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AVIATION SAFETY LETTER

ISSUE 3/2019

In This Issue...

**Moving NOTAMs in Canada to the
International ICAO Standard**

RPAS Operations for Traditional Pilots

Aircraft Icing for General Aviation... and Others

**2019-2020 Flight Crew Recency Requirements
Self-paced Study Program**

TP 185E

Canada 

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Please address your correspondence to:

Jim Mulligan, Editor

Aviation Safety Letter
 Transport Canada (AARTT)
 330 Sparks Street, Ottawa ON K1A 0N8
 E-mail: TC.ASL-SAN.TC@tc.gc.ca
 Tel.: 613-957-9914
 Internet: www.tc.gc.ca/ASL

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IN THE NEWS

It's Time for a Change

The *Aviation Safety Letter* (ASL) is going through some changes. Until now, the ASL was only available in PDF, but starting with this issue, it'll also be available in HTML. This change makes it easier to share articles with others—but more importantly, will make it easier to search for specific topics.

You'll notice that the ASL's look has been updated. If you receive an ASL e-bulletin notification email, you'll soon find an improved email with links directly to content. If you aren't subscribed, we encourage you to [sign-up online](#).

Have a great aviation photo? Send it to TC.ASL-SAN.TC@tc.gc.ca for a chance to be featured on the cover page of an upcoming issue of the ASL! △

Transport Canada Attends the 2019 COPA Convention

by Heather Schacker, Manager, Aviation Safety Promotion and Education, Technical Program Evaluation and Coordination, Civil Aviation, Transport Canada

Transport Canada (TC) had the privilege of attending the 2019 Canadian Owners and Pilots Association (COPA) Convention in Innisfail, Alta., where we had the opportunity to meet and talk to a number of aviation enthusiasts. We spent three days engaging with general aviation pilots, aircraft maintenance engineers, and members of the aviation community, and we're excited to share some of the highlights of the Convention with you!

TC would like to start by thanking COPA for hosting the Convention and inviting us to participate. It was at the 2017 COPA Convention that TC launched the General Aviation Safety Campaign (GASC) in partnership with COPA, and this campaign continues to grow and be successful thanks to COPA's support. TC would also like to thank members of the Civil Air Search and Rescue Association (CASARA) for their participation in the GASC. TC is looking forward to working with CASARA to continue to improve safety in the general aviation community.



TC employees from National Capital Region and Prairie and Northern Region on site at the COPA Convention. From Left: Eric Greenwood, Simon Garrett, Richard Chung, Heather Schacker, Eden Vogan (Missing: Brian Clarke)

TC continues to be amazed by the level of engagement in the general aviation community, and we are thrilled to have had the opportunity to be a part of it.

If you were at the Convention, you might have had the chance to come see us at our booth. We met so many great general aviation enthusiasts, and we were so encouraged by everyone's commitment to general aviation safety! Thank you to everyone who took the time to come by and talk with us. And thank you to those who were able to complete our General Aviation Safety survey and our Aircraft Owners and Pilots survey. The information you provided will help us to continue to improve safety in the general aviation community. If you would like to complete either of these surveys, please send an email to: TC.GeneralAviation-AviationGenerale.Tc@tc.gc.ca

TC's National Safety Seminar was launched at the 2018 COPA convention, so the 2019 Convention was the perfect place to present the 2019 version of the safety seminar. Thank you to staff from the TC Calgary and Edmonton offices who came out to present the seminar and interact with the community. It was great to see so much engagement from the audience. TC will continue presenting these seminars across the country. More information on these seminars can be found [here](#).

With so many people in town for the Convention, it was a great opportunity to host our GASC focus group. This focus group has been providing advice and guidance for the campaign since its launch in 2017. Thank you to everyone who participated in the focus group meeting; the engagement was unparalleled. It underscored how dedicated the general aviation community is to improving safety, and this dedication will propel the campaign forward during its final year.

As the campaign comes to a close in April 2020, it will transition to a General Aviation Safety program with a mandate of continuing to improve safety in the general aviation community. Be sure to check out the [GASC Web site](#) for updates on the new program, as well as articles, videos, and other general aviation safety information. △



TAKE NOTE

Moving NOTAMs in Canada to the International ICAO Standard

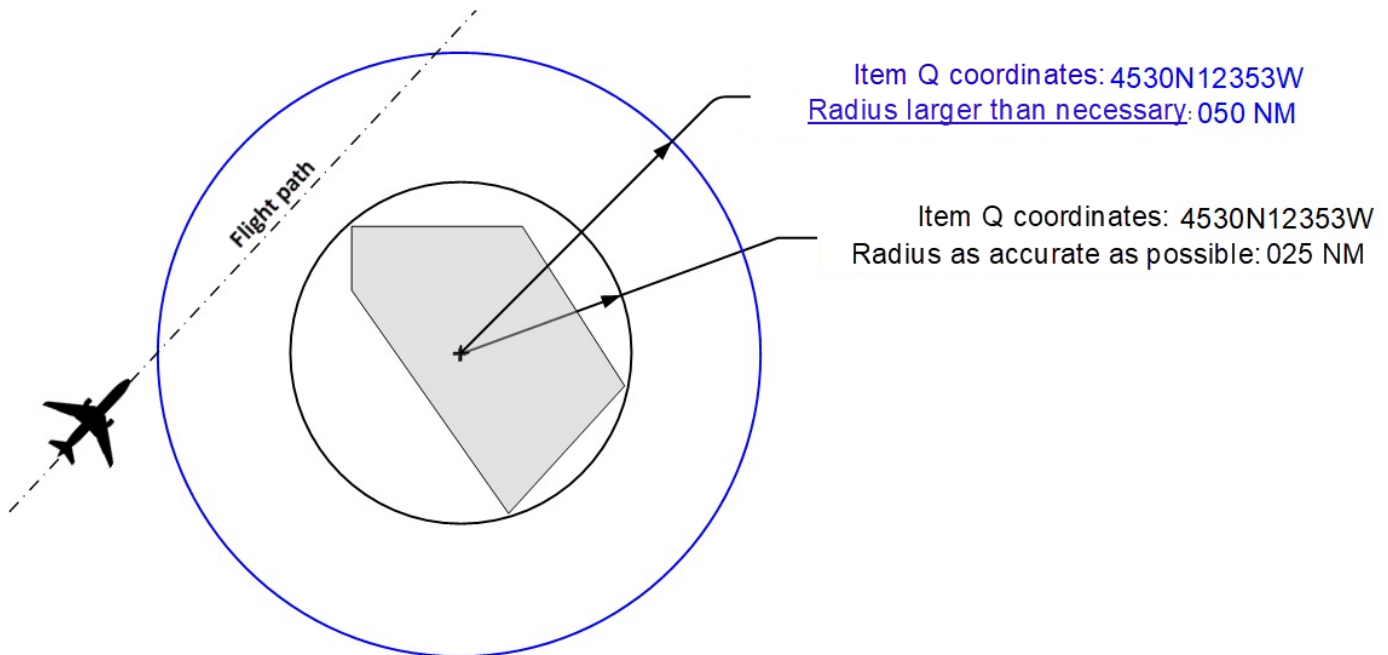
by NAV CANADA

In October 2019, NAV CANADA will transition to the ICAO NOTAM format. In this article, we take a look at the upcoming changes and their potential to promote enhanced safety and usability.

Sorting through the clutter

NOTAMs contain **essential** information for the **safe conduct of flight operations** that is received on **short notice**. It's more than just good airmanship and best practice to check your NOTAMs before a flight—it's **necessary**. However, the number of NOTAMs continues to grow globally as the NOTAM users and NOTAM topics become more diverse—think of remotely piloted aircraft systems (RPAS). The volume of NOTAMs and the risk of missing critical NOTAMs are one of the top safety risks being mitigated by NAV CANADA.

For the last few decades, the NOTAM file system has been used in Canada to store and retrieve NOTAMs. NOTAM files are essentially a collection of folders similar to what would be stored on your computer. Some Aerodrome NOTAM files contain 1 or 2 aerodromes, while others contain 50, making it cumbersome to search for NOTAMs related to a specific aerodrome. With over 200 such “folders”, it can be difficult to find the relevant NOTAMs for a particular flight. Even more challenging is the fact that the number of NOTAM continues to increase, but the time a flight crew has to review NOTAMs doesn't. How can we provide NOTAMs to a crew in a way that helps them discern what is essential for *their* flight? The reality is that the current NOTAM file system, a system and format unique to Canada, doesn't lend itself to sorting, whereas a format containing searchable *metadata* would.



This example shows how a NOTAM radius that is larger than necessary will affect the NOTAMs presented to pilots.

Enter the ICAO NOTAM format

Starting October 2019, all Canadian NOTAMs will be created and disseminated in the ICAO NOTAM format except for RSC/AMSCR NOTAM.

The ICAO NOTAM format, used around the world and described in Annex 15 of the Convention on International Civil Aviation, has been used in Canada for many years. Until now, it was only used to disseminate certain Canadian NOTAMs for international stakeholders. The adoption of this format within Canada will ensure compliance with international standards and eliminate the need for pilots who fly international routes to be familiar with more than one NOTAM format.

The “ICAO NOTAM” presents information in various fields governed by strict rules, which increase the sorting potential of each NOTAM. Fields include: the subject and condition codes, the type of traffic affected (IFR or VFR or both), whether the information affects aerodrome or en-route traffic or both, vertical limits and a radius of influence centered on a latitude and longitude, among other metadata.

The NOTAM file concept will therefore cease to exist. This means that NOTAMs for an aerodrome will no longer be associated with another aerodrome’s NOTAM File. For example, in certain cases, searching

NOTAMs for one aerodrome will not return data for 50 aerodromes but may only include aerodromes in the vicinity. This leads to reduced clutter but will also require careful consideration when entering search criteria to ensure you receive all NOTAMs that are relevant for your flight.

With a new format comes a new way of accessing NOTAMs. NOTAMs accessed directly from the NAV CANADA Web site will only be available on the Collaborative Flight Planning Services (CFPS) Web site, as the functionality will be removed from the Aviation Weather Web Site (AWWS). The NOTAM retrieval tool on CFPS will not require a login, but you will still need a CFPS account to file flight plans online. Whether you access NOTAMs through CFPS or a third-party application, they will no longer be presented in the old format. Also, the structure of the ICAO NOTAM provides greater potential for searching and sorting.

More information on using CFPS and guidelines on how to retrieve NOTAMs for your flight will be made available on the [NAV CANADA Web site](#). Be sure to refer to the October version of the [AIP Canada \(ICAO\)](#) which will include detailed information on the use of Series instead of NOTAM File, the country's three NOTAM Regions, and the dissemination categories.

Successful use of the new NOTAM system requires a strict adherence by the originators to the NOTAM specifications (found in the Canadian NOTAM Operating Procedures [CNOP]). For example, if the vertical limits and the radius of influence of the coded-line are much smaller than they should be, a NOTAM may be omitted from a briefing when it should be included. Conversely, values that are too large may cause a NOTAM to be added to a briefing when it should be omitted.

Reading the ICAO NOTAM Format

Some notions remain the same with the new format such as NOTAMN (new), NOTAMR (revision) and NOTAMC (cancellation), as well as the ten-digit date-time groups for the start and end times. The concept of aerodrome NOTAM (related to an aerodrome's facilities or installations) or FIR NOTAM (not related to any specific aerodrome) are still used. It is incumbent on all personnel involved in flight operations to ensure that all pertinent NOTAMs are consulted. Even when flying within 25 nautical miles (NM) of an aerodrome, NOTAMs for the relevant FIR should be reviewed as missing a critical NOTAM can have serious consequences.

Although the way time periods are expressed has not changed, the terms "TIL" and "TIL APRX" are discontinued. These terms were unique to Canada. "TIL" completely disappears while "TIL APRX" is replaced with "EST" meaning "ESTIMATED end time". It should not be confused with "Eastern Standard Time". As before, all NOTAM times are in UTC. Whereas in the old format there were no times included for a permanent change, this format will show "PERM" instead. Pay close attention to time periods that start before midnight zulu and end after midnight zulu as this can often lead to confusion. You don't want to find yourself in a restricted airspace because the NOTAM time periods were misunderstood!

The [Transport Canada Aeronautical Information Manual](#) (TC AIM) contains a comprehensive description of time periods.

Canadian domestic NOTAM format

190516 NOTAMN CYND OTTAWA/GATINEAU

CYND RWY 09/27 CLSD

1907301530 TIL APRX 1907310100

ICAO NOTAM format

K0288/19 NOTAMN

Q) CZUL/QMRLC/IV/NBO/A/000/999/4531N07534W005

A) CYND B) 1907301530 C) 1907310100EST

E) RWY 09/27 CLSD

An example of a NOTAM showing how the information is displayed in the current (Canadian domestic) format and the new (ICAO NOTAM) format.

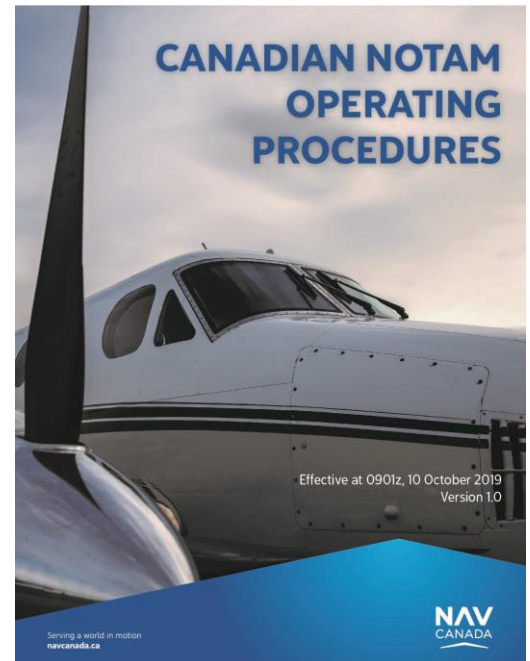
The TC AIM section on NOTAMs has been completely rewritten as has the *Canadian NOTAM Procedures Manual* now titled the *Canadian NOTAM Operating Procedures (CNOP)*. In addition, the details to subscribe to a NOTAM Series has been included in the *AIP Canada (ICAO)*, section GEN 3.1.3.4.

Are you ready?

The transition to the ICAO NOTAM format will impact both NOTAM originators **and** NOTAM users. It is important that all impacted users understand and prepare for the coming change.

Access the [NAV CANADA Web site](#) for more information on the ICAO NOTAM format including a complete ICAO NOTAM briefing, specific instructions to originators, the CNOP, and the AIP. Bookmark this Web site to stay informed as additional information will be added leading up to the transition in October 2019.

Questions may be directed to icaonotam@navcanada.ca △



The new Canadian NOTAM Operating Procedures, formerly the Canadian NOTAM Procedures Manual

Carleton University Voluntary Study

Kathleen Van Benthem Ph.D., Research Fellow, Advanced Cognitive Engineering Laboratory, Institute of Cognitive Science, Carleton University

The Advanced Cognitive Engineering Lab at Carleton University invites you to participate in a voluntary study entitled “A Survey regarding the CANFLY: A Virtual Reality Cognitive Screening and Training Tool for Pilots”. This study aims to gain information for the development of a virtual reality cognitive screening and training tool for pilots.

This study involves one 20-minute survey that will be completed online, with your consent.

While this project does not involve any professional or emotional risks, the survey is completely voluntary and anonymous to protect your identity. This will be done by keeping all responses anonymous and by allowing you to exit the survey at any point, in which case your responses will not be included.



*Advanced cognitive engineering lab at Carleton University
C-172 flight simulator*

You will have the right to end your participation in the study at any time, for any reason, up until you submit the survey; after this point we will have no way to identify your response. If you choose to withdraw before the end of the survey, all the information you have provided will be destroyed.


We truly appreciate any and all participation in this study. All survey responses will benefit the development of the CANFLY tool. There is no compensation for participating; however, we do appreciate your time.

All research data is stored on a password-protected account stored on the Google servers. Any hard copies of data (including any handwritten notes or USB keys) will be kept in a locked cabinet at Carleton University. Research data will only be accessible to the researcher and the research supervisor. Data will be stored for up to five years.

The ethics protocol for this project was reviewed by the Carleton University Research Ethics Board-B (CUREB-B), which provided clearance to carry out the research. (Clearance expires on: May 30, 2020)

CUREB-B Clearance #110526

Should you have any **ethical concerns** with the study, please contact the Research Ethics Board (REB) Chair, Carleton University Research Ethics Board-B by phone at 613-520-2600 ext. 4085 or by email at ethics@carleton.ca. For all other questions about the study, please contact Dr. Kathleen Van Benthem at CessnaStudy@gmail.com.

To participate in this study, please click on the following link: <https://forms.gle/vkMKrd4wzVUvEXPJ6>. 



TIPS AND TOOLS

Aircraft Icing for General Aviation... and Others

This is a partial reprint of an article previously published in ASL 03/2005. —Ed.

Transport Canada wishes to maintain a high level of awareness within the civil aviation community of the hazards of flying with ice and snow adhering to the critical surfaces of an aircraft, and of flying into icing conditions. This article is primarily aimed at the general aviation pilot, but indeed applies to all pilots who fly in our tough climate.

A very small amount of roughness—in thickness as low as 0.40 mm (1/64 in.), caused by ice, snow, or frost—disrupts the airflow over the lift and control surfaces of an aircraft. The consequence of this roughness is severe loss of lift, increased drag, and impaired manoeuvrability, particularly during the take-off and initial climb phases of flight. Ice can also interfere with the movement of control surfaces or add significantly to aircraft weight, as well as block critical aircraft sensors. **There is no such thing as an insignificant amount of ice.**



Aircraft operating from smaller regional airports are generally de-iced by company personnel, or in some cases, by the pilot of the aircraft, using a pressure sprayer containing an approved de-icing fluid. Aircraft must be de-iced shortly prior to takeoff. When operating under icing conditions from remote sites, aircraft operators are responsible for carrying the appropriate anti-icing and de-icing equipment on board the aircraft or storing the equipment at the airport. If conditions are too severe, pilots are prohibited from attempting a takeoff.

In all aviation operations, the pilot-in-command (PIC) has the ultimate responsibility of determining if the aircraft is in a condition for safe flight.

Ground de-icing and anti-icing procedures vary greatly depending primarily on aircraft type, the type of contamination accumulation on the aircraft, and the freezing point depressant (FPD) or de-/anti-icing fluid type. Pilots should become familiar with the applicable *Canadian Aviation Regulations* (CARs) and Standards, as well as the procedures recommended by the aircraft manufacturer in the pilot operating handbook (POH), aircraft flight manual (AFM), maintenance manual, and, where appropriate, the aircraft service manual. As well, they should comply with all company operations manual provisions.

Acceptable fluids—A list of acceptable de-icing and anti-icing fluids is included on the Transport Canada Web site in the *Transport Canada Holdover Time (HOT) Guidelines*. If reliable holdover times are to be achieved, only acceptable fluids that are stored, dispensed, and applied in accordance with the manufacturers' instructions can be used. The acceptable fluids have undergone laboratory testing to quantify their protection and to confirm aerodynamic acceptability.

Proper fluid coverage is absolutely essential for proper fluid performance. It is imperative that the personnel applying the fluid are properly trained and that a consistent fluid application technique is utilized.

For more information on the guidelines for aircraft in ground icing conditions, you can refer to TP 14052 at the following link: <https://www.tc.gc.ca/eng/civilaviation/publications/tp14052-menu-314.htm>. You will find information on application methods, liquid types, and more. △



REGULATIONS AND YOU

RPAS Operations for Traditional Pilots

Justin Miller, Technical Team Lead, Flight Operations, RPAS Task Force, Transport Canada

Remotely piloted aircraft (RPA), otherwise known as drones, have become increasingly popular over the last several years. Advances in technology have made aircraft like these the perfect tool for conducting inspections, taking photographs, and responding to emergencies, but like any change to a system the introduction of remotely piloted aircraft systems (RPAS) to the National Civil Air Transportation System (NCATS) has created new hazards.



To mitigate the hazards associated with the growing number of RPAS operations, Transport Canada developed Part IX of the *Canadian Aviation Regulations (CARS)*, which governs the use of small RPAS less than 25 kilograms (kg) and operated within visual line of sight. The new regulations came into force on June 1, 2019 and created requirements for RPAS operators, including registration (all small RPAS [250 g–25 kg] are required to be registered and marked), pilot certification (all small RPAS pilots are required to write an exam and obtain an operating certificate), and two operating environments, basic and advanced. RPAS less than 250 g do not require registration or a pilot certificate, but they must fly in a way that does not pose a risk to aviation or people on the ground. One fundamental change from other parts of the CARS is the elimination of the distinction between commercial and recreational users—the new drone rules apply to every RPAS pilot regardless of the purpose of their mission.

As pilots, it's our job to manage risk. Remotely piloted aircraft are a new entrant into the National Civil Air Transportation System (NCATS) and have created a new risk: collisions between drones and other aircraft. It's the responsibility of RPAS pilots to remain clear of areas in which traditional aircraft are operated, but pilots of traditional aircraft should understand the operating environment that Part IX of the CARS creates for drone operators so they can plan their flights in a way that further reduces the risks.

Here is a simplified version of the two operating environments:

	Basic Environment	Advanced Environment
Altitude	under 400 feet (ft) AGL	as approved by air traffic control (if within controlled airspace; otherwise, under 400 ft AGL)
Airspace	outside of controlled airspace	within controlled airspace*
Proximity to people	more than 30 m away	more than 5 m away*
Over people	no	yes*
Proximity to airports	more than 3 NM	at or near airports**
Proximity to heliports	more than 1 NM	at or near heliports**
Proximity to uncertified aerodromes	at or near uncertified aerodromes	at or near uncertified aerodromes
Night operations	with appropriate lighting	with appropriate lighting

**The RPAS must meet the appropriate safety assurance profile and the pilot must have permission from NAV CANADA.*

***Advanced operators flying at or near airports and heliports must follow the procedure established for drone operations.*

It's the responsibility of all RPAS pilots, regardless of the operating environment they're in, to keep their drone in control and in sight so that when another aircraft is detected, they'll be able to take immediate action to give way. Avoiding a collision is a shared responsibility of all pilots. To further minimize the risk of a collision, pilots of traditional aircraft should avoid flights below 400 ft AGL in uncontrolled airspace and take additional care to fly standard circuits at uncertified aerodromes because that's where other airspace users are going to expect aircraft to be.

The full integration of visual line of sight drone operations will take some time. There is lots of learning for everyone to do, but this is just the beginning; Transport Canada's RPAS Task Force has been conducting trials with companies across Canada to test beyond visual line of sight (BVLOS) operations with the objective of approving some BVLOS in low-risk environments in the near future.

For more information on drones and drone safety see the Transport Canada drone safety Web site (www.canada.ca/drone-safety). △



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 A1700209—Collision with water

History of the flight

A privately registered Cessna 150J aircraft departed from Brampton-Caledon Airport (CNC3), Ont., at approximately 19:51 for a night visual flight rules (VFR) cross-country training flight to Goderich Airport (CYGD), Ont. Weather was suitable for the flight with light winds, good visibility, and few clouds.

There were 2 pilots on board the aircraft: the owner of the aircraft, who was seated in the left seat, and an instructor, who was seated in the right seat.

After departure, the aircraft climbed to an altitude of 3 000 feet above sea level (ft ASL), where it remained for the cruise portion of the flight. The aircraft's position was recorded on radar until coverage was lost as the aircraft descended into CYGD. The last radar return, at 20:36, showed the aircraft at 1 800 ft ASL, 0.8 nautical miles (NM) east of the airport.

The aircraft was observed flying westbound toward Lake Huron, then in a southeast direction toward the airport, followed by a rapid descent. Tall trees then blocked the aircraft from view, but the sound of the aircraft hitting the water was audible shortly thereafter.

Emergency services were contacted and an extensive search was conducted. The aircraft was located at the bottom of Lake Huron, in 25 ft of water, approximately 0.6 NM from shore. The aircraft was destroyed by the impact forces. Both occupants were fatally injured.

Aircraft and wreckage information

Damage to the aircraft indicated that it struck the water in a steep (nearly vertical) nose-down attitude. The flaps were found in an asymmetric condition: the right wing flap was in the fully retracted (up) position, whereas the left wing flap was extended (down) more than its physical limit of 40°.

The aircraft systems were examined to the degree possible and all flight control surfaces were accounted for. Damage to the propeller was consistent with considerable power being produced at the time of impact.

The instruments were recovered and examined at the Transportation Safety Board (TSB) Engineering Laboratory in Ottawa, Ont. The vertical speed indicator was indicating a rate of descent in excess of 2 000 ft per minute (min). The artificial horizon was tested, and it was determined that it was functional at the time of impact.

Examination of wing flaps and associated components

The wing flaps on the Cessna 150J are electrically driven. The flap actuator assembly is located in the right wing and there are 2 drive pulleys (1 in each wing), which are interconnected by cables. The drive pulleys are

connected to the flaps via push-pull rods. A comprehensive examination of the wing-flap system and associated components was conducted.

The left wing flap sustained damage to the inboard end as a result of the impact. The surfaces of the flap were otherwise undamaged.

The forward section of the left wing inboard aft flap track was fractured (Figure 1). As a result, the left flap inboard aft roller, which is normally positioned inside the associated flap track, was located outside of the broken flap track.

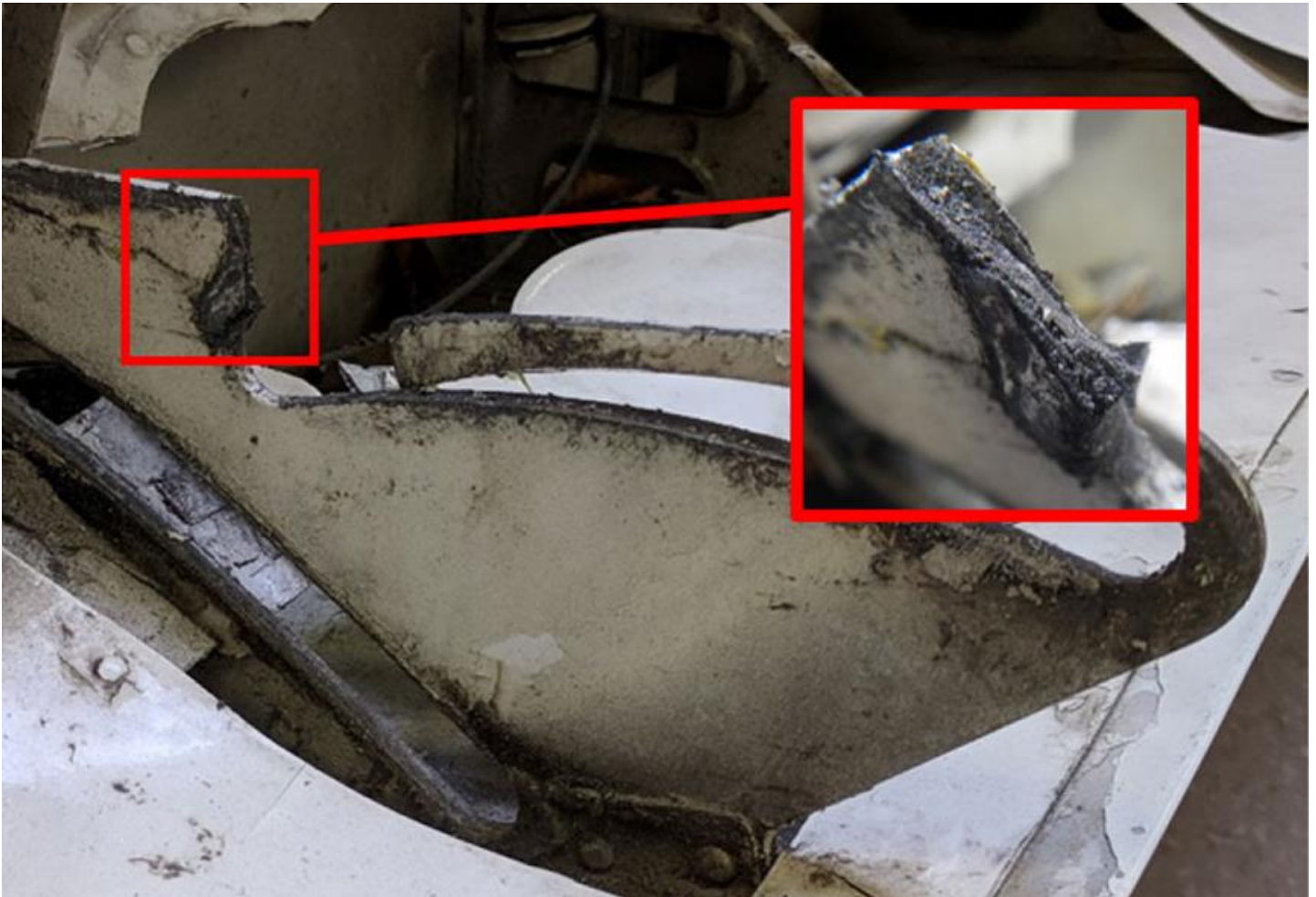


Figure 1. The fractured flap track, with an expanded view of the fractured area

The outboard flap track was still intact and, as a result, it was possible for the left flap to be cocked in position, preventing it from travelling

The fractured surface of the inboard flap track was examined with a scanning electron microscope. It was determined that the damage was caused by corrosion, which gave the appearance of delamination (Figure 2). The corrosion had been present prior to the occurrence; however, when or how it began could not be determined. Corrosion has a detrimental effect on the strength of an aluminum component and can significantly diminish the structural integrity and life expectancy of an aircraft component.

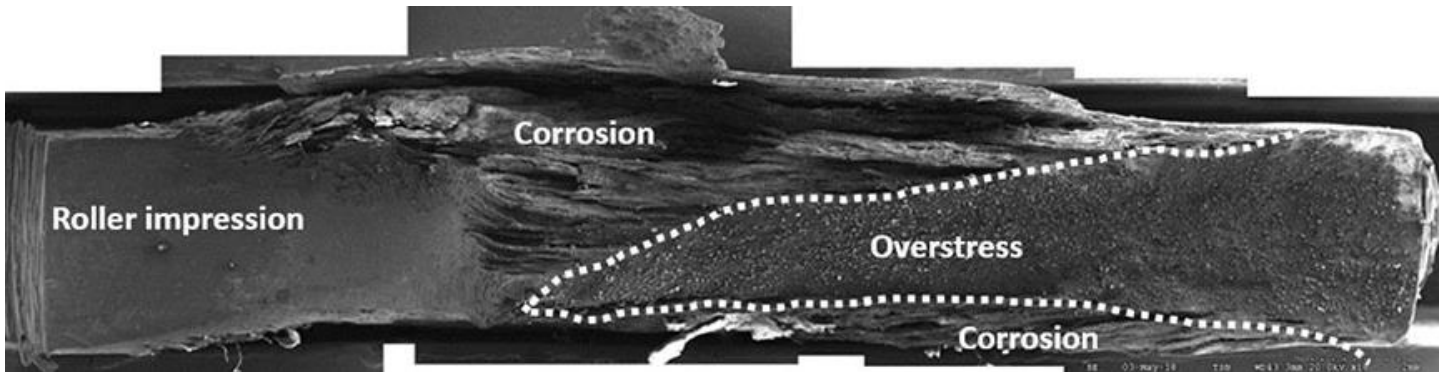


Figure 2. Scanning electron microscope image of the fractured flap track, showing areas of corrosion, overstress, and the flap roller impression on top of corrosion

The fracturing of the non-corroded portion of the flap track was caused by overstress from a combined shear and tension load. However, it could not be determined whether this happened before or during impact.

The arm attached to the flap drive pulley in the left wing was bent almost 90° from its original position as a result of tensile overload (Figure 3). It is possible that this damage occurred during the impact sequence. However, there was no corresponding damage to the left flap, which is connected to the drive pulley arm via a push-pull rod. It is also possible that the bending of the drive pulley arm occurred during operation of the flaps. If the left flap was unable to move, the arm may have been bent from the cable tension produced by the flap actuator.

The examination of the right wing flap, the flap actuator, and other components indicated that the right flap was fully retracted at the time of impact. The flap direct (down) interconnect cable that drives the left flap down in alignment with the right flap was found broken near the right wing root. An examination of the cable indicated that it had broken due to overstress; there was no sign of metal fatigue or corrosion.

It could not be determined with certainty when the cable broke. The force of the impact may have broken the cable; however, it is also possible that, if the left flap was cocked, extreme tension applied during operation of the flaps may have broken the cable.

Aircraft maintenance and inspection

The aircraft was being maintained under the pre-approved maintenance schedule for privately registered aircraft (*Canadian Aviation Regulations [CARs] Standard 625, Appendix B, Part I*). The Standard 625, Appendix B, Part I inspection must be completed at intervals not exceeding 12 months and includes tasks to inspect the aircraft for corrosion.

The last annual inspection of the aircraft was completed in October 2016; the aircraft accumulated 32 hours (hr) of air time since that inspection. No anomalies or modifications related to the flaps were recorded in any of the aircraft log books since the aircraft had been imported into Canada in 1990.

Flight crew

Records indicate that both pilots were certified and qualified for the flight in accordance with existing regulations. There was nothing to indicate that their performance was degraded by physiological factors.

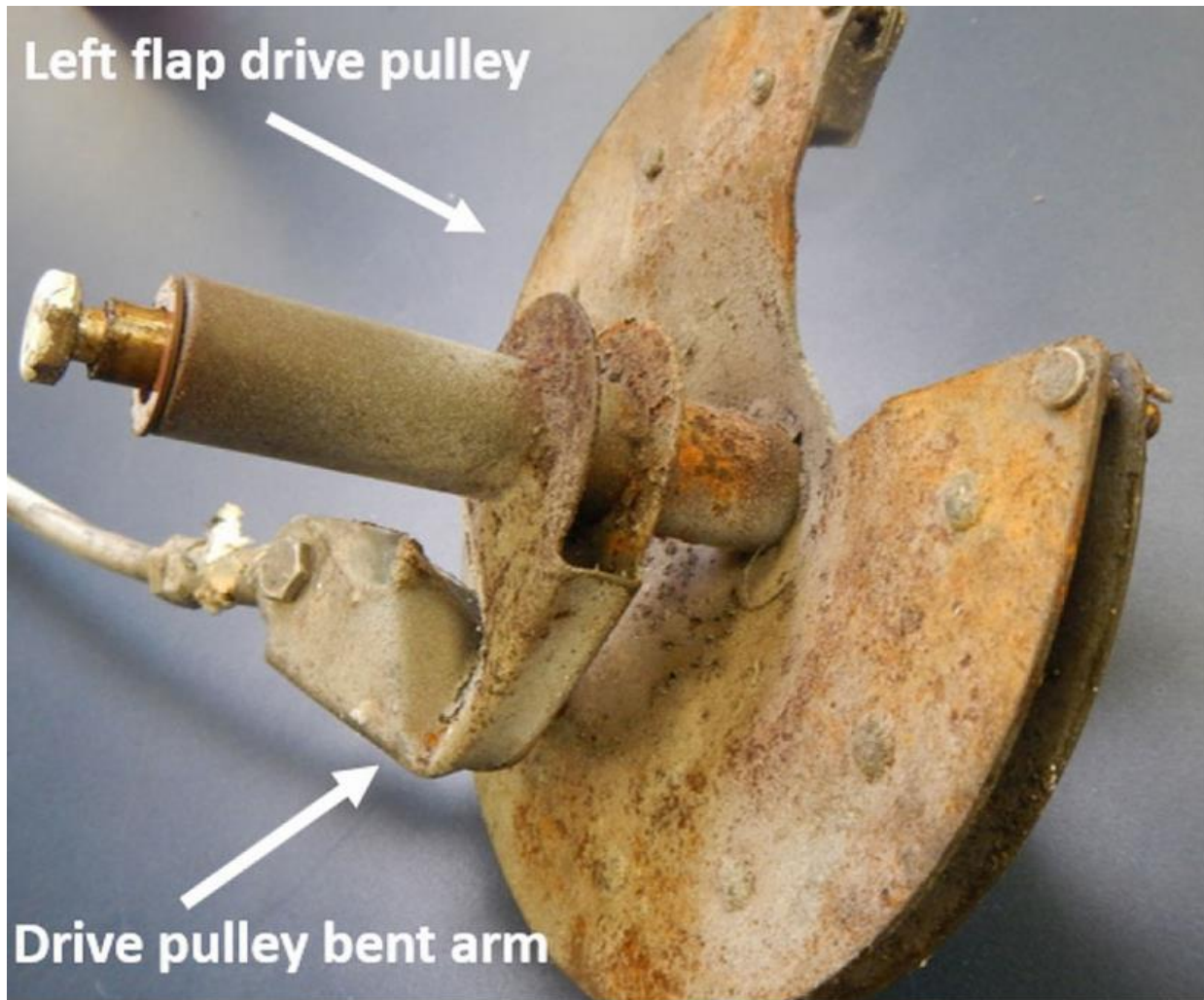


Figure 3. The left flap drive pulley

Night visual flight rules

There are many risks associated with night flying, given the poor visual cues, especially on takeoff and landing. Few or no visual references at night can lead to various illusions that cause spatial disorientation due to the lack of a discernible horizon. Night flying over featureless terrain, such as bodies of water or wooded terrain—called black-hole conditions—is particularly difficult.

The principle behind VFR flight is that the pilot uses visual cues outside the aircraft (e.g., the horizon or ground references) to determine the aircraft's attitude. Therefore, some basic requirements must be met when conducting VFR flight, no matter whether it is during the day or at night.

According to CARs sections 602.114 and 602.115, an aircraft must be "operated with visual reference to the surface," regardless of whether it is operated in controlled or uncontrolled airspace. The CARs define surface as "any ground or water, including the frozen surface thereof."^E However, the CARs do not define "visual reference to the surface," which has been widely interpreted by the industry to mean visual meteorological conditions.

Therefore, a flight conducted over an area away from cultural lighting and where there is inadequate ambient illumination to clearly discern a horizon would not likely meet the requirements for operation under VFR (i.e., to continue flight solely by reference to the surface). Instead, such flights would require pilots to rely on their flight instruments to ensure safe operation of the aircraft.

In this occurrence, the pilots could expect to see lights from the town of Goderich, located approximately 1 NM south of the airport, and some cultural lighting (e.g., houses, traffic on the road) to the east and north of the airport. However, to the west of the airport, over Lake Huron, pilots would not generally see any cultural lighting.

Summary

In this accident, an in-flight flap asymmetry could not be ruled out. The broken flap track was heavily corroded, which weakened its structural integrity and life expectancy. The corrosion had been present for some time, but was not noticed in any of the annual inspections that followed standards set out in the CARs. The manufacturer recommends periodic supplemental corrosion inspections; however, these are not required by regulation, and none were documented as having been completed.

Although both pilots had received some instrument training, neither of them had an instrument rating. Nonetheless, the aircraft was being operated at night in an area with limited visual reference to the surface. As detailed in TSB Recommendation A16-08, the CARs do not clearly define the visual references that are required in these situations.

TSB Final Report A17P0149—Loss of Control and Collision with Terrain

History of the flight

On 1 October 2017, at 15:30, the Robinson R44 Astro helicopter (Figure 1) departed from the Campbell River Airport (CYBL), B.C. during daylight hours, with 2 pilots on board. The purpose of the flight was to allow the pilot in the right-hand seat to demonstrate his ability to conduct slow flight manoeuvres for potential future employment.

At 15:48, after conducting a number of flight exercises about 5 nautical miles (NM) to the northwest of the airport, the flight crew contacted the NAV CANADA flight service station at CYBL and informed them that the helicopter would be returning to the airport infield area west of the threshold of Runway 12 (Figure 2) to conduct hover exercises.

At 15:53, while on final approach to CYBL, control of the helicopter was transferred from the right-seat pilot to the left-seat pilot for the demonstration of a manoeuvre. Shortly after the control transfer, while in close proximity to the ground at slow speed, the helicopter began to spin uncommanded to the right. After several revolutions, it travelled in a northwesterly direction away from the airport. During that time, it attained an altitude of approximately 150 feet (ft) above ground level (AGL) and a groundspeed of approximately 85 knots (kt).



Figure 1. (Source: Willy Dahmen)

At approximately 15:55, the helicopter collided with trees about 1.2 NM northwest of Runway 12. The damage to the helicopter, trees, and terrain indicated that the aircraft had been on a relatively level flight path when it first struck the trees. It had then pitched to a steep nose-down attitude and struck the ground in a vertical profile.

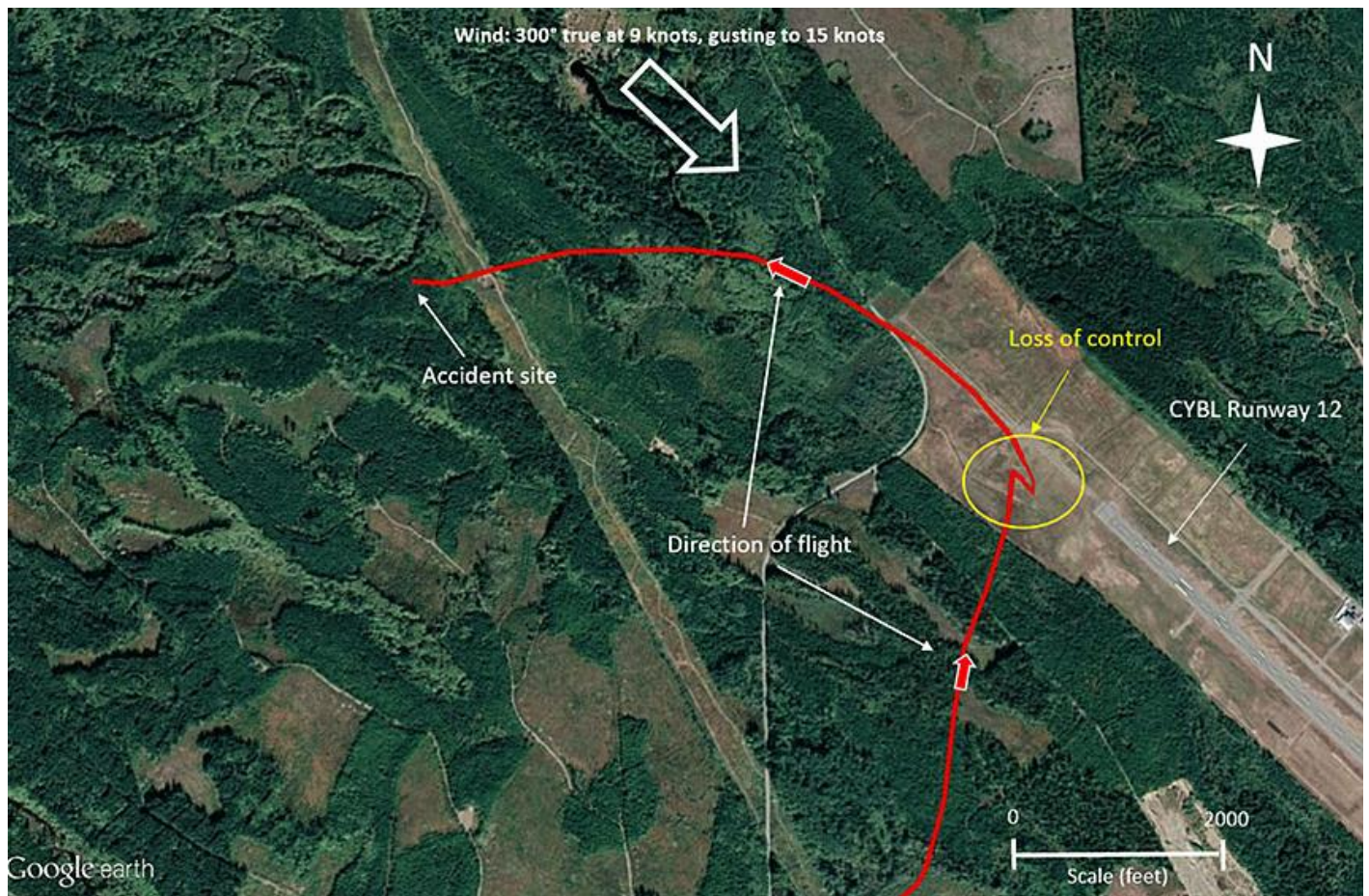


Figure 2. Depiction of the helicopter flight path based on aircraft global positioning system data, showing the approach to CYBL, the area where the loss of control occurred, and the accident site (Source: Google Earth, with TSB annotations)

Analysis of the wreckage indicated that the rotor had been turning during the first impact with the trees and was still turning, though at a slower rate, on final impact with the terrain. After coming to rest, the helicopter's engine continued to run for an undetermined period. The left-seat pilot was fatally injured, and the right-seat pilot was seriously injured. The helicopter was destroyed.

At 16:56, approximately 1 hour (hr) after the accident, the surviving pilot was able to contact 911 on his personal cellphone, and a search was initiated.

At 17:12, an emergency locator transmitter (ELT) signal was detected by the flight service station.

At 18:06, search-and-rescue personnel arrived on scene. The surviving pilot was evacuated from the accident site at 19:48.

Pilot information

Both pilots were certified and qualified for the flight.

Table 1. Personnel information

	Left-seat pilot	Right-seat pilot
Type of licence	Airline transport pilot licence–helicopter	Commercial licence–helicopter
Total flying hrs	3 116	122
Total hrs on type	738	27
Hrs, last 90 days	24.6	0

Meteorological information

The aviation routine weather report (METAR) for CYBL at 15:00 indicated the following: winds 300° true (T) at 9 kt, gusting to 15 kt, varying from 270°T to 340°T; visibility 30 statute miles; few clouds at 4 000 feet AGL; temperature 18 °C; dew point 5 °C; and altimeter setting 30.14 in. of mercury.

Aircraft information

The helicopter was certified, equipped, and maintained in accordance with existing regulations and approved procedures. It had no known deficiencies and was being operated within its weight-and-balance and centre-of-gravity limits.

Technical examination

A comprehensive laboratory examination of the helicopter was performed. Representatives from the helicopter manufacturer (Robinson Helicopters) and engine manufacturer (Lycoming Engines) were present for the examination, in addition to investigators from the TSB and the U.S. National Transportation Safety Board.

Flight control and drivetrain

Flight control continuity was confirmed, and none of the flight control components showed signs of disconnect or premature failure. The main and tail rotor gearboxes, as well as the engine freewheel unit, were examined, and no malfunction or pre-existing anomaly was noted.

Engine

The engine was found to be capable of producing full power and was within normal operating specifications for its type.

Engine-to-main transmission coupling

To transfer engine power to the main transmission, the R44 helicopter employs 4 double-V drive belts running around 2 sheaves—the lower, "driving" sheave and the upper, "driven" sheave.

An examination of the drive belts showed evidence of slippage and wear. One of the belts had a considerable amount of glazing and heat damage, with the web between the belts separated in areas. Another belt was damaged more significantly, with one of the strands burned completely through and the remaining strand distorted and inconsistent. The damage observed on the belts is consistent with the belts having moved from their proper location on the sheave and subsequently being subject to loading either on the sheave or in contact with rotating parts. However, the investigation was unable to determine how much, if any, of the damage occurred prior to the impact with terrain.

Engine-cooling fan

The engine is cooled by means of an engine-cooling fan, which is attached to the engine by a taper-fit between the end of the drive shaft and the socket of the fan. Examination of the tapered surface of the shaft and bearing assembly showed some significant gouging damage. It was also noted that the bolts holding the fan wheel to the socket hub were loose. Further examination revealed that the fan wheel bolt holes were elongated. The investigation was unable to determine if the loose bolts and elongated holes contributed to the occurrence.

Conclusion

In this accident, the left-seat pilot was fatally injured, and the right-seat pilot was seriously injured. Both pilots were certified and qualified for the flight. The weather conditions were not considered a factor in the accident. The aircraft was maintained and certified in accordance with existing regulations.

The cause of the loss of control and collision with terrain could not be determined. As this and other occurrences have demonstrated, when cockpit or data recordings are not available to an investigation, the identification and communication of safety deficiencies to advance transportation safety may be precluded.

New Cannabis Policy



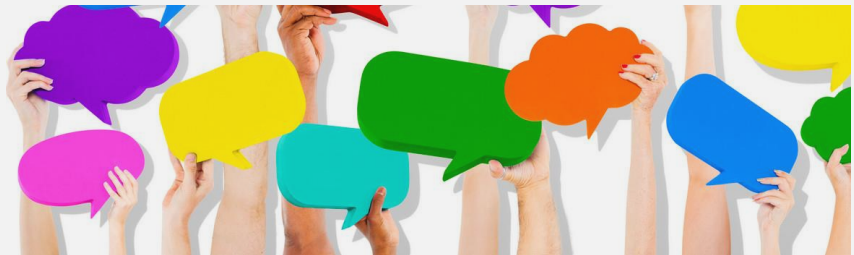
Transport Canada is moving forward with a new policy prohibiting flight crews and flight controllers from consuming cannabis for at least 28 days before being on duty.

The *Canadian Aviation Regulations* (CARs) require fitness for duty and that no person shall act as a crew member of an aircraft, air traffic controller, or flight service specialist while using or under the influence of any drug that impairs the person's faculties to the extent that aviation safety is affected. The change is aligned with the best available science and is consistent with other government departments' approach to legalization of cannabis including the Department of National Defence and the Royal Canadian Mounted Police. The policy does not prevent Canada's air operators from implementing more stringent prohibitions for their employees.

Following the legalization of cannabis in October 2018, the Department undertook extensive policy review and consultation to determine the most effective means of ensuring aviation safety with regard to impairment overall, including cannabis.

General Aviation Safety Survey

Do you enjoy flying for fun?
Transport Canada is looking for feedback from you, and other pilots across Canada about how you operate and implement safe flying practices. This will help us better understand the challenges you face and how we can work to help you fly safely.



This **survey** will take 10 minutes of your time. All responses are anonymous, and data will be grouped together for reporting purposes.

2019-2020 Flight Crew Recency Requirements

Self-Paced Study Program

Refer to paragraph 421.05(2)(d) of the *Canadian Aviation Regulations* (CARs).

Completion of this questionnaire satisfies the 24-month recurrent training program requirements of CAR 401.05(2)(a). It is to be retained by the pilot.

All pilots are to answer questions 1 to 44. In addition:

- aeroplane pilots are to answer questions 45 to 52;
- ultra-light aeroplane pilots are to answer questions 53 to 56;
- helicopter pilots are to answer questions 57 to 58;
- balloon pilots are to answer questions 59;
- glider pilots are to answer questions 60 to 63; and
- gyroplane pilots are to answer questions 64 to 65.

References are listed after of each question. Many answers may be found in the *Transport Canada Aeronautical Information Manual* (TC AIM). Other answers can be found in the *AIP Canada* (ICAO). Amendments to these publications may result in changes to answers and/or references. The TC AIM is available online at: <https://www.tc.gc.ca/eng/civilaviation/publications/tp14371-menu-3092.htm>.

The *AIP Canada* (ICAO) is available online at: <http://www.navcanada.ca/EN/products-and-services/Pages/AIP.aspx>.

The *Canadian Aviation Regulations* (CARs) are available online at: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-433/FullText.html>

GEN–General

1. State the difference between the terms “should” and “shall” as defined in the *Transport Canada Aeronautical Information Manual* (TC AIM) GEN 1.1.3.

a) The term “should” as used in the AIM means that pilots are

b) The term “shall” as used in the AIM means that

Reference: GEN 1.1.3 Transport Canada Aeronautical Information Manual (TC AIM)

AGA–Aerodromes

2. An aerodrome, airport, or heliport whose use can be limited, as listed in the *Canada Flight Supplement* (CFS) or *Canada Water Aerodrome Supplement* (CWAS), is called a private-use aerodrome. This can include:

(a) _____

(b) _____

Reference: TC AIM AGA 2.2, CFS Section A58

COM–Communications

3. The removal of the audio identification from non-directional beacons (NDB), VHF omnidirectional ranges (VOR), distance measuring equipment (DME), or instrument landing systems (ILS) warns pilots that the facility may be _____ even though _____.
Reference: TC AIM COM 4.2
4. Prior to using any navigation aid (NAVAID), pilots should check _____ for information on NAVAID outages.
Reference: TC AIM COM 4.2
5. After all normal communications failure procedures have been followed, is it permissible to contact an air traffic service (ATS) unit by cellular phone? _____
Reference: TC AIM COM 1.12.2 c)
6. Pilots are encouraged to use the letter “_____” on VFR flight plans when using any type of global navigation satellite system (GNSS) to assist VFR navigation.
Reference: RAC 3.16.4 (Table 3.9), CFS C4 Planning
7. If a VFR GPS with a current database is used on board an aircraft, do aeronautical charts still have to be carried on board? _____
Reference: COM 5.11, CAR 602.59

MET–Meteorology

METAR CYXE 292000Z **CCB** 09015G25KT 3/4SM R09/4000FT/D –RA BR BKN008 0VC040 21/19 A2992
WS RWY 09 RMK SF5NS3 VIS NW 3/8 SLP134 DENSITY ALTITUDE 2500FT

8. What does “**CCB**” mean? _____
Reference: TC AIM MET 8.3
9. What does “**WS**” mean? _____
Reference: TC AIM MET 8.3
10. What is the lowest ceiling? _____
Reference: TC AIM MET 8.3

RAC–Rules of the Air and Air Traffic Services

11. What is the new private advisory station (PAS) frequency that replaces 122.75 MHz? _____
*Reference: Amendment of Change and RAC 1.2.1 UNICOM, which states:
Frequency 122.75 was replaced with 122.35 MHz.*
12. A minimum fuel advisory _____ imply an air traffic control (ATC) traffic priority;
Reference: TC AIM RAC 1.8.3
13. Traffic priority is given to a pilot who declares an emergency for fuel by broadcasting -

Reference: TC AIM RAC 1.8.3

14. Does declaring a MAYDAY relieve you of complying with the ATC instruction issued to you prior you declaring the MAYDAY?

Reference: TC AIM RAC 1.7 and RIC-21—Study Guide for the Restricted Operator Certificate with Aeronautical Qualification (ROC-A) <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01397.html>

15. No person may conduct aerial activities within active Class F restricted airspace, unless _____ has been obtained from the _____.

Reference: TC AIM RAC 2.8.6

16. During **En route** flight in the altimeter setting region, the altimeter shall be set to the _____ altimeter setting of the _____ along the route of flight.

Reference: TC AIM RAC 2.10

17. The standard summer weights (including personal clothing and carry-on baggage) of a male and female (over 12 years) are, respectively, _____ and _____.

Reference: TC AIM RAC 3.5.7 Table 3-1

18. You are flying an aircraft configured for up to five passenger seats. What is the recommended weight you would use for computing your weight and balance for the aircraft?

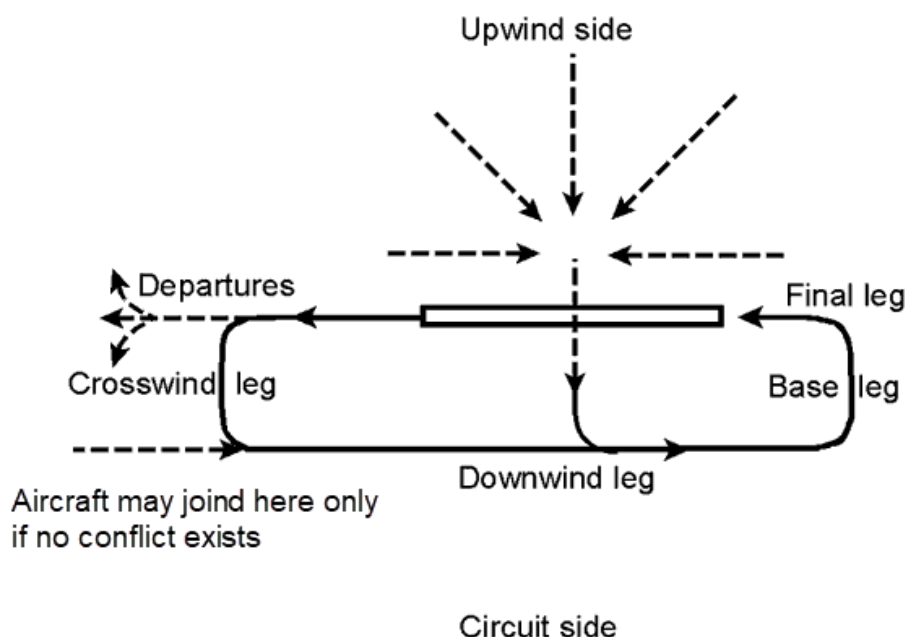
Reference: TC AIM RAC 3.5.7

19. CAR 602.73 states that no pilot-in-command shall operate an aircraft in VFR flight unless a VFR flight plan or a VFR flight itinerary has been filed, except where the flight is conducted within ___NM of the departure aerodrome.

Reference: TC AIM RAC 3.6

20. You are joining the circuit straight in on the downwind for a left pattern at an uncontrolled airport and you hear another pilot joining overhead crosswind but cannot see this pilot. What would you do?

Reference: TC AIM RAC 4.5.2 and Figure 4.6 Standard Left-Hand Circuit Pattern



21. The aerodrome traffic frequency (ATF) will normally be the frequency of universal communications (UNICOM) where one exists or _____ MHz where a UNICOM does not.

Reference: TC AIM RAC 4.5.5

22. No person shall operate an aircraft at a distance of less than _____ ft from a person, vessel, vehicle or structure when not over a built-up area or over an open-air assembly and permitted under CAR 602.14?

Reference: CAR 602.14

23. What should you include in a VFR position report?

Reference: TC AIM RAC 5.1

SAR–Search & Rescue

24. If unable to establish communication immediately with an ATC unit, a pilot wishing to alert ATC to an emergency situation should adjust the transponder to reply on code _____. Communication with ATC should be established as soon as possible thereafter.

Reference: TC AIM SAR 4.4

25. For purposes of search and rescue, the symbol X on the ground indicates _____.

Reference: TC AIM SAR 4.8

26. Flying below the maximum elevation figure (MEF) may place the aircraft in jeopardy of _____?

Reference: Legend of VFR navigation chart (VNC)

MAP–Aeronautical Charts & Publications

27. Which organization has been delegated the responsibility of collecting, evaluating, and disseminating aeronautical information in the *AIP Canada (ICAO)*, *Canada Flight Supplement (CFS)*, *Canada Water Aerodrome Supplement (CWAS)* and *Canada Aeronautical Charts*? _____

Reference: TC AIM MAP Section 1.0 Page 345

28. Where will you find the regulations and information regarding the airspace surrounding an area of forest fire? (Select all that apply.)

- a. CARs 602.14 and CARs 602.15
- b. CARS 601.15 and CARs 601.16
- c. Aerodrome NOTAM File
- d. Appropriate FIR NOTAM File

Reference: TC AIM MAP Note in paragraph 3.6.10(b), Page 358

29. Aerodrome NOTAMs will cover activities of particular interest to a specific aerodrome within _____ NM and such activities occurring beyond that distance will be reported in the appropriate _____ NOTAM file.

Reference: TC AIM MAP Paragraph 3.6.10(c) Page 358

LRA–Licensing, Registration & Airworthiness

30. The aviation document booklet (ADB) is valid for _____ years. However, a licence holder with “operational” language proficiency must be re-tested every _____ years and he or she will continue to be issued ADBs valid for up to _____ years.

Reference: TC AIM LRA 1.2

31. Certificates of airworthiness are issued for aircraft that fully comply with _____.

Reference: TC AIM LRA 5.3.2

32. A Canadian medical certificate for a private pilot licence is valid for _____ months if the pilot is under the age of 40, and for _____ months if the pilot is 40 or older.

Reference: LRA 2.2

33. In accordance with CAR 401.08, every applicant for, and every holder of, a flight crew permit, licence, or rating shall maintain a _____.

Reference: LRA 1.5, CAR 401.08

34. According to recency requirements of CAR 401.05, if pilots wish to act as pilot-in-command (PIC) or co-pilot of an aircraft, they must meet both the _____ and the _____ recency requirements. If they wish to carry passengers, they must also meet the _____ requirement.

Reference: LRA 1.12, CAR 401.05(2)

35. In addition to the particulars of any defect in any part of the aircraft or its equipment that becomes apparent during flight operations, pilots must also enter the particulars of any _____ to which the aircraft has been subjected into the aircraft’s records.

Reference: CAR 605.94; TC AIM-LRA 5.6.1

AIR–Airmanship

36. It is strongly recommended that owners equip their aircraft with the manufacturer’s recommended _____. The _____ should be arranged in an _____ sequence having regard to the _____ layout.

Reference: TC AIM AIR 1.2

37. Winds that are deflected around large single mountain peaks or through the _____ of mountain ranges tend to _____ speed which results in a local _____ of pressure (Bernoulli’s Principle). A pressure altimeter within such an airflow would be subject to an _____ error in altitude.

Reference: TC AIM AIR 1.5.6

38. The “drop” in pressure associated with increased in wind speed and altimeter errors caused by non-standard temperature may result in an altimeter overreading by as much as _____ feet?

Reference: TC AIM AIR 1.5.8

AIP Canada (ICAO) Aeronautical Information Circular (AIC)

39. What is the title of *AIP Canada (ICAO) Aeronautical Information Circular (AIC) 19/19*?

Reference: Part 5–Aeronautical Information Circulars (AIC): <http://www.navcanada.ca/EN/products-and-services/Pages/AIP-part-5-current.aspx>

40. What is the title of *AIP Canada (ICAO) Supplement 20/19*?

Reference: AIP Canada (ICAO) Supplements: http://www.navcanada.ca/EN/products-and-services/Documents/AIP/Current/part_4_aip_sup/4aip_sup_eng.pdf#top

AIP CANADA (ICAO) SUPPLEMENT 20/19

**QUEBEC REGION
RESTRICTIONS TO AIRSPACE OVER
10 PROVINCIAL DETENTION FACILITIES**

CFS

41. In the Public Facilities (PF), what does C 6 mean? _____

Reference: CFS General Section A.

42. To enter Class C Airspace a VFR flight requires a _____ and a _____ transponder incorporating an automatic pressure altitude device.

Reference: CFS Section C Planning

43. Is the UNICOM frequency at an aerodrome always the frequency to turn the aircraft radio control of aerodrome lighting (ARCAL) runway lights on? (Yes or No). Where would you find the ARCAL lighting frequencies to activate the runway lights at an aerodrome? _____

Note: Aerodromes may have a different frequency for turning runway lights on. For example: CFS, SMITHS FALLS-MONTAGUE (CYSH) Aerodrome COMM/ATF Unicom is 122.7, while LIGHTING ARCAL is 122.9 Type K.

RWY DATA RCR	Rwy 06(064°)/24(244°) 3998x75 asphalt Rwy 24 up 0.7% first third Opr Ltd win maint
LIGHTING	06-(TE ME) AP, 24-(TE ME) AP ARCAL-122.9 type K
COMM ATF	UNICOM ltd hrs O/T tfc 122.7 5NM 3400 ASL excluding the airspace that lies within Ottawa TCA class C airspace.

Navigation

44. You are navigating in an area where both a VNC and VFR terminal area (VTA) chart, depicted below, exist. Where would you find the minimum altitude to overfly restricted area CYR 531 and CYR 508? What are the minimum altitudes?

Reference: *VTA Chart and Designated Airspace Handbook (TP 1820E)* on the Nav Canada Web site:
http://www.navcanada.ca/EN/products-and-services/Documents/DAH_Current_EN.pdf

Figure A – Toronto VNC

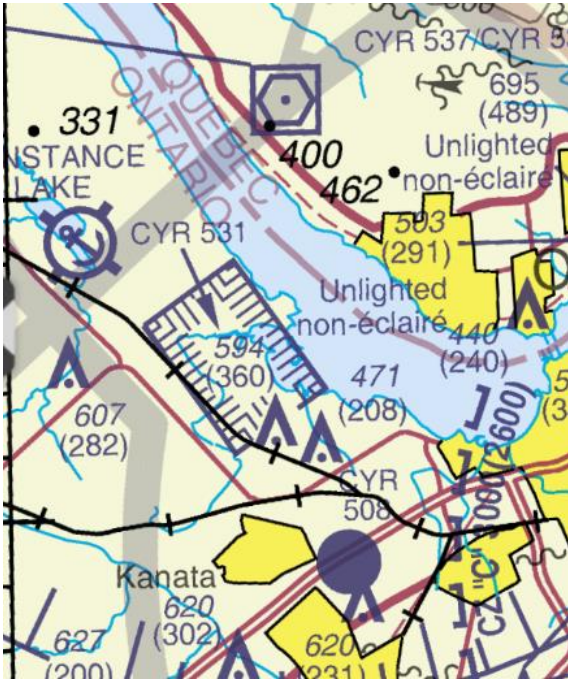


Figure B – Ottawa VTA



Aeroplane-specific questions:

45. You experience engine failure in cruise flight at 2 000 ft. What are the initial actions in the forced approach?

1. _____,
2. _____,
3. _____.

Quote your Pilot Operating Handbook/Aircraft Flight Manual (POH/AFM) emergency checklist items as time permits.

Reference: FTM-EX 22 Force Approaches, Pilot Operating Handbook/Aircraft Flight Manual (POH/AFM)

46. What is the maximum load factor for your aeroplane? _____

Reference: POH/AFM

47. On a VFR flight, if an approach to landing is not stabilized by _____ ft AGL, you should _____.

Reference: TP 13723—Flight Test Guide - Private Pilot Licence—Aeroplane—March 2019, TP 12475—Flight Test Guide—Recreational Pilot Permit—Aeroplane—March 2019

48. On a go-around, why might there be a tendency for the nose to pitch up abruptly? How do you control this tendency?

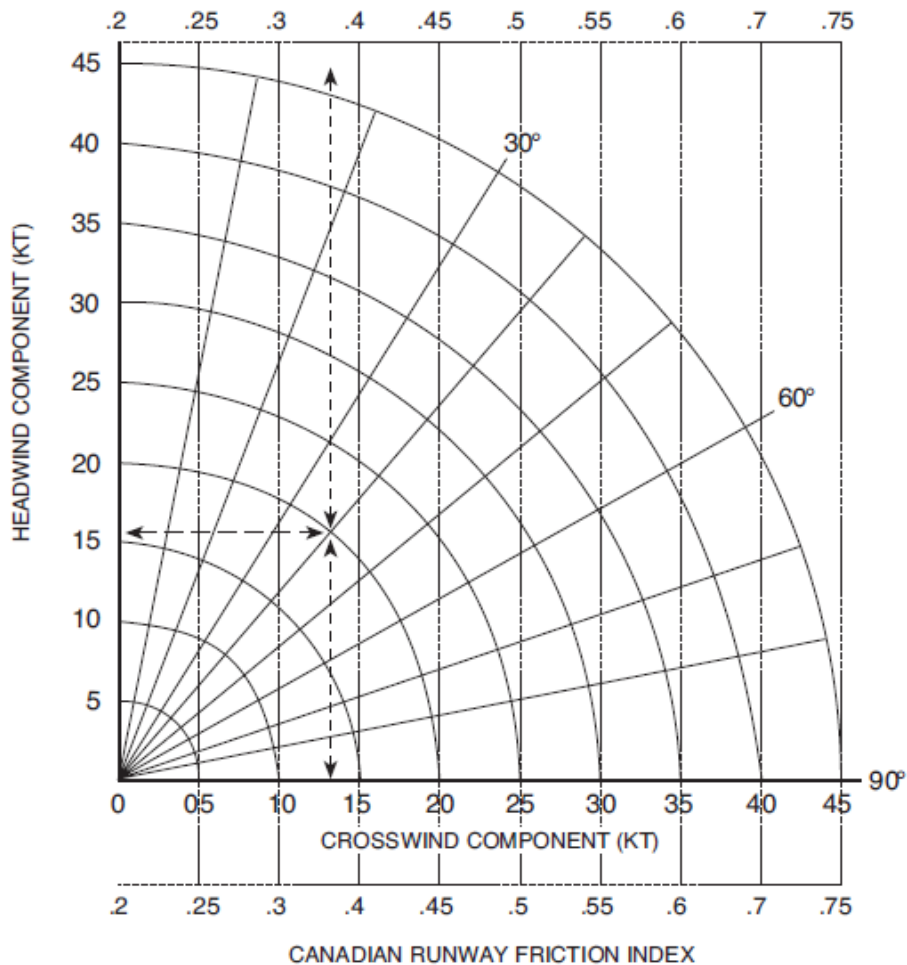
Reference: FTM Exercise 5 Attitudes and Movements & Exercise 18 Approach and Landing

49. What is the crosswind component of a wind 30° off the runway at 20 kts? _____

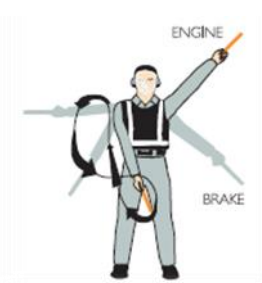
Reference: TC AIM AIR 1.6.6 Using Figure 1.1 Crosswind Li

50. What would be the crosswind limit when the CFRI index is .25? _____

Reference: TC AIM AIR 1.6.6 Using Figure 1. 1 Crosswind Limits for CFRI char



51. What does this marshalled signal of moving the right-hand wand in a “fanning” motion from shoulder to knee, while at the same time pointing with the left-hand wand to a particular area, mean?



Reference: TC AIM AIR 1.8 Marshalling signals

52. In an aeroplane in a stable climbing turn, the _____ wing will stall first. In a stable descending turn, the _____ wing will stall first.

Reference: FTM Stalls Exercise 12

Ultra-light-specific questions:

53. What is the definition of a basic ultra-light aeroplane?

Reference: CAR 101

54. What is the licensing requirement to carry a passenger in an ultra-light?

Reference: CAR 401.21

55. What is the medical requirement for the passenger-carrying rating-ultra-light aeroplane?

Reference: CAR standard 421.55

56. What is an advanced ultra-light aeroplane?

Reference: CAR 101.01

Helicopter-specific questions:

57. TSB findings in the aviation investigation report A18Q0016 state: “It is highly likely that the pilot _____ of the helicopter as a result of _____.”

Reference: Air Transportation Safety Investigation Report A18Q0016 / 3.0 Findings

<http://www.bst-tsb.gc.ca/eng/enquetes-investigations/aviation/2018/a18q0016/a18q0016.html>

58. Robinson Helicopter Company Safety Notice SN-44 states: “Carrying passengers is an _____ for the pilot in command. Passengers have placed their trust entirely in the hands of the pilot and should be _____ of the risks associated with the flight.

Reference: Robinson Helicopter Company Safety Notice SN-44

https://robinsonheli.com/wp-content/uploads/2017/06/rhc_sn44.pdf

Balloon-specific questions:

59. To launch a 120-foot-high balloon within a built-up area, the launch site shall have a diameter of no less than _____ft.

Reference: CAR 602.13

Glider-specific questions:

60. When two gliders are in the same thermal, whose responsibility is collision avoidance?

Reference: Soar and Learn to fly gliders Pg. 60

61. If the tow pilot releases the tow rope below 300 ft AGL, where should you normally plan to land?

Reference: Soar & Learn to Fly Glider (2011), Page 75. Link at <https://www.sac.ca/index.php/en/documents-en/safety-and-training/resources-for-new-pilots/447-soar-new-ed-9-aug-2011-optim/file>

62. If you lose sight of the tow-plane, or if you are diverging upwards rapidly above the normal tow position, you should _____.

Reference: Glider Flying Handbook FAA-H-8083-13A Chapter 7-9. Link at: https://www.faa.gov/regulations_policies/handbooks_manuals/aircraft/glider_handbook/

63. What should you do when slack in the towline is excessive, or beyond pilot's capability to safely recover? _____ (Use Glider References)

Reference: Glider Flying Handbook FAA-H-8083-13A Chapter 8-13 link: https://www.faa.gov/regulations_policies/handbooks_manuals/aircraft/glider_handbook/media/gfh_ch08.pdf

Gyroplane-specific questions

64. If a gyroplane took off with its centre of gravity aft of the longitudinal limit, the aircraft may not be able to establish level flight, even with maximum _____ cyclic.

Reference: Use gyroplane references

65. When descending in autorotation, if the rotor RPM decreases, what action other than rounding out your descent would increase your rotor RPM? _____.

Reference: Use gyroplane references

Signature: _____

Date: _____

Answers can be found on the next page.

Answers to the 2019-2020 Flight Crew Recency Requirements Self-Paced Study Program

1. (a) encouraged to conform with the applicable procedure;
(b) the applicable procedure is mandatory because it is supported by regulations.
2. PPR: The aerodrome operator's permission is required prior to use. All military aerodromes require PPR for civilian aircraft.
PN: The aerodrome operator owner or operator is to be notified prior to use so that current information on the aerodrome may be provided.
3. unreliable, it may still transmit a navigation signal.
4. NOTAMs
5. Yes
6. G
7. Yes
8. Means the second correction
9. WS means wind shear
10. 800 feet (ft) above ground level (AGL)
11. 122.35
12. does not
13. MAYDAY MAYDAY MAYDAY FUEL
14. Yes, MAYDAY indicates the pilot is "threatened by grave and imminent danger and requires immediate assistance". If unable to comply with the clearance, pilots should immediately inform ATC since the controller will understand the acknowledgement of the clearance as indicating acceptance.
15. permission; user agency
16. current; nearest station
17. Male 200 lbs. or 90.7 kg and Female 165 lbs. or 74.8 kg.
18. Recommended using actual weight
19. 25
20. Make appropriate radio call. Search for your traffic. Ascertain there is no conflict then continue joining the circuit. If a conflict exists, you may consider widening/narrowing and/or increasing/decreasing your airspeed to sequence.
21. 123.2
22. 500 ft
23. The following reporting format is recommended:
 1. Identification
 2. Position
 3. Time over
 4. Altitude
 5. VFR / VFR-OTT
 6. Destination
24. 7700
25. Require medical assistance
26. hitting an obstacle or terrain
27. NAV CANADA
28. CARS 601.15 and CARs 601.16 ; d. Appropriate FIR NOTAM File
29. 25; FIR
30. 10, five, five
31. all standards of airworthiness applicable to the category.
32. 60; 24
33. personal log
34. five-year, two-year, six-month
35. abnormal occurrence (Example: a hard landing)
36. checklists; checklists; orderly; cockpit
37. valleys; increase; decrease; increased

- 38. 3 000 ft
- 39. Transition to the International Civil Aviation Organization (ICAO) NOTAM Format for All Canadian NOTAMs
- 40. Quebec Region Restrictions to Airspace over 10 Provincial Detention Facilities
- 41. Car rental within 5 NM of aerodrome
- 42. clearance, functioning
- 43. No; CFS General Section LIGHTING.
- 44. CYR 508 Surface to 1400 feet, CYR531 Surface to 1000 feet. Refer to VTA chart and/or Designated Airspace Handbook (TP 1820E) which states:

CYR531 CONNAUGHT RANGE, ON

The airspace within the area bounded by a line beginning at:

- N45°24'00.00" W075°55'00.00" to
- N45°22'00.00" W075°53'00.00" to
- N45°21'00.00" W075°55'00.00" to
- N45°23'00.00" W075°57'00.00" to
- N45°24'00.00" W075°55'00.00" point of beginning

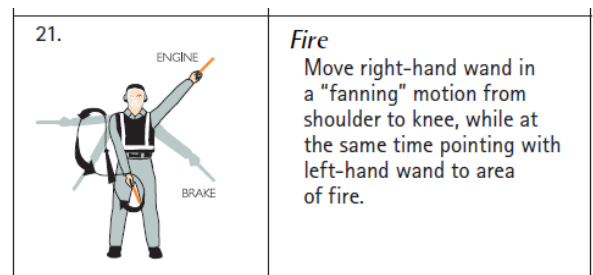
Designated Altitude - Surface to 1000'
 Time of Designation - Cont
 User/Controlling Agency Connaught Range Control (613) 991-5740 (CSN) 991-5740
 Operating Procedures - No person shall operate an aircraft within the area described unless the flight has been authorized by the User/Controlling Agency.

CYR508 Hazeldean, ON

The airspace within the area are bounded by a circle of:
 0.4 mile radius centered on
 N45°19'18.00" W075°52'32.00"

Designated - Surface to 1400'
 Altitude - Cont daylight
 Time of Designation - Natural Resources Canada, CANMET
 User/Condition Facility (613) 995-1275
 Agency
 Operating - No person shall
 Procedures operate an aircraft within the area described unless the flight has been authorized by the User/Controlling Agency

- 45.
 1. Control aircraft-establish a glide.
 2. Choose your landing area.
 3. Plan your approach. Refer to the POH/AFM for specific details as time permits.
- 46. See your POH/AFM
- 47. 200 ft; go-around
- 48. sudden application of power; use appropriate elevator and control attitude.
- 49. 10 kts of crosswind.
- 50. Max. crosswind limit of 5 kts.
- 51.



- 52. high (outside), low (inside)
- 53. basic ultra-light aeroplane means an aeroplane having no more than two seats, designed and manufactured to have
 - a) maximum take-off weight not exceeding 544 kg, and
 - b) a stall speed in the landing configuration (V_{so}) of 39 kts

(45 mph) indicated airspeed, or less, at the maximum take-off weight.

54. 401.21(b) and (c)

401.21 The holder of a pilot permit—ultra-light aeroplane may, under day VFR,

- a) act as pilot-in-command of an ultra-light aeroplane with no other person on board;
- b) act as pilot-in-command of an ultra-light aeroplane with one other person on board if
 - i. the holder's permit is endorsed with a passenger-carrying rating,
 - ii. the ultra-light aeroplane has no restrictions against carrying another person, and
 - iii. the holder has completed training, including dual instruction and solo flight, on the class of ultra-light aeroplane being operated;
- c) act as pilot-in-command of an ultra-light aeroplane with one other person on board if the other person is a holder of a pilot licence or permit, other than a student pilot permit, that allows them to act as pilot-in-command of an ultra-light aeroplane.

55. 421.55 Requirements

1) Medical Fitness

- a) An applicant holds a Category 4 Medical Certificate valid for a Pilot Permit-Ultra-light Aeroplane.

- b) An applicant who meets the medical conditions specified on the Civil Aviation Medical Declaration and has signed it is considered to have met the Category 4 Medical Standards, providing a physician licensed to practice medicine in Canada has signed Part C of the declaration.
- c) The medical validity period for the permit holder under 40 years of age is 60 months and for a permit holder 40 years of age or over, is 24 months.
- d) The permit is maintained by a valid Category 1, 3, or 4 Medical Certificate.

56. advanced ultra-light aeroplane means an aeroplane that has a type design that is in compliance with the standards specified in the manual entitled *Design Standards for Advanced Ultra-light Aeroplanes* which states: https://upac.ca/wp-content/uploads/2015/10/2004_LAMAC_DS-10141_ULTRALIGHT_DESIGN_STANDARD.pdf

An advanced ultra-light aeroplane is an aeroplane which:

- Is propeller driven;
- Is designed to carry a maximum of two persons, including the pilot;
- Has a maximum take-off mass, M_{TOmax} or W_{TOmax} , of:
 1. 350 kg (770 lb) for a single place aeroplane, or
 2. 560.0 kg (1232 lb) for a two place aeroplane;
- A maximum stalling speed in the landing configuration, V_{s0} , at manufacturer's recommended maximum take-off mass (weight) not exceeding 72 km/h (20 m/s, 45 mph) (IAS); and

- Is limited to non-aerobatic operations.
Non-aerobatic operations include:
 1. manoeuvres incident to normal flying;
 2. stalls and spins (if approved for type);
 3. lazy eights, chandelles; and
 4. steep turns, in which the angle of bank is not more than 60°.

57. lost control; spatial disorientation

58. additional responsibility; advised

59. 150 (120 plus 25%)

60. Both pilots' responsibility

61. Straight ahead

62. release the tow rope immediately

63. Immediately release from the aerotow.

64. Forward

65. Turning