



**ISSUE 3/2022**

# **AVIATION SAFETY LETTER**

## **In This Issue...**



**TC Launches Three-year Air Taxi Safety Campaign  
in Response to TSB Recommendation A19-02**

**Taxi Name Changes in Halifax (CYHZ) to Prevent ATC Errors**

**Aviation Occupational Health and Safety Essentials**

**Important Notice: 2022-2023 Flight Crew Recency  
Requirements Self-Paced Study Program**

TP 185E

The *Aviation Safety Letter* is published by Transport Canada, Civil Aviation. The contents do not necessarily reflect official government policy and, unless stated, should not be construed as regulations or directives.

Articles, comments and suggestions are invited. The editor reserves the right to edit all published articles. The author's name will be withheld from publication upon request.

Please send your comments, suggestions or articles to:

**Jim Mulligan, Editor**

*Aviation Safety Letter*

E-mail: [TC.ASL-SAN.TC@tc.gc.ca](mailto:TC.ASL-SAN.TC@tc.gc.ca)

Tel.: (343) 553-3022

Internet: [canada.ca/aviation-safety-letter](http://canada.ca/aviation-safety-letter)

**Copyright:**

Some of the articles, photographs and graphics that appear in the *Aviation Safety Letter* are subject to copyrights held by other individuals and organizations. In such cases, some restrictions on the reproduction of the material may apply, and it may be necessary to seek permission from the rights holder prior to reproducing it. To obtain information concerning copyright ownership and restrictions on reproduction of the material, please contact the *Aviation Safety Letter* editor.

**Note:** Reprints of original *Aviation Safety Letter* material are encouraged, but credit must be given to Transport Canada's *Aviation Safety Letter*. Please forward one copy of the reprinted article to the editor.

**Electronic distribution:**

To subscribe to the *Aviation Safety Letter* e-Bulletin notification service, visit: [canada.ca/aviation-safety-letter](http://canada.ca/aviation-safety-letter).

**Print-on-Demand:**

To purchase a Print-on-Demand (POD) version (black and white), please contact:

**The Order Desk**

Transport Canada

Toll-free number (North America): 1-888-830-4911

Local number: 613-991-4071

E-mail: [MPS1@tc.gc.ca](mailto:MPS1@tc.gc.ca)

*Sécurité aérienne — Nouvelles* est la version française de cette publication.

© His Majesty the King in Right of Canada, as represented by the Minister of Transport (2022).

ISSN: 0709-8103

TP 185E

## Table of Contents

---

	Page
Transport Canada launches three-year air taxi safety campaign in response to TSB recommendation A19-02 .....	3
Important notice: 2022-2023 Flight Crew Recency Requirements Self-Paced Study Program .....	4
Taxiway name changes at Halifax (CYHZ) to prevent ATC errors .....	5
Aviation occupational health and safety essentials .....	6
Recently released TSB reports.....	7
<i>Aviation Safety Letter</i> (ASL) article submission .....	19



## ON THE RADAR

# Transport Canada launches three-year air taxi safety campaign in response to TSB recommendation A19-02

---

*by the Air Taxi Safety Campaign Team, Transport Canada, Civil Aviation*

With a summer of nice weather and a greater sense of adventure behind us, we anticipate air traffic volume to continue to grow alongside people's desire to get mobile in ways they weren't able to during the pandemic. With that desire and an expected increase in the volume of air traffic within the 703-air taxi sector, we'd like to draw your attention to some important safety information. In one of its latest reports on the air-taxi sector, the Transportation Safety Board (TSB) identified more accidents and fatalities than in all other sectors of commercial aviation in Canada. As you may know, air-taxi services operate in a very different context than other sectors of aviation; air-taxi operations often have no set schedule and fly into remote areas in uncontrolled airspace with few airports or navigation aids. Given this movement of adventure and excitement within the country with fewer restrictions, Transport Canada Civil Aviation (TCCA) is taking this timely opportunity to highlight its air taxi aviation safety campaign.

The aim of this campaign is to directly address TSB's recommendation [A19-02](#) from the TSB report A15H0001, which is to "collaborate with industry associations to develop strategies, education products, and tools to help air-taxi operators and their clients eliminate the acceptance of unsafe practices." Success in doing so is predicated on voluntary compliance through safety promotion and awareness, which TCCA is ready to undertake to positively influence safety within the sector and to reduce the risks in the air-taxi sector over the course of the next three years.

This integrated multi-year approach focuses on:

- Focus group development and facilitation;
- Facilitation of subsequent working groups;
- Statistics-gathering to support campaign objectives and effectiveness;
- Facilitation of seminars and participation in association events; and
- Developing safety promotion and education publications, as well as tools that support the elimination of unsafe practices in the air taxi sector.

The groundwork has been laid in the first phase of this multi-year approach. The framework, vision and documentation were developed and in phase two, TCCA is focusing on risk categorization within the air-taxi sector, identifying stakeholder groups to participate in the campaign, establishing regular recurring focus groups to broaden best practices discussions, promoting the campaign through media outreach, obtaining industry feedback through an Air Taxi Maintenance Safety Survey, developing safety seminars, and conducting air taxi

targeted inspections. The two subsequent phases, four and five, are aimed at refining and strengthening the work completed throughout phase three.

We encourage you to take a moment to familiarize yourself with this campaign as we invite you to participate and share your input and expertise with us and others across the industry. You can find more information on the [Air Taxi Safety Campaign web page](#). You can also provide your input, feedback, and expertise by contacting us at: [airtaxi-taxiaerien@tc.gc.ca](mailto:airtaxi-taxiaerien@tc.gc.ca).

We'd also like to share a few words with you from Nicholas Robinson, Director General, TCCA:

*“There really couldn't be a better time for us to broadly share the work we've undertaken to further aviation safety in Canada, especially in a sector that is as unique and more fluid than other areas of the aviation industry. Over the last couple of years, we've really been able to take a step back to strategize and inform ourselves on how to dial this campaign into what it needs to be to take us forward. Not only did this period afford us the time to do that, but it also afforded us the opportunity to deepen the approach of how we are addressing the TSB's concerns and recommendations within the air taxi sector. We look forward to working together, as your expertise, commitment and action are the most critical parts of this campaign.”*

This fall, you will start to see more inspectors reaching out to gain insight and input from you. You will also start to see more promotional products, messages, and forums to participate in. We know that you take the recommendations of the TSB as seriously as we do, and we look forward to collaborating with you over the coming months. △

## Important notice: 2022-2023 Flight Crew Recency Requirements Self-Paced Study Program

From now on, the Flight Crew Recency Requirements Self-Paced Study Program will no longer be published in its entirety in the *Aviation Safety Letter* (ASL). With the expansion of the exam and technological advances, it will be more convenient to complete the exam online. Each year, a reminder will be published in the ASL with a link to the exam to remind readers that it is now available online.

It is important to note that a printable version of the exam will still be [available online as a PDF](#).

If you have any questions or comments regarding the Flight Crew Recency Requirements Self-Paced Study Program, please send an e-mail to the flight crew licensing group at: [PilotLicensing-LicencesdePilote@tc.gc.ca](mailto:PilotLicensing-LicencesdePilote@tc.gc.ca) △

# Taxiway name changes at Halifax (CYHZ) to prevent ATC errors

by Jonathan Hunt, Unit Operations Specialist–Halifax Tower, NAV CANADA

One of the recommendations featured in the [European Action Plan for the Prevention of Runway Incursions](#) (EAPPRI, published in 2017) was that “Different taxiways on the same aerodrome should not have the same or similar designations especially on different sides of the same runway.”

At that time, CYHZ had two taxiways (Delta and Foxtrot) which crossed a runway. Given this geography, vehicle operators and controllers used non-standard colloquialisms to differentiate each portion of Delta or Foxtrot (i.e., long Delta or new Foxtrot). Further adding risk to ground operations was the fact that CYHZ has runway numbers which are reciprocals (23 and 32). Errors could and did occur by controllers, vehicle operators and flight crews such as “proceed/taxi Delta hold short Runway 32” when “hold short Runway 23” was intended.

In the fall of 2019, as part of NAV CANADA’s participation in the Halifax Airport Runway Safety Team, a request was made of Halifax International Airport Authority (HIAA) that one portion of those taxiways be renamed.

After consideration by the safety group at HIAA, the taxiways were renamed in the spring of 2021.

Taxiway Delta is now only the portion between Runway 05/23 and Apron I, while Taxiway Kilo is now the portion between Runway 05/23 and Runway 14/32, southeast of 05/23.

Taxiway Foxtrot is now only the portion between Taxiway Golf and Runway 14/32, while Taxiway Lima is now the portion between Runway 14/32 and Runway 05/23, northeast of 14/32. △

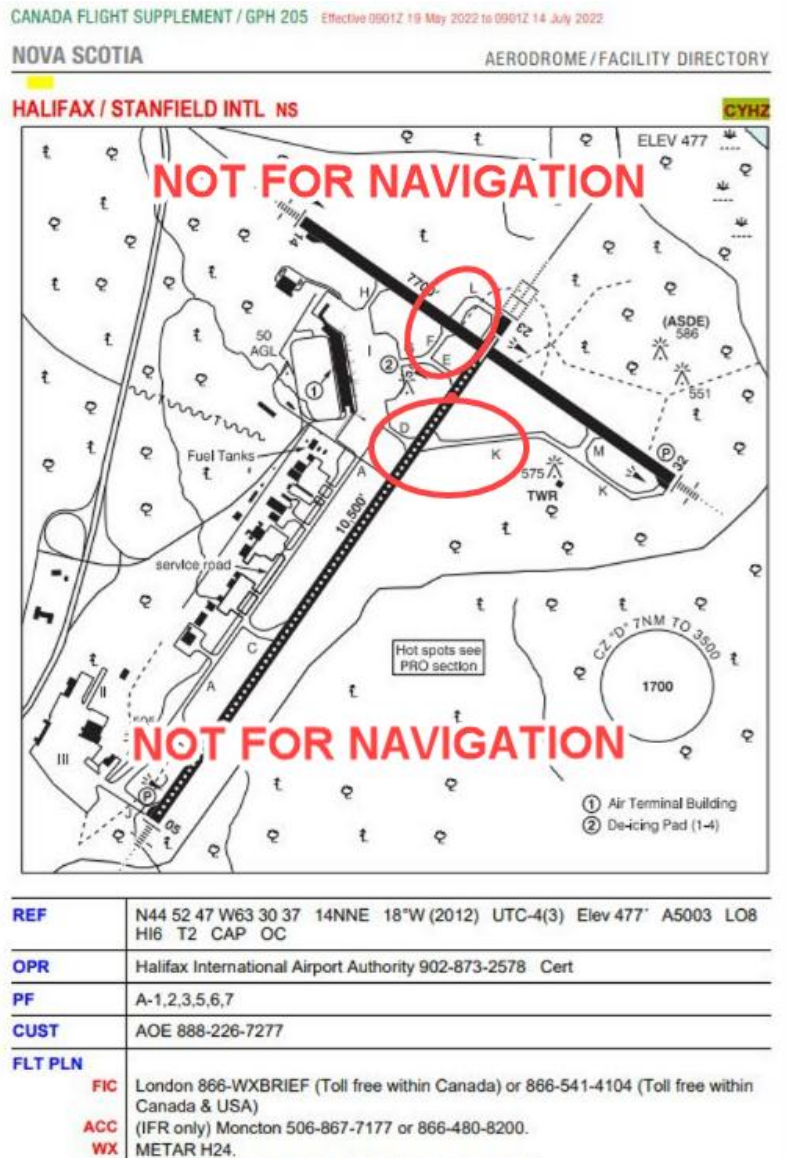


Figure 1. Halifax/Stanfield Intl N.S. airport schematic

# Aviation occupational health and safety essentials

---

by Dawn Kinoshita, Civil Aviation Safety Inspector–AOSH, Transport Canada

The *Canadian Aviation Regulations* (CARs) require air operators to demonstrate to Transport Canada Civil Aviation (TCCA) that they are adequately equipped and able to operate safely and in accordance with regulatory requirements. However, are you aware that it is mandatory under the *Canada Labour Code* (CLC), Part II and the *Aviation Occupational Health and Safety Regulations* (AOHSR) that air operators must safeguard the health and safety of their employees?

The CLC is intended to assist an air operator in providing an incident-free workplace or, at least, remove or mitigate any hazards by establishing a

compliant occupational health and safety (OHS) program. Though the employer is responsible for overall compliance, it's the partnership between operator and worker that ensures the safety of all, through either an OHS workplace committee or an OHS representative, depending on workforce numbers.

OHS committees and/or representatives contribute to preventing work-related occurrences by cooperating with the employer and solving workplace issues using an internal responsibility system. This system, based on collaboration, improves the overall understanding of workplace health and safety issues. An effective system is meant to address safety issues, training, and complaints, establish best safety procedures and practices, identify hazards, and encourage compliance.

The CLC provides employees with three basic rights. They have a right to know what hazards are present on the job and how they can be affected. They have a right to participate in health and safety activities, such as reporting hazards or participating in a health and safety committee. They have the right to refuse to do dangerous work as long as they are following proper procedures when doing so.

In addition, employees have the responsibility to participate in safety education and training, cooperate with all safety requirements, including wearing safety equipment, report all work-related accidents, occupational diseases, or other hazardous occurrences, and help to keep their colleagues safe.

A safe environment under an effective OHS program complies with regulatory legislation and contributes to the wellbeing of the operator and all employees. The Aviation Occupational Health and Safety (AOHS) program's main objective is to ensure the health and safety of employees on board aircraft in operation. For information on the benefits of occupational health and safety and the establishment of an effective program, contact a Civil Aviation Safety Inspector–OHS who can provide additional assistance, or alternatively, access the [AOHS website](#).

Employees who are not working on board an aircraft while in operation are covered under the Employment and Social Development Canada (ESDC)—OHS Labour Program. For additional information on employer responsibilities related to occupational health and safety, visit the [website](#).

## Worker Rights



- **Right to know,**
- **Right to participate,**  
**and**
- **Right to refuse work**  
**which you believe is**  
**unusually dangerous.**

The [Canadian Centre for Occupational Health and Safety \(CCOHS\)](#) provides excellent resources on all aspects of OHS.

Links to legislation:

- [Canada Labour Code](#)
- [Aviation Occupational Health and Safety Regulations](#) △



## RECENTLY RELEASED TSB REPORTS

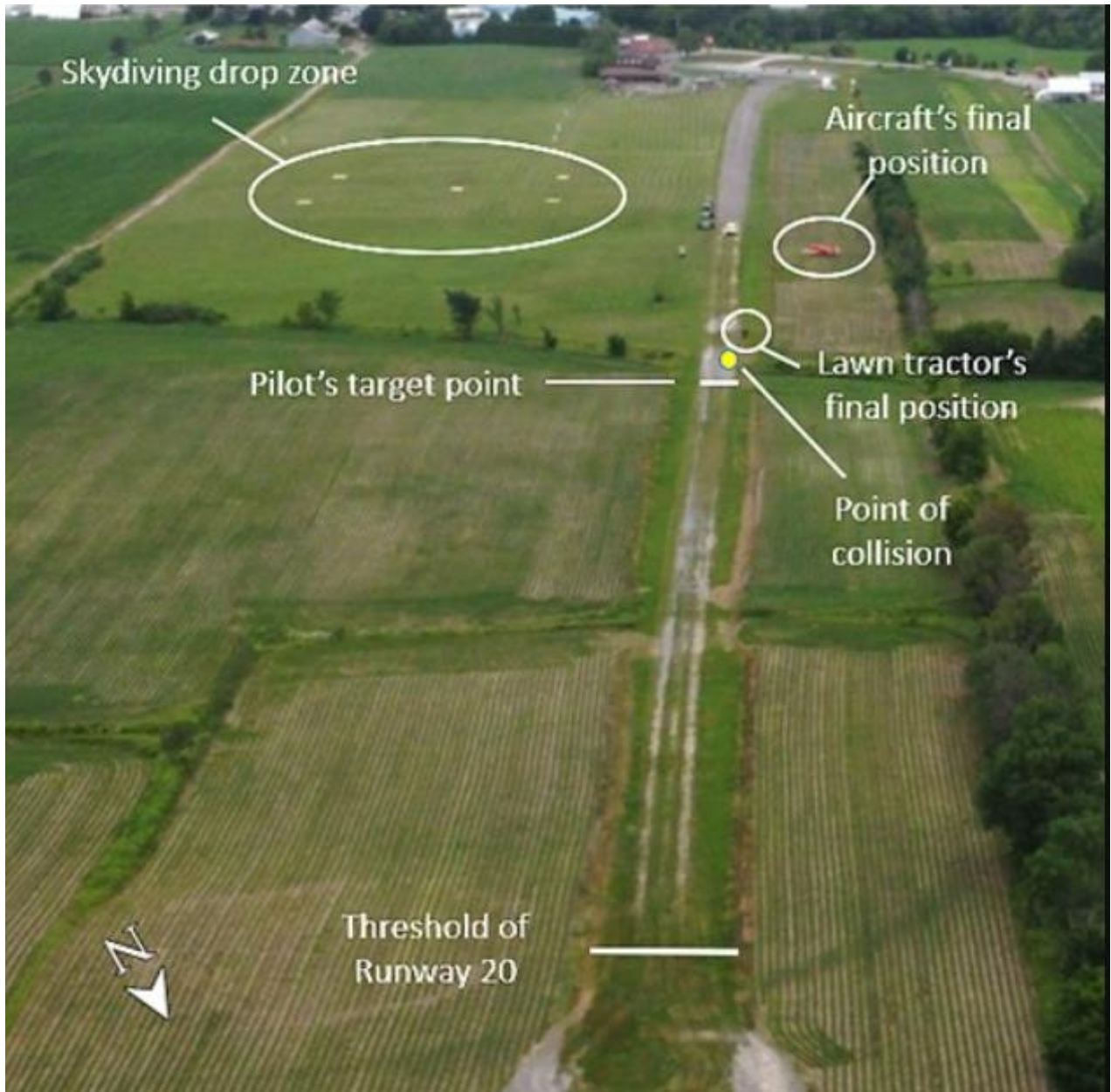
*The following summaries are extracted from final reports issued by the Transportation Safety Board of Canada (TSB). They have been de-identified. Unless otherwise specified, all photos and illustrations were provided by the TSB. For the benefit of our readers, all the occurrence titles are hyperlinked to the full report on the TSB Web site. —Ed.*

### **[TSB final report A21Q0052—Collision with a lawn tractor during landing](#)**

#### **History of the flight**

At approximately 1130 on 5 July 2021, the privately registered, single-engine Nanchang CJ6A aircraft took off for a local visual flight rules (VFR) flight from Joliette Aerodrome (CSG3), Que. to Saint-Esprit Aerodrome (CES2), Que. The pilot, who was the sole occupant, intended to conduct two aerobatic training flights, one in the morning and one in the afternoon. CES2 is a private aerodrome leased and operated by Parachute Montréal, a parachuting club for which the occurrence pilot occasionally worked as a pilot. During the flight, the pilot attempted, unsuccessfully, to communicate with the club's skydiving aircraft (a DHC-6 Twin Otter aircraft) to find out whether any jumps were in progress. Once he was close to the aerodrome, he circled several times to check. Having spotted some skydivers but not the Twin Otter either in the air or on the ground, he attempted once again to contact the Twin Otter to obtain its position and succeeded in establishing communication. The pilot of the Twin Otter confirmed that jumps were in progress and that he was on final approach for Runway 20. The two pilots agreed to land one after the other, with one minute of separation between them, and decided that the Twin Otter would land first.

After the Twin Otter had landed, the pilot of the Nanchang, who did not see any traffic in the circuit or on the ground, joined the left base leg of the circuit at an altitude of approximately 500 ft above ground level (AGL) before turning onto final at approximately 300 ft AGL. Because the surface of the grass strip runway was in poor



*Figure 1. Aerial photograph of the Saint-Esprit Aerodrome showing the threshold of Runway 20, the skydiving drop zone, the target point, the point of collision, and the final positions of the aircraft and the tractor (Source: TSB)*

condition at the threshold and beyond, the pilot chose a target point approximately 800 ft beyond the threshold and began to flare approximately 300 ft before the target point (Figure 1). At about the same time, a lawn tractor that was performing maintenance work at the aerodrome crossed Runway 20 near the pilot's intended target point and began a turn to the left to cut the grass parallel to the runway.

During the flare phase, with the aircraft in a normal configuration for landing, the pilot could no longer see the runway ahead of him and looked to the right to assess the aircraft's height. At the moment when he expected to reach the touchdown point, he heard a noise and immediately felt the aircraft deviate to the right. He was able to stop the aircraft on the right side of the runway strip.



Seeing damage to the right wing, the pilot realized that he had struck something. He exited the aircraft and saw the lawn tractor to the right of the runway not very far from the touchdown point. The aircraft had struck the tractor, and the driver was fatally injured. The pilot was not injured. There was major damage to the aircraft's right wing (Figure 2).

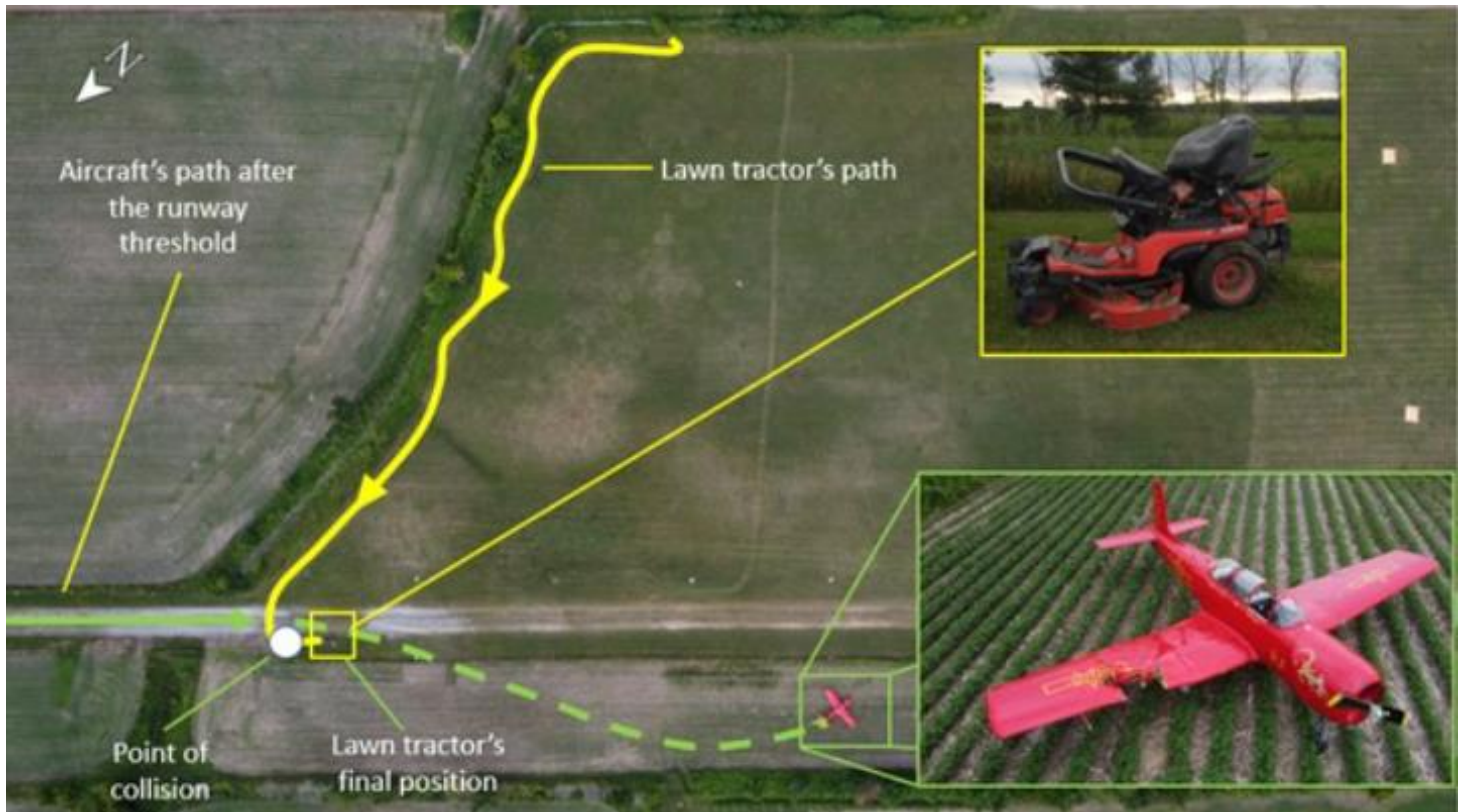


Figure 2. Aerial photograph of the point of collision at the Saint-Esprit Aerodrome, showing the tractor's path and the aircraft's path, and the extent of the damage in the close-ups (Source: TSB)

### Meteorological information

According to the aerodrome routine meteorological report (METAR) issued at 1100 for the Montréal International (Mirabel) Airport (CYMX), Que., located 20 nautical miles (NM) southwest of the accident site, weather conditions were favourable for this VFR flight and were not considered to be a contributing factor in this accident.

### Pilot information

The pilot held the appropriate licence and ratings for the occurrence flight in accordance with existing regulations.

According to information gathered during the investigation, there was no indication that the pilot's performance was affected by medical, pathological, or physiological factors.

### Aircraft information

The Nanchang CJ6A is a demilitarized single-engine aircraft designed and built in China. The occurrence aircraft had been issued a special airworthiness certificate by Transport Canada on 1 June 2006 and had no known deficiencies before the occurrence. Because of the aircraft's configuration (long nose, radial engine, and pilot position), the pilot temporarily loses visibility in front of the aircraft when beginning the flare.

### **Aerodrome information**

CES2 is a private aerodrome that is leased and operated by Parachute Montréal and is used exclusively for skydiving activities. It has a single grass strip (Runway 02/20). As an aerodrome, CES2 is governed by Subpart 301 of the *Canadian Aviation Regulations* (CARs), which is much less restrictive than Subpart 302, which applies to airports. CES2 is listed as registered in the *Canada Flight Supplement* and is annotated with prior permission required (PPR), which means that, at all times, “the aerodrome owner’s or operator’s permission is required prior to use, except in cases of emergency.” Given that the occurrence pilot occasionally did work for the skydiving club at this aerodrome, he believed that he could fly there without a PPR, and he had therefore not notified the operator of his intentions before the flight.

### **Summer maintenance of the aerodrome**

Skydiving activities at CES2, which begin in March and end in November, require that the grass be cut in manoeuvring areas and in the drop zone.

The aerodrome manager uses a subcontractor, the same one since 2017, for this purpose. CES2 does not have written procedures for maintenance of the aerodrome, nor are such procedures required by the CARs. However, according to a verbal agreement between the aerodrome manager and the subcontractor, the grass is to be cut only when the Twin Otter is on the ground at CES2 and no skydivers are in the air, given that the drop zone is adjacent to the manoeuvring areas (Figure 1).

According to the verbal agreement, the subcontractor decides when the grass will be cut and does not have to notify the aerodrome manager in advance or coordinate its activity with the manager. On the day of the occurrence, no coordination had taken place between the subcontractor and the aerodrome operator.

The investigation revealed that the grass-cutting team, which generally consisted of one to three people, tended to cut the grass at CES2 early in the morning, before skydiving jumps began. On the day of the occurrence, the usual team was unavailable. Instead, another person was cutting the grass, alone. She was not employed by the subcontractor but was performing the task to assist the subcontractor, as she had recently done a few times.

The investigation was unable to determine whether the tractor driver was aware of the presence of the Nanchang.

She was not wearing a safety vest or head protection and was not using a radio.

### **Safety message**

This accident highlights how important it is for pilots to obtain permission to use an aerodrome when prior permission is required, so that aerodrome operators can coordinate the various activities taking place at the aerodrome, to ensure that the activities are carried out safely.

In addition, individuals working near a runway must remain vigilant and continually scan the runway and its two approaches before entering or crossing it.

## TSB final report A21W0071—Collision with terrain

### History of the flight

On 31 August 2021, the privately registered Mooney M20C aircraft was conducting a visual flight rules (VFR) flight from La Crête Aerodrome (CFN5), Alta. to Saskatoon/John G. Diefenbaker International Airport (CYXE), Sask. The pilot was the sole occupant on board.

At 0816, the pilot called the Edmonton flight information centre to file his VFR flight plan. The planned route was from CFN5 to Slave Lake Airport (CYZH), Alta., then to Lloydminster Airport (CYLL), Alta. and finally, to CYXE. The planned altitude for the flight was 5 500 ft above sea level (ASL). During the call, the flight service specialist offered to provide a weather briefing, but the pilot declined and informed the specialist that he had already retrieved weather information for the airports along the route and concluded that the conditions met VFR minima; however, he recognized that it might not be possible to reach his planned altitude owing to clouds.

The pilot had a tablet on board with a current subscription to a commercially available flight planning program. The investigation was unable to confirm whether the pilot used that program to obtain weather information. However, the investigation revealed that the pilot called his family before departure and told them that he was aware of poor weather on his planned route, but that he would work his way around it. He had flown this route many times.

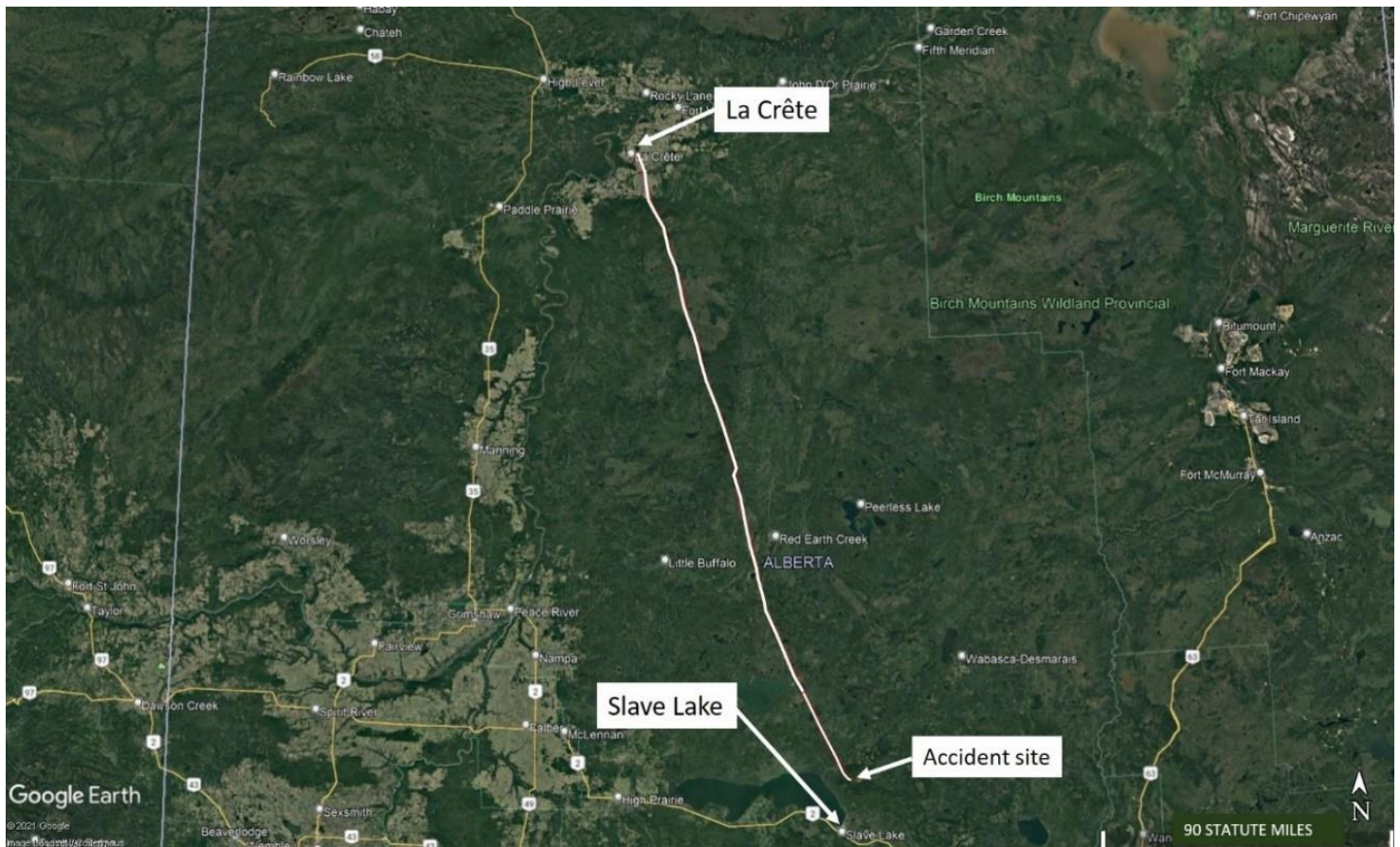
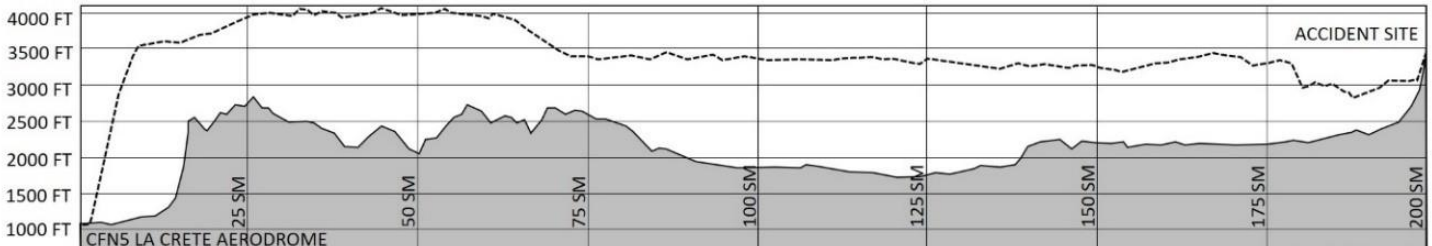


Figure 1. Map showing the occurrence flight track (Source: Google Earth, with TSB annotations)

The aircraft departed at 0900 in visual meteorological conditions and initially climbed to 3 500 ft ASL on a southerly heading (figures 1 and 2). Along the route to CYZH, the aircraft reached an altitude of 4 000 ft ASL before descending, likely due to cloud ceilings. When the aircraft was 14 nautical miles (NM) north of CYZH, the pilot changed the destination in the global positioning system (GPS) from CYZH to CYLL. The aircraft's track then turned to the east toward CYLL and toward rising terrain. At this time, the aircraft was at 3 000 ft ASL or 500 ft above terrain.



*Figure 2. Graph showing the terrain and vertical flight path profile, with altitudes indicated in feet above sea level and distances indicated in statute miles from La Crête Aerodrome (Source: TSB, based on data from the aircraft's digital engine monitor)*

At 1011:40, the aircraft climbed to 3 550 ft ASL and its ground speed decreased from 125 kt to 68 kt. The aircraft then started a descent at 1011:59 and descended until shortly after 1012:09, when it impacted terrain in a wooded area at approximately 3 200 ft ASL (Figure 3). GPS data from the digital engine monitor showed that the aircraft's descent angle before it hit trees was about 15°. The average descent rate was 1 680 fpm until a few seconds before impact, when it increased to over 2 000 fpm. The pilot was fatally injured. The aircraft was destroyed. The emergency locator transmitter activated.

Given the weather conditions, search and rescue (SAR) aircraft, based at Slave Lake and Cold Lake, Alta., as well as at Comox, B.C., were grounded at the time of the occurrence and an air search of the area was not possible. As a result, first responders could not locate the site on the day of the occurrence. The accident site was located the next day and was reached by SAR technicians two days after the occurrence.

## Pilot

The pilot held a private pilot licence and his Category 3 medical certificate was valid. He had obtained an instrument rating in 1979. Records indicate that he had not exercised the instrument rating privileges in the preceding five years and did not meet the recency requirements to do so.

Records also indicate that the pilot had accumulated approximately 2 800 hours of flying time, 1 259 of which were in the occurrence aircraft or other Mooney M20 aircraft.

## Aircraft information

The Mooney M20C is a low-wing, single-engine, four-seat, general aviation aircraft with retractable tricycle landing gear. The occurrence aircraft was manufactured in 1964.

The investigation did not identify any issues related to aircraft equipment, maintenance, or certification that would have prevented the aircraft from operating normally during the occurrence flight.

## Impact and wreckage information

The area around the accident site was heavily treed. Damage to the aircraft is consistent with the aircraft striking trees in a right-wing-low attitude.

The aircraft's instruments were found either in the instrument panel or in the wreckage near the panel. The altimeter was set to 29.69 in. of mercury (inHg). The investigation determined there were no signs of pre-impact mechanical failure or system malfunction. The damage to the engine and propeller indicates that power was being produced during the impact sequence.

## Weather

There is no weather reporting at CFN5. At the time of departure, the aerodrome routine meteorological report (METAR) issued at High Level Airport (CYOJ), Alta., the nearest reporting station (32 NM to the northwest of CFN5), indicated:

- wind from 360° true (T) at 9 kt
- visibility 15 statute miles (SM)
- broken ceiling at 11 000 ft above ground level (AGL), overcast cloud layer at 26 000 ft AGL
- temperature 11°C, dewpoint 8°C
- altimeter setting 29.86 inHg

The aerodrome forecast (TAF) issued at 0639 indicated that conditions at CYZH at 0900 would be:

- wind from 050°T at 8 kt
- visibility 6 SM in light rain and mist
- scattered cloud layer at 800 ft AGL, overcast ceiling at 1 200 ft AGL

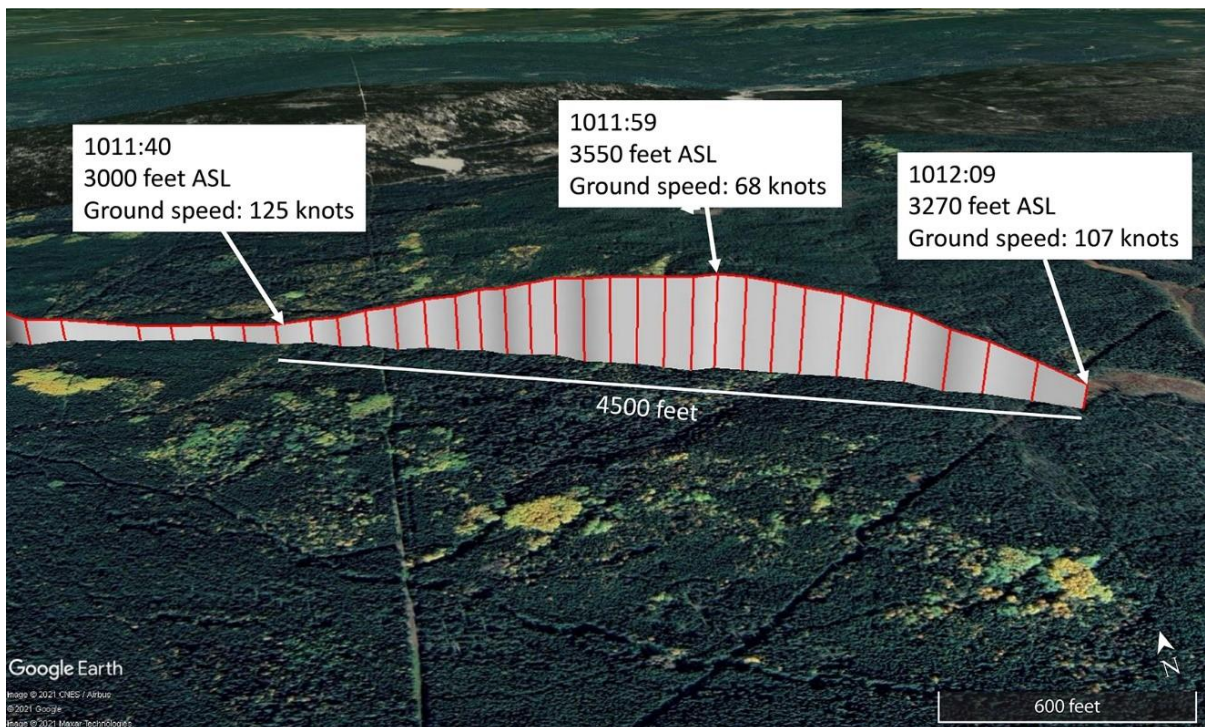


Figure 3. Aerial photo showing the flight path before the collision with terrain  
(Source: Google Earth, with TSB annotations)

Temporarily between 0900 and 1900 on the day of the occurrence, the TAF indicated:

- visibility 3 SM in light rain showers and mist
- broken ceiling at 800 ft AGL, overcast cloud layer at 1 200 ft AGL

There was a 30% probability during this timeframe for visibility of 3 SM in thunderstorms, rain, and mist, and an overcast ceiling at 2 000 ft AGL with embedded cumulonimbus clouds.

The forecast for the route indicated on the graphic area forecast (GFA) (Figure 4) was:

- overcast cloud ceilings between 4 000 and 6 000 ft ASL with tops at 20 000 ft ASL
- frequent altocumulus castellanus clouds with tops at 24 000 ft ASL
- visibility 3 SM to more than 6 SM in rain showers or light rain showers with mist

The GFA also indicated isolated cumulonimbus clouds with tops at 34 000 ft ASL giving visibilities of 1 SM in thunderstorms, rain, and mist. During those periods, patchy cloud ceilings were expected between 600 and 1 200 ft AGL.

At the time of the occurrence, the automated weather observation system (AWOS) at CYZH (12 NM to the southwest of the accident site) reported:

- wind from 270°T at 6 kt
- visibility 9 SM
- overcast ceiling at 1 500 ft AGL
- temperature 13°C, dewpoint 12°C
- altimeter setting 29.68 in Hg

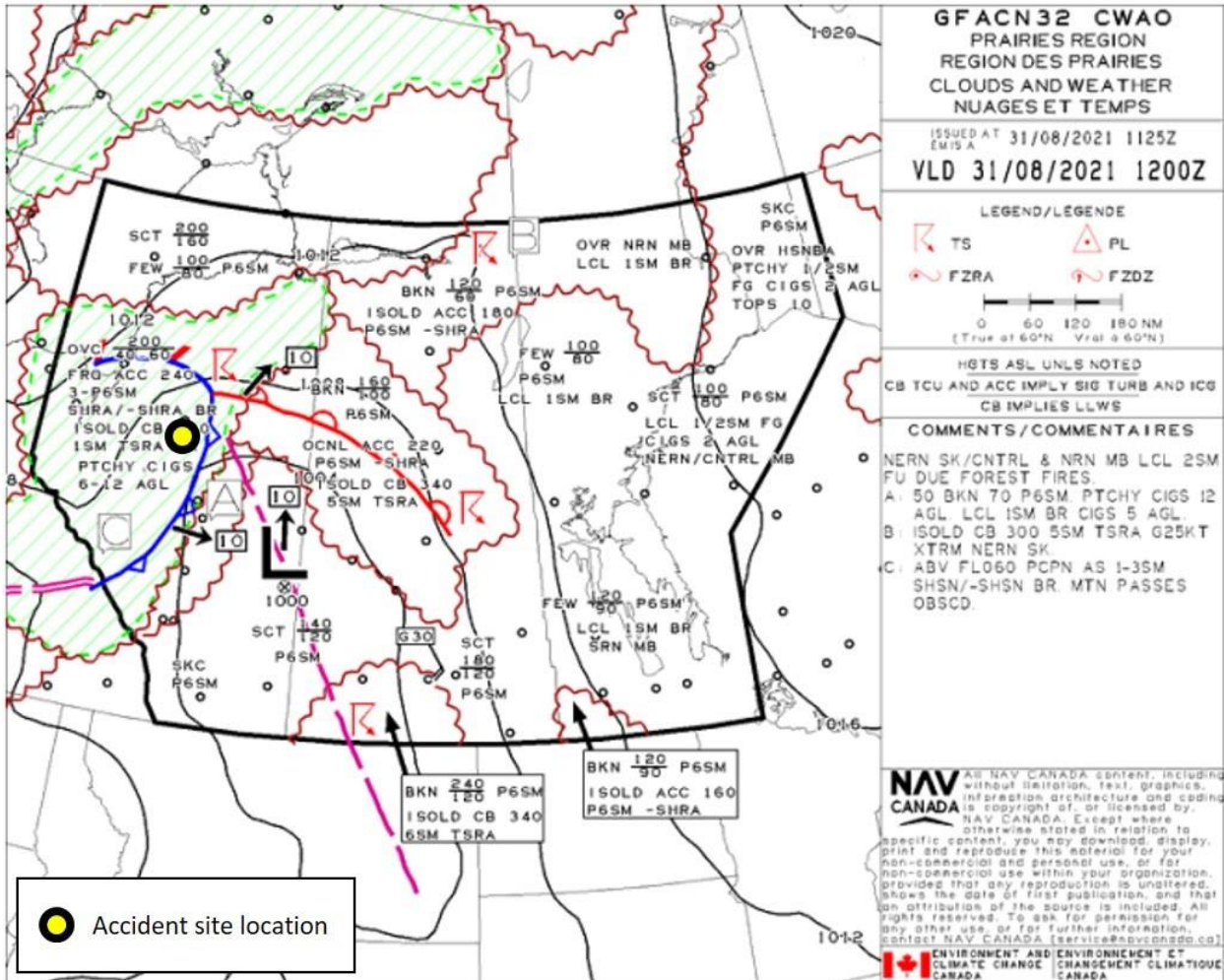


Figure 4. Graphic area forecast valid at 0600 Mountain Daylight Time on 31 August 2021. Yellow circle denotes accident site location. (Source: NAV CANADA, with TSB annotations)

### Visual flight rules in deteriorating weather conditions

The hazards associated with continuing VFR flight into instrument meteorological conditions are well documented. According to data collected by the TSB from 2000 to 2019, accidents involving flights that depart under visual meteorological conditions and continue to a point where pilots lose visual reference with the ground have a high number of fatalities. Over this twenty-year period, these types of accidents resulted in 115 fatalities.

### Safety message

Pilots are reminded that flying VFR in marginal weather conditions, such as low ceilings, is challenging, especially when flying over rising terrain. Pilots need to plan ahead and consider strategies to avoid adverse weather, as well as have alternate plans should such weather be encountered. VFR flights that continue into instrument meteorological conditions often result in a fatal collision with terrain or a loss of control due to lost visual references.

## TSB final report A21Q0007—Loss of control and collision with terrain

### History of the flight

At approximately 0817 on the morning of 3 March 2021, the Wag-A-Bond (amateur-built aircraft) took off from Barron Lake, near the municipality of Gore, Que., bound for the Lachute Aerodrome (CSE4), Que. The pilot was going to meet one of the aircraft's co-owners to conduct other flights during the day.

When the aircraft took off from the frozen surface of the lake, westbound, the flaps were set to 40°. The aircraft climbed to nearly 50 ft above ground level (AGL), close to the north shore of the lake and began turning left with the flaps still at 40°. The aircraft entered a spin to the left and struck the surface of the lake in a near-vertical attitude, with the left wing contacting the surface first (Figure 1).

A person who was near the accident site quickly contacted emergency services by dialing 9-1-1. The 121.5 MHz emergency locator transmitter activated on impact and transmitted a signal.



Figure 1. Estimated flight path of the occurrence aircraft (Source: TSB)

The pilot was fatally injured. The aircraft was destroyed by impact forces and there was no post-impact fire.

### Weather information

According to the aerodrome routine meteorological report (METAR) issued at 0834 for the Montréal International (Mirabel) Airport (CYMX), Que., located 10 nautical miles (NM) southeast of the accident site, winds were variable from 230° true (T) to 320°T at 3 knots. Weather conditions were suitable for this visual flight rules flight and were not considered a factor in this accident.

### Pilot information

The pilot was certified and qualified for the occurrence flight in accordance with existing regulations.



According to information gathered during the investigation, there was no indication that the pilot's performance was affected by medical, pathological or physiological factors.



Figure 2. Photo of the occurrence aircraft (Source: Aircraft co-owner)

### Aircraft information

The Wag-A-Bond is an amateur-built aircraft. The occurrence aircraft was built in 2011. It received a special certificate of airworthiness on 15 November 2012. The aircraft was equipped with wheels and skis (Figure 2).

The aircraft's journey log indicated that it had accumulated 208.8 flight hours since its construction. It had a maximum take-off weight of 1 800 lb and an empty weight of 1 176 lb. The aircraft had an air-cooled, 4-stroke, 4-cylinder engine, which generates 150 hp at a maximum speed of 2 700 rpm.

The aircraft was not equipped with a stall warning system and had no known deficiencies before the occurrence flight.

### Accident site and examination of the wreckage

The aircraft struck the frozen surface of the lake at a near-vertical angle and came to rest in that position at the point of impact. Marks in the snow indicated that the left wing had contacted the surface first, followed by the nose of the aircraft (Figure 3). The fuel tanks, located in the wings, were damaged, causing a small fuel spill.

The wings had partially separated from the fuselage, but the cables controlling the ailerons were under tension and still attached to the cabin. The cable and pulley system that controls the elevators and rudder was checked to the extent possible; when the cables below the fuselage were pulled, the elevators and rudder moved freely. The control column and connecting



Figure 3. Photo of the wreckage (Source: TSB)

cables were torn off by the impact forces. Damage to the wings and structure was the result of impact forces and the work of the first responders.

### Aerodynamic stall and incipient spin

A stall is a loss of lift and an increase in drag that occurs when an aircraft is flying at an angle of attack greater than the angle that provides maximum lift. Regardless of airspeed, an aircraft always stalls when its wings reach this critical angle of attack.

Stall speed varies depending on factors such as the aircraft's weight, power setting, flap position, and angle of bank. An incipient spin occurs when an aircraft stalls and one wing produces more lift than the other. Because the descending wing is at a greater angle of attack, it stalls even further and produces more drag, which triggers an autorotation. During this phase of the incipient spin, the flight path changes from horizontal to vertical.

Generally, even if the pilot takes the necessary measures to stop the autorotation as soon as it begins, the aircraft is in a vertical position while accelerating rapidly, and a high altitude is necessary to regain a horizontal flight path. If the autorotation continues, the aircraft could stabilize in a spin and follow a spiral path downward (Figure 4).

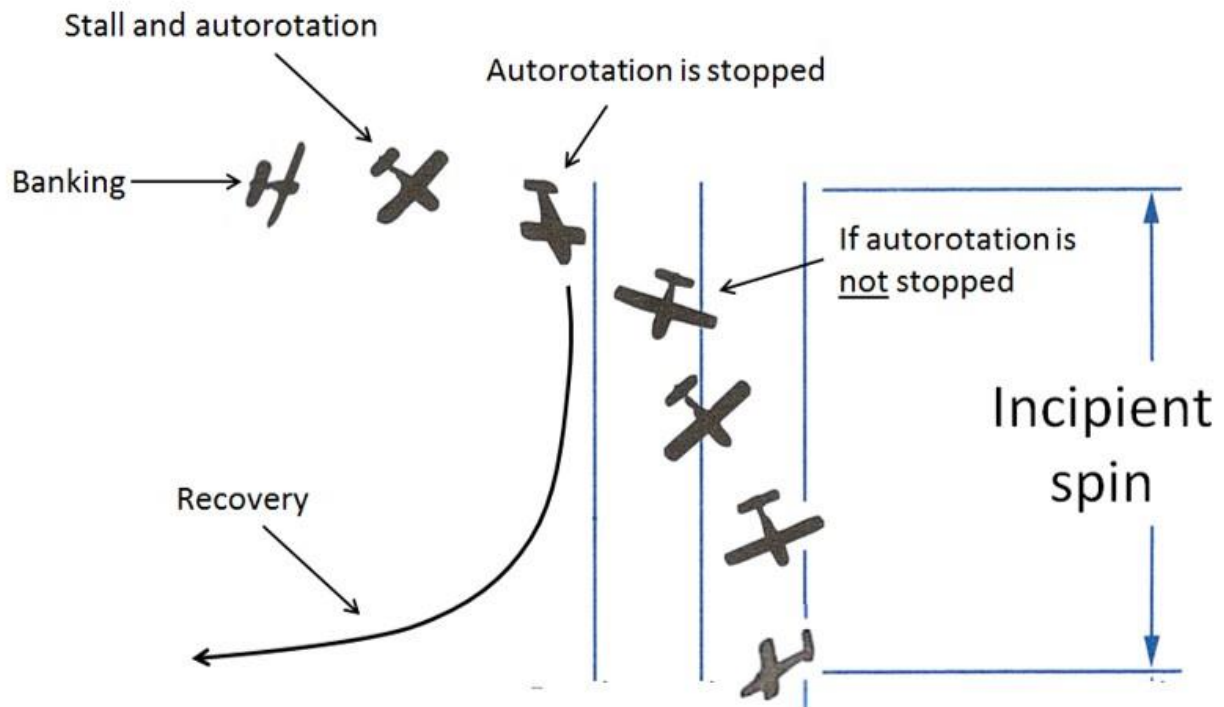


Figure 4. Incipient spin (Source: TSB, based on Transport Canada, TP 1102, Flight Training Manual, 4<sup>th</sup> Edition [revised 2004], Figure 2-31)

In the occurrence flight, the higher drag caused by the flaps being set to 40° limited the aircraft's speed during the climb. The engine torque at full power caused the aircraft to roll to the left; the slipstream on the stabilizer and rudder caused the aircraft to yaw to the left. When the pilot began a low-speed left turn by applying the controls and left pedal, it is likely that the aircraft stalled, sending it into an incipient spin. With the aircraft at approximately 50 ft AGL when control was lost, it was not high enough for the pilot to avoid collision with the frozen surface of the lake.

### **Safety message**

In this occurrence, having the flaps at their maximum setting (40°) limited acceleration during the initial climb. When flying at a slow speed, especially during the initial climb after takeoff, pilots must watch for any warning signs that a stall is imminent and exercise caution in handling flight controls to avoid a stall and an incipient spin, and potentially impact with the ground.

## ***Aviation Safety Letter (ASL) article submission***

---

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.



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 (ie.: 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 are looking forward to hearing from you! △