility: Not all individuals respond to altitude the same way. Factors such as age, physical fitness, sleep quality, hydration and pre-existing conditions (e.g., anemia or smoking history, obesity) can make some pilots more susceptible to hypoxia even at moderate altitudes. Using oxygen proactively eliminates this variability, ensuring consistent performance. As pilots age, their metabolism and cognitive functions can diminish, resulting in a reduced capacity. Aging can lead to decreased cardiac output and vascular elasticity, affecting the delivery of oxygenated blood to tissues. This can exacerbate the effects of hypoxia in older individuals.
2. Older pilots may have a diminished ability to adapt to hypoxic conditions due to lower overall physical fitness or pre-existing health conditions (e.g., cardiovascular or respiratory issues).

3. Slower recovery: With age, recovery from hypoxic episodes may take longer, and the associated symptoms, such as fatigue or confusion, might persist longer compared to younger pilots.
4. Pre-existing conditions such as hypertension, diabetes or smoking history, which are more common with age, can further impair oxygen transport and exacerbate hypoxia.
5. Fatigue and long flights: Prolonged exposure to even mild hypoxia can contribute to cumulative fatigue, making it harder to maintain focus over time.
6. Pilots operating at 8 000 ft for extended periods (common in unpressurized aircraft) may experience subtle but significant declines in performance as the flight progresses.
7. Night flying risks: At night, the human eye is particularly sensitive to oxygen deprivation. Vision starts to degrade at altitudes as low as 5 000 ft due to reduced oxygen delivery to the retina. Using oxygen at 5 000 ft at night improves night vision and enhances situational awareness in low-light conditions, reducing the risk of spatial disorientation or missed visual cues.
8. Safety margin and emergency preparedness: Using oxygen at 8 000 ft provides an additional safety margin in case of unforeseen altitude increases or emergencies that require prolonged effort or focus under stress. It also helps maintain full cognitive and physical capacity during challenging phases of flight, such as navigating turbulence, managing complex airspace or dealing with malfunctions.



G3X at 11 500 ft

Regular use of oxygen at moderate altitudes is a proactive approach to reducing the strain on the cardiovascular and respiratory systems, potentially lowering the risk of long-term health issues, like chronic hypoxia or pulmonary hypertension, for frequent flyers. It promotes overall alertness and well-being, contributing to safer, more enjoyable flying experiences.

### What can you do to make your flying safer?

- Consider adding either a built-in or portable system to your aircraft if you own any aeroplane capable of higher altitude and long-range flight. Thankfully, oxygen systems for GA aircraft are becoming more widely available at the manufacturing stages of the aircraft and retrofit systems for post manufacturing to make using oxygen easier. There are two types of oxygen systems—on-demand and continuous flow. With respect to on-demand oxygen systems, these systems are only designed to provide oxygen to you when needed, such as during inhalation, and you must ensure that your system is certified for use at altitudes mandated by regulations. In contrast, a continuous or constant flow oxygen system is designed for simplicity with oxygen flowing continuously from the storage tank, through a regulator, to your oxygen mask. New systems are now being marketed which can produce on demand oxygen for two people up to 18 000 ft, and can reduce the reliance on refillable tanks. The integration of these systems into your EFIS means that O2 systems can be monitored at all times, including your own biometrics, to alert you before you succumb to a hypoxic situation.
- Buy a simple pulse oximeter. These can be purchased on the internet for under \$50.00 and simply clip to your finger to display both your oxygen saturation and your heart rate. These are simple and valuable tools to help you monitor how your body is performing at higher altitudes.
- Many smart watches and fitness trackers now include oxygen and heart rate monitoring, some with alarms.
- A carbon monoxide detection system is a must have in your cockpit. Passive, disposable detectors have a shelf life but are useful to alert you to a possible problem. Newer electronic versions can be integrated with your EFIS to alarm if they go out of range.
- Aviation specific devices like ForeFlight Sentry can alert pilots of hypoxic conditions in combination with a pulse oximeter.
- If you don't have these devices on board yet, you can count your breaths/minute, feel your pulse manually for high rate and look for signs of dizziness, confusion and shortness of breath for indication of a problem.
- Have a plan to descend to lower altitudes, and don't be afraid to ask ATC for help.

Although not legally required, using oxygen regularly at 8 000 ft as PIC is a proactive safety measure that enhances cognitive performance, mitigates individual variability and ensures maximum alertness and decision-making capacity. By prioritizing oxygen use, all pilots, but especially aging pilots and those with less-than-average health, can significantly improve flight safety, reduce risks and set a higher standard for professionalism in aviation. △



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## From the Tower to Your Feed: How Instagram is Transforming Pilot–ATC Relations

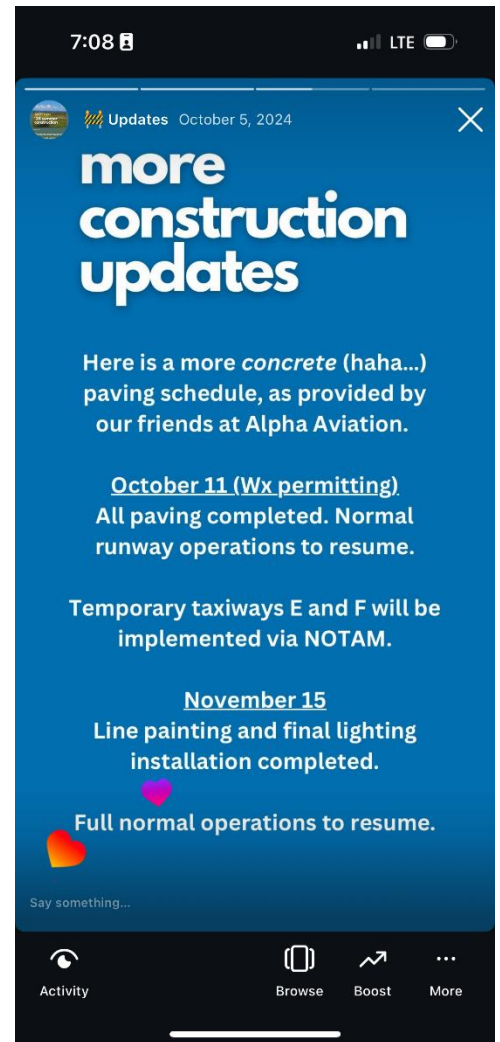
by Anthony Lam & Tatiana Young, NAV CANADA

The digital age has drastically changed how we communicate and share information. With the rise of social media, people of all generations are more connected than ever before. Platforms like Instagram have become a vital part of daily life, particularly for the younger generation. Social media is now used not only to socialize with friends and family but also to discover new information. Among many social media platforms, Instagram stands out because of its visually engaging and dynamic nature, making it the platform of choice for sharing both personal moments and educational content.

Although Instagram is typically seen as a platform for lifestyle and entertainment, an increasing number of NAV CANADA air traffic control (ATC) towers across the country have adopted it to connect with pilots and foster a more direct and transparent relationship between ATC and the aviation community. The idea is simple: leverage Instagram's wide reach, algorithms and user base to share timely, useful information that enhances pilot safety and situational awareness.

### A new vision for pilot outreach

The vision behind using Instagram for pilot outreach is straightforward: imagine being able to check your phone before heading to the airport and seeing a social media post about something safety-critical, like a runway closure or a safety reminder on ways to help mitigate runway incursions. Instagram makes this vision a reality. ATC towers can post operationally critical information on Instagram to help pilots develop situational awareness and provide context for what is happening. It is important to note that Instagram is used to provide context and supplement official sources of information, not to replace them. Towers do not use Instagram as a substitute for official aeronautical information and publications.



*Screenshot of providing pilots context on what is happening during runway extension project at Boundary Bay*

Instagram is not only used for operational updates but also to reinforce safety messages. Safety reminders, such as tips on mitigating runway incursion, are regularly shared to increase situational awareness and to ensure that pilots are better informed and mentally prepared before they even begin their aircraft walkaround. Thanks to Instagram’s algorithms, Canadian pilots—our target demographic—are more likely to see these safety messages appear in their feeds.

The success of this initiative started with Springbank Tower (YBW), which pioneered the use of Instagram for pilot outreach in Canada. Following its success, several other towers across the country, including Boundary Bay (ZBB), Pitt Meadows (YPK), Langley (YNJ), Abbotsford (YXX), Villeneuve (ZVL), Thunder Bay (YQT), Waterloo (YKF), and Prince George (YXS), have adopted the platform. Each account is managed locally by an air traffic controller and focuses on three key goals: promoting aviation safety, humanizing ATC and providing a platform for pilots to engage with their local air traffic controllers.

### The importance of humanizing ATC

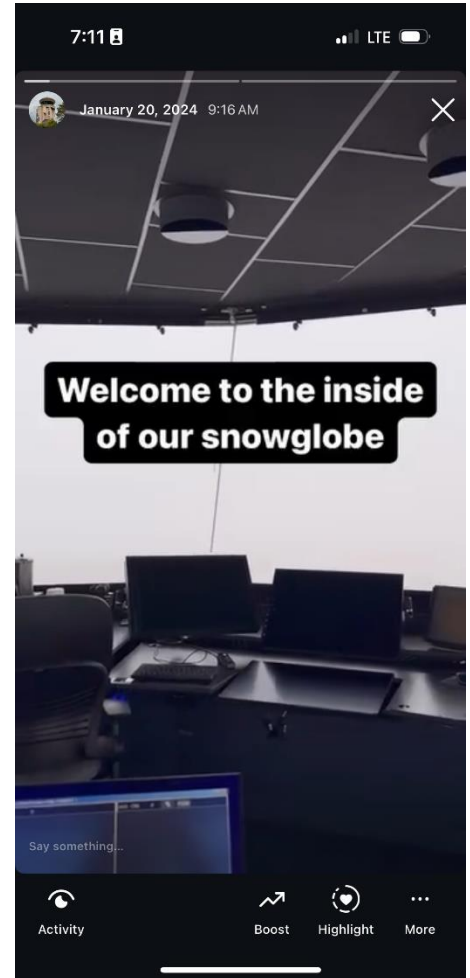
ATC is often viewed as a faceless entity—a distant voice over the pilot’s headset. In many cases, this is true. NAV CANADA manages over 18 million square kilometers of Canadian civil airspace and parts of the North Atlantic oceanic airspace. For many student pilots, communicating with ATC can be challenging. Aviation English, while it may sound like conversational English, is distinct in its structure. Standard aviation phraseology is designed to communicate information clearly and concisely, but it is not a natural way of speaking. For student pilots, remembering what to say and then saying it out loud on the radio can be difficult. There is often a fear of making mistakes when learning to fly, including in communications with ATC. But “fear”—at least when communicating with ATC—is exactly what we are working to reduce.

Through posts, stories and Q&A sessions, the goal is to humanize ATC and to show pilots that air traffic controllers are not just voices on the radio but also real people who care about their safety. Our hope is that this social media outreach will help shift the perception of ATC from a faceless and intimidating entity to an approachable and helpful safety resource.

### Creating an open forum for pilots

One unique aspect of using Instagram for pilot outreach is that it isn’t just a one-way communication channel. Instagram provides a forum where pilots can ask questions and receive answers directly from local air traffic controllers. Our content is designed to be both informative and interactive, encouraging open dialogue between ATC and pilots of all experience levels.

Some of our most engaging posts have come from Q&A sessions, where pilots can ask controllers anything, from general questions like “What’s it like working in a tower?” to more specific, local procedural questions like “Why is this route designed this way?” The beauty of this format is that answers to safety-related questions are relevant everywhere. Air traffic controllers across Canada follow the same basic set of rules and procedures, meaning any



*Instagram stories allow for instantaneous sharing. We regularly share humorous content to drive engagement and follower retention*

tower can answer general safety questions. When the question pertains to local procedures, the local tower can provide insight into why certain procedures are designed the way they are.

Instagram’s direct messaging feature allows pilots to privately ask questions even outside of Q&A sessions. Access to local expertise is invaluable because understanding why a procedure is designed a certain way can help pilots better understand ATC instructions. Many pilots are more likely to comply with instructions when they understand the rationale behind them, and that compliance improves overall safety. By investing time into answering these questions and explaining procedures, we are helping to advance safety across the board.

The success of this open forum has been remarkable. Several Instagram accounts, such as Boundary Bay Tower’s, hold bi-monthly “Ask Me Anything” sessions, which have garnered impressive levels of engagement. Many pilots have expressed appreciation for this platform, where they can interact directly with air traffic controllers. This demonstrates how social media can bridge the gap between pilots and ATC, making communication more accessible in a way that was rarely available before.

### **Educating and engaging through content**

While direct interaction is a key feature of these Instagram accounts, towers also share educational content targeting specific safety issues and behaviours. For example, runway incursions are a serious safety risk, and several towers have collaborated on a multi-part series to help pilots mitigate these risks. These posts provide practical advice from an ATC perspective, covering topics like maintaining situational awareness on the ground and following runway safety protocols.

Instagram is also a great platform for sharing fun and engaging content. Many towers post behind-the-scenes glimpses of the ATC world, from equipment and procedures to controllers’ daily experiences. Lighthearted content, such as fun facts, memes and friendly competitions between towers, helps keep followers engaged and makes the accounts more approachable.

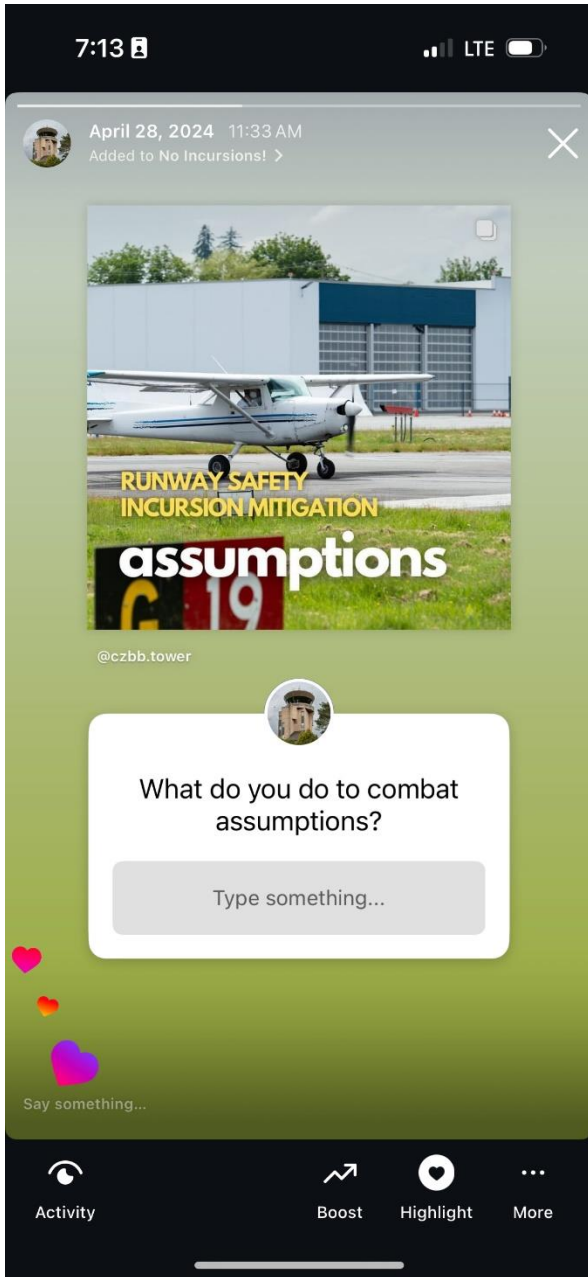
Creating content that is both educational and entertaining is key to ensuring a positive relationship with the aviation community. After all, no one wants to follow an Instagram account that only pushes safety reminders. The goal is to make learning enjoyable while still focusing on our core mission of putting “safety first.”

### **Collaborations and building community**

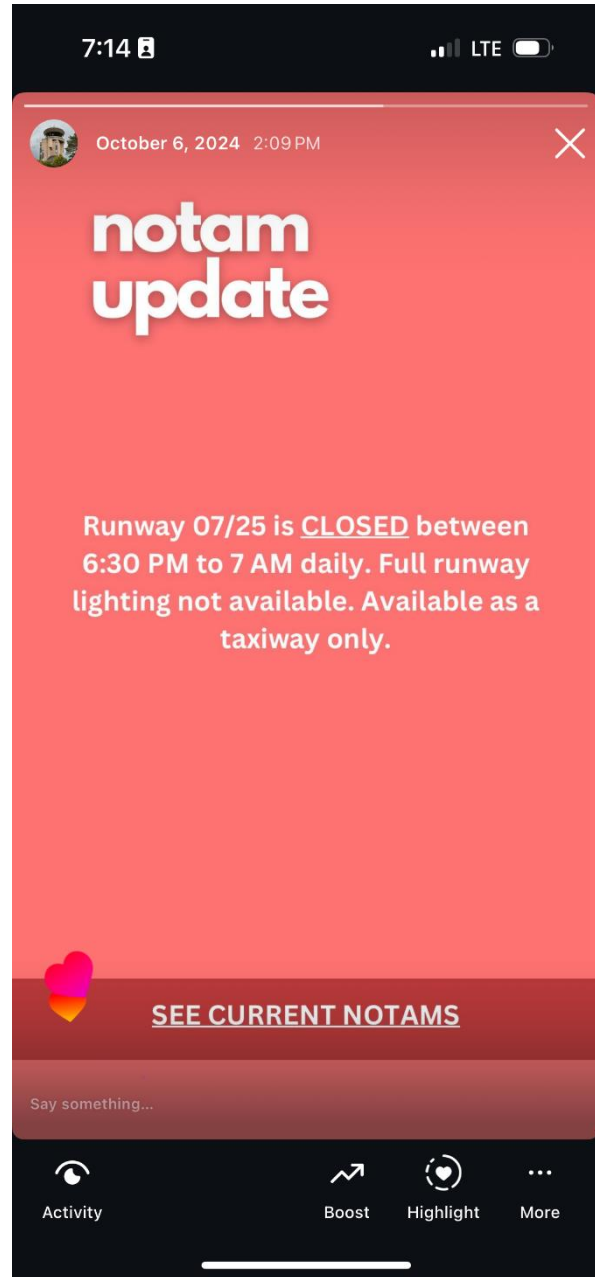
Collaboration is a central aspect of this initiative. Instagram accounts run by different control towers are not isolated; they work together whenever possible to create content that benefits the entire aviation community. This collaborative approach ensures that pilots, no matter where they are flying, have access to the same valuable information.



*Where necessary, we run safety campaigns to address specific risks. In this case, similar callsigns, misidentification of aircraft and miscommunication were identified as safety issues that needed to be addressed across several NAV CANADA sites*



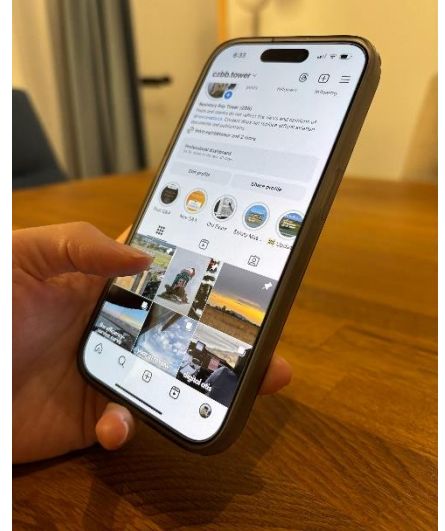
*In addition to making safety posts, we also try to drive public engagement by asking questions and sharing answers. Many pilots who engage are often those who fly professionally; their answers may be of value to student pilots*



*Where necessary, we re-publish important NOTAMs with additional context. The benefit is that pilots have enhanced situational awareness when given additional context above and beyond NOTAM text. We do not replace official publications, so we always direct pilots to check current NOTAMs*

Moreover, the success of these Instagram accounts highlights the importance of community-building in aviation. It fosters a sense of collaboration and shared knowledge between pilots and ATC. This exchange of knowledge benefits everyone; it improves pilot safety and provides air traffic controllers—many of whom do not have flying experience—with valuable insights into pilot behaviour and decision-making.

Instagram has proven to be a powerful tool for aviation safety outreach. By humanizing ATC, creating open forums for dialogue and sharing educational content in an engaging way, Instagram has become an essential tool for improving the relationship between pilots and air traffic controllers. As more towers adopt this platform, the aviation community will benefit from a more informed, connected and safer environment for all. So, if your local control tower has an Instagram account, be sure to follow it—you never know what important safety information, helpful tips or chuckle-worthy posts might pop up in your feed next! △



*Casual shot of someone using one of the Instagram accounts*

## Enhancing Safety Through the Use of Data Link

by Richard Sletten, Manager, ACC Operations, Edmonton, [NAV CANADA](#)

The Arctic High Specialty in the Edmonton area control centre (ACC), in some ways, represents the future of air traffic control (ATC) and management today. Data link, and its integration into controller decision-making tools, has been a big part of the automation to assist ATC in performing their daily tasks and in greatly reducing safety incidents (pilot and controller). Data link refers to controller–pilot data link communications (CPDLC) and automatic dependent surveillance—contract (ADS-C).

### Controller–Pilot Data Link Communications—CPDLC

Controller–pilot data link communications is analogous to ‘texting’ between ATC and pilots, using equipment interfaces between the controller’s situational display and the flight management computer on the flight deck of an aircraft. In the Arctic High Specialty, all CPDLC clearances, whether pilot or controller initiated, are tested for air traffic conflicts prior to the clearance being uplinked to a flight deck. A Medium Term Conflict Detection is evaluated for surveillance separation; simultaneously, conflict prediction evaluates for procedural (non-surveillance separation), and the controller is alerted prior to the clearance being ‘uplinked’. The Edmonton Arctic High Specialty supports requests and clearances for altitude and route.

As illustrated in Figure 1, UAL803 is requesting Flight Level 360. When the controller actions the request and the requested altitude is selected, it is tested by default. The green ‘Submit’ button indicates the flight would not be in conflict if the clearance is issued.



*Figure 1: UAL803 requesting Flight Level 360*

If a conflict was detected, the Submit button would display yellow or red based on the time proximity of the conflict, and a graphical display would result, as indicated in the example involving QTR39A (Figure 2).

When a pilot makes a request and the requested ATC clearance is selected and actioned, using our respective interfaces, the minimal manual intervention greatly reduces the incidence of human error. Readback hearback errors are eliminated, and safety is greatly enhanced.

**CPDLC Route Conformance Monitoring**

CPDLC route conformance monitoring is also being used within the Edmonton Arctic High Specialty to alert ATC of a potential route deviation in advance of the deviation occurring.

When an aircraft comes into Edmonton airspace, an uplink message, ‘Confirm Assigned Route’, is sent using CPDLC. When the flight responds, the received route is compared to the route as filed. If the received route matches the filed route, no alert is provided to ATC, and no action is required. If the CPDLC received route is determined to *not* match the filed route, then an indication is presented to ATC on the flight data tag, and the non-conformant portion of the route is highlighted, as illustrated in the VIR20V example (Figure 3).

ATC can then intervene to ensure the route in the flight management computer matches that held by ATC, ensuring the Conflict Detection algorithms are being tested against an accurate flight profile.

Flights will not be queried on their route if within 30 minutes of top of descent and further modifications are ongoing to ensure this request occurs to reduce unnecessary request for routes that may be considered onerous by flight crews.

**Automatic Dependent Surveillance—Contract—ADS-C**

The Edmonton ACC will establish event and periodic ADS contracts with suitably equipped flights operating in ADS-C designated airspace.

Event contracts are received when a flight progresses to a waypoint or amends its route, while a periodic contract is to be received every 11 minutes.

The ATC system evaluates the current waypoint and next two successive waypoints, the reported altitude and the implied accuracy

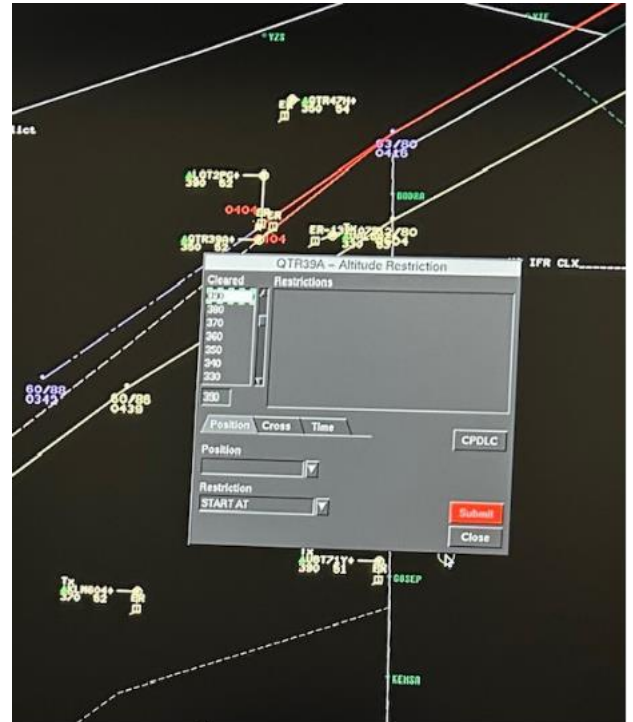


Figure 2: QTR39A

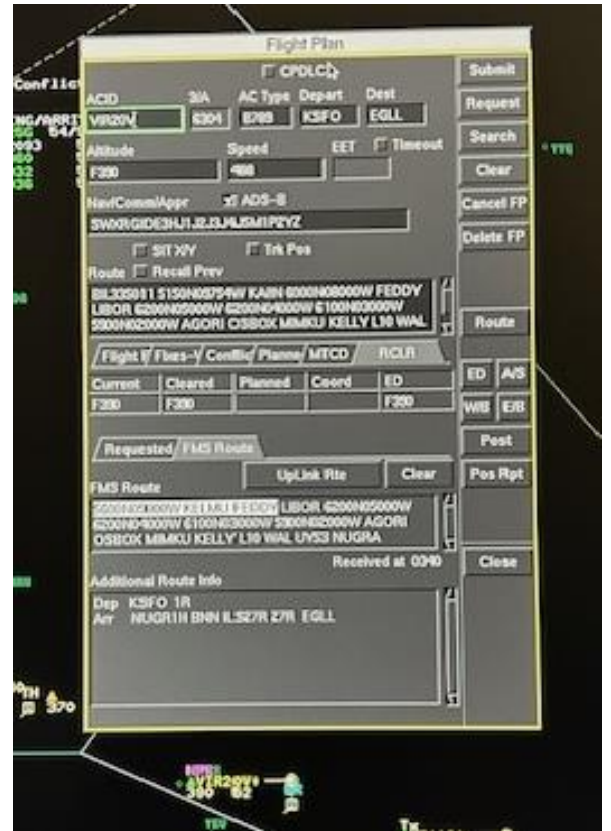


Figure 3  
For illustrative purposes only

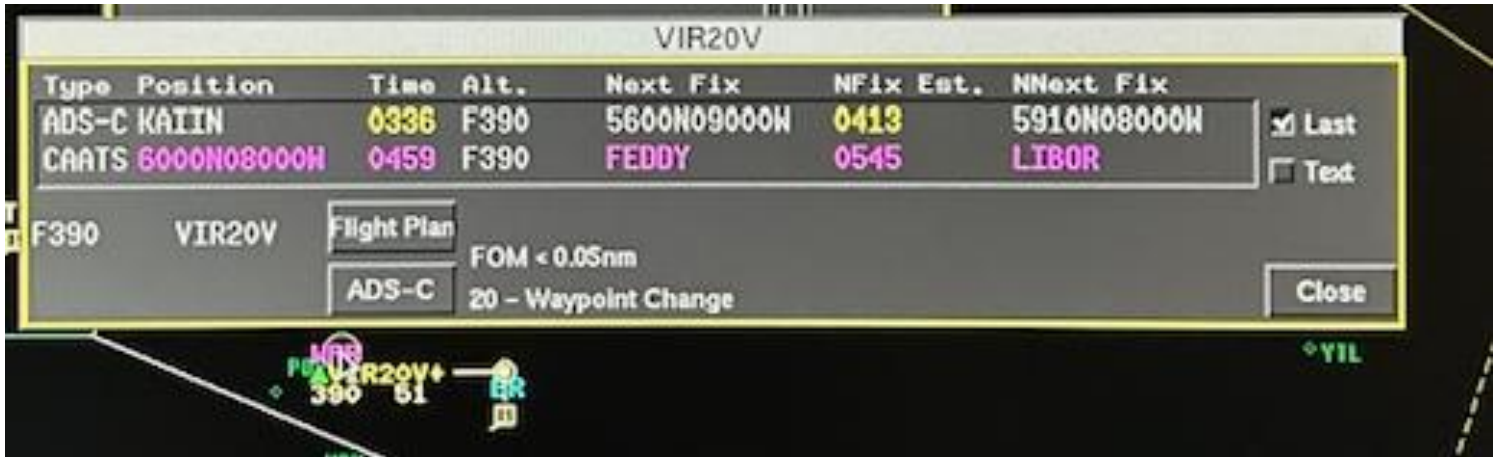


Figure 4

*The ATC system: detected conflict if ADS-C times are coloured yellow or red*

of the report. If the report is conformant, the report is sent to 'History', and no action is required by ATC. If the report is non-conformant, an alert is provided to ATC with the non-conformant information highlighted. The ADS-C times also will indicate a detected conflict, if coloured yellow or red.

ADS-C reports work to ensure that the flight profile in the flight management computer matches the profile held in the ATC system, as it is the profile that is evaluated in reporting traffic conflicts to ATC. Additionally, with GPS jamming becoming more of a worldwide concern, the figure of merit (FOM) is reported to assist ATC in increasing separation when the navigational capabilities of an aircraft have been compromised.

The use of data link capabilities has been essential in the Arctic High Specialty, promoting:

- user preferred flight trajectories;
- increased system efficiency; and
- increased safety by reducing potential safety incidents.

Data link assists ATC by integrating system conflict detection into ATC and by providing appropriate alerts at the appropriate time for ATC to react and investigate to ensure the overall safety of the air traffic management system. △

## Submission of *Aviation Safety Letter (ASL)* articles

Do you have an aviation safety topic you are passionate about? Do you want to share your expert knowledge with others? If so, we would love to hear from you!

### General information and guidance

The ASL's primary objective is to promote aviation safety. It includes articles that address aviation safety from all perspectives, such as safety insight derived from accidents and incidents, as well as safety information tailored to the needs of all holders of a valid Canadian pilot licence or permit, to all holders of a valid Canadian aircraft maintenance engineer (AME) licence and to other interested individuals within the aviation community.



*Credit: iStock*

If you are interested in writing an article, please send it by e-mail to [TC.ASL-SAN.TC@tc.gc.ca](mailto:TC.ASL-SAN.TC@tc.gc.ca) in your preferred language. Please note that all articles will be edited and translated by the Transport Canada Civil Aviation (TCCA) Aviation Terminology Standardization Division and will be coordinated by the ASL team.

### Photos

In order to captivate our readers' interest, we recommend that you include one or two photos (i.e., photo, illustration, chart or graphic) for each article, if possible. Please send us your photos as an e-mail attachment (preferably as a jpeg).

We look forward to receiving your articles. △

## Civil Aviation Documents Issued Recently

### Civil Aviation Safety Alerts (CASAs)

Document N°	Issue number	Subject
CASA 2025-01	Issue 01 2025-02-25	<a href="#">Cockpit Displays–Cooling Air Filter–Non-Compliance to Flammability Requirements</a>
CASA 2023-07	Issue 02 2025-02-04	<a href="#">Degraded Anti-Skid Performance when Landing on a Contaminated Runway</a>



## INSTRUCTOR'S CORNER

# Are Instructors Preparing Their Students for Actual Engine Failures or Just Preparing Them to Pass the Flight Test?

by David Gagliardi, Transport Canada Inspector, Flight Operations

Every private pilot student is familiar with the forced landing exercise. The airplane is out in the practice area, the instructor reaches over and pulls the throttle to idle, and they tell you the engine just failed. You then frantically look around for a field to land in, quickly mumble the engine failure checks and concentrate on flying a gliding approach that will hopefully set you up for a landing in the field. The first few times you probably missed the field by a country mile, but with a bit of practice, you get better at flying an approach that would actually result in a good score on the flight test.



*Credit: iStock*

However, let's look at the lesson we are really teaching. What we are showing the

student is that the aircraft for which they had done a full walkaround inspection (including draining the fuel sumps, checking the fuel and oil levels, performing all the run-up checks, verifying the correct static RPM/MP at the beginning of the takeoff roll, and which in cruise flight displayed normal engine gauge indications) had a sudden and complete engine failure. This type of engine failure scenario is, in fact, the least likely to actually occur in the real world.

The reality is that the accident statistics show that at least 60% of the engine failures are a direct result of the actions or inactions of the pilot. Carb ice and fuel exhaustion/mismanagement figure most frequently in the cause of the failure, and both, of course, are entirely preventable by the pilot.

An accident report I once read is sadly a typical example of this phenomena. The aircraft lost all power, and the pilot executed a difficult but successful forced landing into a very small field: the only available flattish area within gliding range. The airplane was totalled, but nobody was hurt. The pilot attributed his success to surviving the engine failure on the fact that he regularly practiced forced landings. The cause of the accident: carb ice. It would seem to me that if this pilot spent more effort on developing an effective instrument scan and regularly checked for carb ice on a day that was particularly conducive to carb icing, he would not have had to use all that forced landing practice for real, and there would be one more general aviation airplane still flying.

This problem is exacerbated because, typically, every simulated engine failure during training results in a “no start.” We are therefore training the student that the engine will never restart after it fails. My practice is to restore power on some simulated engine failures, if the student performed an efficient and effective cause check.

A sad example of what happens when you condition the student to concentrate on flying the approach and don't establish the importance of the cause check occurred to a pilot flying an airplane based at my home airport. The engine failed at 3 000 ft AGL. Again, a very well-flown approach into the only available spot, but a nasty little timber cut block resulted in no injuries. However, it resulted in a wrecked airplane. When the airplane was recovered, it had 10 gallons of gas in the left tank and 0 gallons in the right tank, with the fuel selector set to the right tank. I wonder if more attention had been paid to the cause check in this pilot's training that they would have found the problem and restored full power.

The last “engine failure” I personally experienced did not start out as an engine failure. The first hint that my day was about to be ruined was the RPM starting hunting 100 revs up and down. All of the appropriate troubleshooting was inconclusive. The situation progressed to intermittent burps where the engine momentarily lost power to a total loss of power just out of gliding range of the runway. Fortunately for me, I was able to recover power, and I made an uneventful landing on the runway, with the engine stopping when I pulled the power off on short final.

Despite over 40 years of flying experience, I found the situation very difficult to deal with because it wasn't obvious what was wrong and if I could still get home if/when the engine failed. In the end, all I could do was assume the engine could fail at any time and arrange a flight path that always gave me a landable option. The incident records show that for every total engine failure, there are at least two incidences where a significant but not total power loss occurred, yet this scenario is seldom covered in training.

The problem is the traditional one for flight safety. You ace the forced landing, and you are a hero. However, if you do all the boring stuff like good walkarounds, make the effort to learn your airplane systems so you know what to look for during the run-up and, in flight, don't “live with” aircraft defects, and have good checklist discipline. Your chance of having an engine failure is then greatly reduced, but you don't get any credit for something that didn't happen.

I think that the first step to breaking the engine failures caused by the pilot problem is to be honest about pilot failures and cover those during training. Habits, good or bad, are established in initial pilot training, and it is important for instructors to connect student mistakes in normal operations to potential consequences. When teaching or for those already licensed and practicing forced landings, after pointing the airplane at a suitable landing area, it is vital that a full and effective cause check is completed. If my student misses an item or rushes the check the exercise is over, I climb back up and reset the exercise. In addition, I give my students a few partial failures, some with enough power to just maintain level flight, and some with power but not enough to maintain level flight. This invariably generates some excellent discussion around the decisions the pilot made.

Engine mechanical failures almost always give some warning, so I insist that my students get a feel for where the engine gauges normally sit. Significant changes from normal will result in action by the pilot. However, that only works if pilots develop the habit of regularly scanning the instruments.

Finally, I tell my students that when the engine fails, the insurance company just bought the airplane. The only consideration is the safety of the occupants. If the airplane can be saved, that's nice, but it should never be a consideration. If power can't be restored, the pilot's only responsibility is to fly the airplane to survivable landing areas and arrive with the airplane fully under their control. △