



Aviation Safety

Letter

Learn from the mistakes of others; you'll not live long enough to make them all yourself . . . Issue 1/2003

Just a Bit of Slush...

by William Ives, Technical Inspector, Aerodrome Safety, Transport Canada

The most important obligation that all pilots have is for the safety of their passengers during all phases of flight. Like clockwork, we again find ourselves having to deal with periods of rapidly changing winter weather and runway conditions that most people within the Canadian aviation industry have come to dread.

Weather and its direct impact on aircraft movement areas is one of the most significant factors in aviation safety. Historically, weather and weather-related phenomena have made up a major part of the significant percentage of aviation accidents. If you were to conduct a review of all fatal aviation accidents in North America over the past ten years, you would discover that approximately one-third, or 33%, of such accidents were directly attributable to the prevailing weather conditions at or near the airport. Mother Nature is an extremely dynamic force and still to date is very unpredictable. Winter hazards cause everyone in the aviation community to experience significant safety concerns relating to low ceilings, airframe-icing conditions, poor visibility, and runway contamination by ice, snow, water and in particular slush.

Flying in Canada during the winter months requires that all airport operators, air traffic control units, airline dispatch agencies and pilots in particular, pay extra attention not only to the most current weather conditions at departure, destination, and alternate airports, but to the most current Airport Movement Surface Condition Reports (AMSCRs) for each. Principally, under changing severe weather conditions it is of the utmost importance for pilots to receive the most accurate, complete and current runway surface condition (RSC) and Canadian Runway Friction Index (CRFI) reports from the appropriate



Just a bit of slush can seriously affect aircraft control.

air traffic service units, and/or NOTAMs, (in some cases, from information provided by airline dispatchers).

It is well known that snow, ice and specifically slush on aircraft movement surfaces can degrade the coefficient of friction and reduce aircraft braking and directional control. With this in mind, a large part of any airport's annual operational and maintenance budget is spent directly in dealing with the seasonal impact of winter weather conditions on airport manoeuvring areas.

Of all runway contaminants, the effects of slush has been, and continues to be, greatly underestimated by airport operators, air traffic control units, airlines and pilots as witnessed every winter by the number of runway excursions being reported. Slush means partly melted snow or ice, with a high water content, from which water can readily flow. It usually occurs when the outside temperature hovers around the freezing mark. Departing and landing on slush-covered runways continues to be a considerable test of pilot knowledge, ability and skills. Snow and ice control operations greatly improve the friction levels

on such contaminated runways and once complete, friction testing to obtain CRFI values can be successfully conducted. Timeliness of RSC reports, along with associated CRFI, is but a “snap-shot of a single moment” thus subject to rapid deterioration as time goes on. It must be fully understood by all parties in the pilot’s decision-making tree (go/no-go decision-making) that the actual effective time of any RSC or CRFI report should and must be of paramount concern.

To date, Transport Canada, in partnership with the National Research Council Canada (NRC), the Federal Aviation Administration (FAA), the National Aeronautics and Space Administration (NASA) along with participation from the European aviation community as well as manufacturers of both aircraft and friction testing equipment, has undertaken an extensive research program. This multi-year effort is known as the Joint Winter Runway Friction Measurement Program. To date, (1996-2001) data on over 400 test runs with aircraft and more than 15 000 runs with 44 ground friction measuring vehicles have been collected on various winter contaminated surfaces.

Guidance information, respecting the CRFI and the *Recommended Landing Distance Tables*, currently published in the *Canada Flight Supplement* (CFS) and the *A.I.P. Canada* has been developed for pilot use and is compiled for certain winter contaminants based on actual field test results from instrumented test aircraft and the corresponding CRFI data.

At this time of the year, all pilots, airport operators, airlines, and air traffic service units are strongly urged to refresh their knowledge of winter maintenance operations and reporting procedures in a concerted effort to reassess their own decision-making awareness. This can be accomplished by paying particular attention to the information published in the *A.I.P. Canada*, AIR Section, Part 1.6, dealing with CRFI and AMSCR prior to

encountering poor winter weather and runway conditions.

Canadian airports have made vast improvements over the years, from providing state-of-the-art standards in equipment to new techniques for dealing with winter runway contaminants such as snow, ice and slush. Airport operators are also keenly aware of their responsibilities for the provision of effective and safe facilities under current *Canadian Aviation Regulations* (CARs), with attention to the timeliness, completeness and accuracy of information gathered and reported via AFTN/ADIS and NOTAM. Current and accurate RSC reports can be of significant benefit to pilots in their decision-making (go/no go) process only if they allow the time required for maintenance crews to properly deal with any contaminants and report remaining conditions in a satisfactory manner prior to any aircraft movement.

Finally, the responsibility for the decision to take off or land, based on information supplied from various parties and knowledge of the aircraft, ultimately rests with the pilots. Obviously, these decisions can be critical and pilot requirements for effective and consistent evaluation of runway conditions, along with a reliable means for relating those conditions to the aircraft’s capabilities, cannot be overstressed. Inconsistent, or untimely reporting of runway conditions, such as the presence of slush on the active runway, can be a contributing factor to aircraft ground handling incidents. In spite of advances in technology and operational procedures, safe winter operations remain a challenge for all stakeholders in the aviation industry, especially for all concerned who must coordinate their efforts under rapidly changing weather conditions.

Be prepared, brush up on your decision-making process and take appropriate actions to attain the highest degree of aviation safety that can be achieved this and every winter season. △

UNRAR: Unnecessary RAR Alert

by Derek Howes, Program Officer, Risk Assessment and Safety Studies, Transport Canada

Did you know that Canadian Joint Rescue Coordination Centres (JRCC) recorded 369 alerts from aircraft emergency locator transmitters (ELTs) in 2001? Of these, 322 alerts were false alarms that took over 1 500 hours of intervention time by JRCCs just to find out that no help was required.

In many of these cases search and rescue (RAR) resources, such as Canadian Forces aircraft, Civil Air Search and Rescue Association (CASARA) and Industry Canada had to be dispatched to find the source of the ELT signal—to find out in the end that it was a false alarm. Some examples include:

- Over 18 hours spent by CASARA and Industry Canada inspectors locating an Aeronca parked in

a hangar. The ELT had been accidentally activated.

- 6.8 hours spent by a Canadian Forces Hercules aircraft in locating a helicopter whose ELT was activated during maintenance.
- 4.2 hours of Canadian Forces time to locate an ELT in a Purolator truck. The ELT had been shipped for maintenance armed and with the batteries in place.

You can help minimize this number and amount of time spent dealing with those incidents by:

- Making sure the ELT is part of your preflight check:
 - Secure, free of corrosion and antenna connections are secure



Transport Canada
Transports Canada

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

Agreement Number 40063845

- Armed
 - Batteries are current
 - Listen on 121.5 to ensure the ELT isn't transmitting
 - After landing—as part of your post-flight routine:
 - Listen on 121.5 to make sure you didn't set off the ELT with that bounce on landing
 - Turn your ELT function switch to "OFF" if practical
- If your ELT did go off accidentally, let an air traffic service (ATS) unit or JRCC know, advising them of the ELT location and how long it was activated.

This may prevent the unnecessary launch of search aircraft. Just turning your ELT off without telling anyone will leave SAR officials in doubt about the incident and whether or not the search should continue.

Finally, when shipping your ELT for maintenance, turn the ELT function switch to "OFF" and remove the batteries if possible. Funny enough, those Purolator and Canada Post trucks get a little concerned when a big yellow and red aircraft starts following them! △

Sharing the Responsibility *Video*

SAR is a shared responsibility; shared between those who need help and the thousands of volunteers and professionals who put themselves at risk to give help. But sometimes, despite the best precautions, people do become victims.

Sharing the Responsibility, available from the National Search and Rescue Secretariat for \$8, is an educational video that shows how people can help themselves by planning for survival and preparing for any situation. For more information, contact the Secretariat at 1 800 727-9414, or e-mail louisep@nss.gc.ca. △

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Loss of Control—Collision with Terrain

On May 25, 2001, a Cessna T 310Q was working as a birddog aircraft on a forest fire about 33 NM northeast of Red Earth Creek, Alberta. During a turning manoeuvre at low altitude, in preparation to lead the tanker group's Douglas B26 water bombers to a drop zone, the aircraft descended into the trees and crashed. The aircraft was destroyed by fire. Both occupants—the pilot and the air attack officer—were fatally injured. This synopsis is based on the Transportation Safety Board of Canada (TSB) Final Report A01W0118.

At 13:34, the aircraft was dispatched as a member of a group tasked to conduct an initial attack on a forest fire located 94 NM east of Manning, Alberta. This was the first operational flight of the season for this aircraft and its pilot.

A birddog pilot's role is to transport the Land and Forest Service air attack officer (AAO) to the scene of a fire, help the AAO plan and coordinate the airborne attack, and manage the restricted airspace near the fire. The pilot assists in the planning and checking of routes to and from the drop zone and in leading the water bombers into their bombing runs. These activities usually involve extensive manoeuvring of the birddog aircraft through a number of circuits at low altitude and low airspeed. It is common for birddog pilots in the Cessna 310 to conduct their low-level operations at about 120 to 140 mph, with 15° of flap and landing gear retracted. Birddogs regularly achieve bank angles of 40° to 60° in turns, as confirmed by measurement of previous recordings from forward-looking infrared cameras mounted on various birddog aircraft.

When the group arrived on location, the fire was spreading south with a light northerly wind. The smoke column was well defined, with good visibility along the flanks. After flying clockwise reconnaissance circuits around the fire, the aircraft was observed making steep left-hand turns east of the fire. This was consistent with the crew's communication that they intended to have the tankers lay retardant on the east flank of the fire in a line from north to south. The circuit in which the accident occurred was to be a "dummy run" where the Cessna 310 would demonstrate the desired flight path and zone for the first retardant drop. The aircraft was last observed in a left turn about 200 ft above ground level (AGL) and about 0.7 SM from the east flank of the fire, as it entered the downwind leg of the dummy-run circuit.

The accident occurred 1 911 ft above sea level (ASL), in relatively level, obstacle-free, forested terrain with trees from 20 to 30 ft tall.

The wreckage was examined on site, to the extent possible, because of destruction by impact and fire. No pre-existing defects could be found. The main wreckage trail was about 100 ft long, preceded by a



40-ft long by 10-ft wide slash through trees at an angle of 42° from horizontal.

The pilot held an airline transport rating and had about 10 000 hr of total flying time, with 368 hr on type, including about 85 hr in 2000 in his first season as a birddog pilot. In April 2001, he completed 3 hr of supervised flight training and 4 hr of recurrent ground training, which met the company's annual training requirement for birddog pilots of at least 3 hr of recurrent flight training and 3 hr of recurrent ground training.

Good visual flight rules (VFR) weather conditions prevailed throughout the area. At the time of the accident, the weather on location was observed to be generally high cloud, visibility greater than 15 SM, and wind from the north at about 13 mph, with no turbulence.

The weight of the aircraft was within the maximum gross weight limit of 5 500 lb. The calculated centre of gravity (C of G) was 36.8 in. aft of the datum, which is at the forward limit of the C of G envelope for a weight of 5 200 lb.

In *Flight Training Manual*, Transport Canada defines an aerodynamic aircraft stall as a loss of lift and an increase in drag that occurs when an aircraft is flown at an angle of attack greater than the angle for maximum lift. The stalling speed increases in manoeuvring flight, such as turns or abrupt changes in the aircraft's flight path; the steeper the turn, the higher the stalling speed. The manufacturer calculates the power-off stalling speed of the Cessna T 310Q at 5 200 lb, in straight and level flight, with landing gear retracted and flaps at 15°, to be 84 mph indicated airspeed. Under the same conditions at 45° of bank, the stalling speed increases to 100 mph, and at 60° of bank to 119 mph. A forward C of G will normally increase the stalling speed. When an aircraft stalls during a level or descending turn, the inside wing normally stalls first and the aircraft will roll to the inside of the turn. During a climbing turn, the higher wing normally stalls first and drops abruptly.

Analysis—Several factors were involved during

the manoeuvring for the dummy run: low relative airspeed, steep left turns, and forward C of G position, which would have increased the stall speed and decreased the margin between airspeed and stall. The aircraft likely stalled in a climbing attitude. This would result in a sharp roll to the right. With the aircraft's low altitude, recovery before ground impact would be

difficult. Tree-strike evidence indicates that at impact the aircraft was in a 42° nose-down attitude in a right bank of about 105°. On ground contact, the aircraft cartwheeled and tumbled.

Examination of the aircraft wreckage revealed no defects that could have led to the accident. Damage to the two propellers indicated that both

engines were producing power on impact. The TSB concluded that the aircraft likely entered a stall during a low-level turning manoeuvre from which recovery was not possible.

Lesson learned—While bird-dog flying is a highly specialized activity, the above occurrence clearly reminds us of the aerodynamic limits of flying an airplane—any airplane. △

System Safety Program Renewal

One of the evolving directions identified in *Flight 2005: A Civil Aviation Safety Framework For Canada* is to focus our resources to those activities with the greatest safety benefit. Given this context and the many challenges it represents, the System Safety management team conducted an extensive program review, which has resulted in program renewal. The renewed program will refocus energies and resources to meet new priorities and address evolving issues and directions, such as safety management systems (SMS) and initiatives to reduce runway incursions.

Effective April 1, 2003, the System Safety program will incorporate components of its national workshops into Regional safety briefings and discontinue the delivery of workshops, namely Pilot Decision-Making (PDM), Crew Resource Management (CRM), Human Performance in Aviation Maintenance (HPIAM) and Company Aviation Safety Officer (CASO).

The refocused program will:

- Develop and provide new initiatives, products and information on evolving issues and safety trends based on better safety information;
- Provide continued access to safety information through Regional safety briefings;

- Continue to offer workshop information kits at a nominal charge of \$100.00 plus applicable taxes; and
- Continue providing System Safety support and advice.

The changes also mean that aviation organizations will have:

- Direct involvement, management and ownership in the development and delivery of safety information;
- The flexibility to deliver and tailor material to their own needs; and
- The opportunity to develop their own cadre of resident expertise.

As we progress with these changes, the System Safety Program will be revitalizing its evaluation activities and take on a leadership role in safety intelligence where we believe we will see the greatest safety benefit. In addition, over the next two years System Safety will continue the education campaign on SMS concepts and principles launched in November 2001. We firmly believe these program changes will maximize our mutual contribution to safety. Should you have any questions or comments, please contact your System Safety Specialist. △

Fueling: Turbo Does Not Equal Turbine!

After departing Smithers for Williams Lake on May 12, 2002, a Turbo Aztec reported one engine running hot and returned. It was discovered that the plane had been fueled with Jet B! Apparently the fuel handler put Jet B into the "Turbo" Aztec. No one was hurt, but the occurrence could easily have turned out much worse. The fuel handler may have seen the word "turbo" on the aircraft, and incorrectly assumed that the aircraft was a turbo-prop. He was intending to follow up on that assumption with the people involved, but has not been able to get in touch with anyone.

This may seem basic motherhood to most, but pilots should observe whenever fuel is being delivered to their aircraft. This is not only good practice, but it may be a requirement in your company SOPs as well! Never assume a fuel handler knows what he or she is doing! Fetch ASL Issue 2/2001, Page 10, and read "Full-service Mistake" again. It is also available at:

www.tc.gc.ca/Aviation/syssafe/newsletters/letter/asl2_2001/english/239_e.htm. △

Aviation Safety Letter Expands

Our family of newsletters has been missing the *Aviation Safety Ultralight & Balloon (U&B)* newsletter since the retirement of its editor, Mr. Joe Scoles. U&B addressed specific segments of general aviation, which were not clearly targeted in the *Aviation Safety Letter (ASL)*, and it was truly a niche market. That limited market has since grown to include all kinds of aircraft types, to name a few: basic and advanced ultralight aeroplanes, home-builts, powered parachutes, gyroplanes, hot air balloons, and just about anything you can strap a propeller to. Furthermore, U&B was created well before the arrival of the recreational pilot permit, which has opened the door for more people to enjoy recreational aviation. With all those factors in mind, the name *Ultralight & Balloon* did not seem to reflect the recent growth of the recreational aviation world, and we felt that a more suitable name was needed, such as *Recreational Aviation*.

We also reviewed our distribution network for the newsletters. While ultralight pilots were receiving both the ASL and the U&B, private pilots did not receive the U&B, even though they were allowed, by virtue of their licence, to fly ultralight aeroplanes. It made sense for the new *Recreational*

Aviation to use the same mailing list as the ASL. Since they will be going in the same envelope, and are all targeted primarily to pilots, the logical next step was to produce them jointly. So instead of being a newsletter in its own right, *Recreational Aviation* has become a new dedicated section in the ASL.

This new section will have its own editor, Mr. Serge Beauchamp, who is also the Editor for *Aviation Safety Maintainer*, as well as a recreational pilot, aircraft owner and aircraft maintenance engineer (AME). The content will be a joint effort from our editorial staff here at System Safety, from the staff at the General Aviation Branch, and contributing editors from the recreational aviation industry. Therefore, starting in this issue you will find the new section on *Recreational Aviation*. The section will bring back material we had in the U&B and material more representative of today's recreational aviation. We also believe that a large majority of general aviation pilots are interested in commercial aviation, and vice-versa. In the end, we're all in the front end! We hope you all enjoy this addition to the ASL. △

Charlottetown Has One Up on Runway Incursions!

by André Vautour, System Safety Specialist, Atlantic Region, Transport Canada

Back in March 2002, the Transport Canada Atlantic Region enforcement branch notified System Safety of a possible trend in mandatory frequency (MF) violations occurring at the Charlottetown airport. The majority of the violations occurred as a result of pilots taxiing on Alpha from Ramp II without contacting the flight service station (FSS) first. It's worth mentioning that the majority of the aircrafts involved were not from the local area. System Safety staff went to the Charlottetown airport to see what could be done to stop this trend. After looking at the area surrounding Ramp II and the Alpha taxiway, recommendations were made to the Aerodrome Safety branch. The Charlottetown Airport Authority was then contacted, and without hesitation followed up on those recommendations; it painted a line on Ramp II marking the boundary between the ramp and the Alpha taxiway, and erected two stop signs at either end of the new line, reminding pilots to contact FSS. In addition, the Prince Edward Island Flying Association was approached, and they posted a sign inside the general aviation (GA) building informing pilots to contact FSS before taxiing on Alpha. Since then, no other incidents of this kind have been reported. All in all, a small issue that could have become a link in the chain of events to cause an accident. A job well done by all parties involved. △



Recreational Aviation

by Serge Beauchamp, Section Editor


Winter Flying: A Rewarding Experience

Winter flying is always a joy, no matter what kind of light aircraft you fly; whether it's a light aircraft, an ultralight, a balloon, a trike or a powered paraglider (PPG). The engine and the airplane always seem to perform much better in the winter than in the summer. As a pilot, you have to exercise caution and good judgment in analyzing the weather and planning your trip. Visibility is usually good, allowing you to enjoy vast expanses of nature. Lakes are easily accessible on skis, and sometimes on wheels, and the fishing is usually rewarding and great fun. The same applies to recreational flying in groups to various lodges that cater to such adventurers. However, great care must be given to the preparation of a flight. The weather forecast must be studied carefully; do not hesitate to get additional information from experienced pilots who are well acquainted with the area. Winter weather can be treacherous and is often unpredictable, so you must be prepared. What do you need to do to be safe? The first questions to ask yourself are: How is my health? Is my airplane in good shape? How do I plan and organize for an emergency? Remember, planning is everything!

Transport Canada System Safety has published a guide called: *"Take Five...for safety: Winter Tips"* It can be used as a basic checklist when planning a



flight and I strongly recommend it. For your own copy, go to the Transport Canada Web site at: www.tc.gc.ca/quebec/en/aviationSafety/Instant/hiver_a.html. The FAA has also published a useful guide for winter flying, which is available at www.faa.gov/ats/afss/newyork/LIFESUPP.HTM.

Using a checklist when preparing for an outing is of the outmost importance as it will enable you to prepare the flight, aircraft, communication and equipment required to ensure a safe and pleasant trip. Be sure that you are up to the task, and enjoy winter flying! 

Stall-Spin Accidents May Be Hazardous to Your Health

There is one thing common to all aircraft; whether you're flying a large or a small aircraft, an ultralight, a trike or a glider, you must not—at any cost—exceed the critical angle of attack (AOA) in order to sustain controllable flight. The AOA, as you all know, is the angle between the mean aerodynamic chord (MAC) and the relative wind. If this occurs, you will lose all lift, stall and fall out of control to the ground. Note that the relative wind is that which is created by the motion of the aircraft through the air.

As a pilot, you must remember the AOA concept and repeat it as often as it takes in order not to forget this physical fact that can be life-threatening at low altitude. I have read too many times of friends, colleagues, pilots, or associates losing their lives or seriously injuring themselves following a stall-spin accident at low level.

What is the cause? What is the problem? The answer to these questions is not easy; otherwise there wouldn't be as many stall-spin accidents as there are. As you can see, this type of failure is

often difficult to foresee. Can we say that it is insidious or dare we say, inevitable? Well, yes it can be insidious and no it isn't inevitable! It's pure physics.

There are of course, two elements required for such accidents. First, the aircraft must be in a stalled condition, and second, there must be a yaw moment introduced. Students must be able to recognize the conditions leading to an imminent stall and how to prevent it from happening.

No stall, no spin. It is as simple as that. Even more fundamental is the necessity to instill in the student a complete understanding of the AOA concept. This seems to be a particularly difficult concept for many students to grasp, and quite a few pilots out there are unaware of the relationship between power and AOA; how increasing or reducing power changes the direction of the relative wind, and thus the AOA.

You have a set of wings, and as long as the air is flowing over them at the same velocity, and the AOA remains the same, all is well. If, however, you change the AOA and the relative wind factor—such

as in a tight left turn from base to final to try and line up with the runway—and you pull back the control column as you force the aircraft to make a tighter turn, you can have one wing slowing down because you are using the ailerons to try and lower the upper wing that is rising, often too quickly. The left aileron will cause the lower wing to drag and slow down even more. In a left turn, the engine torque factor and gravity may pull the wing and aircraft down too early for your comfort, and if you kick in the rudder to keep your nose up where you want it to be, the lower wing may keep coming down no matter what you do. Releasing back pressure, lowering the nose, adding power, changing the AOA, and bringing the wings level may save the day right there; especially if you have some altitude available, otherwise there is a possibility that you may become another statistic.

If you don't have enough altitude for recovery, you may see your life flash before your eyes! Your

last thoughts would probably be: What Happened? How did this come about? This can't be happening to me!

It's sudden and often deadly at low pattern altitude! What is the solution? Well certainly any regular, recurrent and well structured training at a flying school, with a qualified instructor, will go a long way to instill in you the qualities, the knowledge and most of all the confidence to recognize the imminent stall and spin parameters and environment.

Your instructor trains pilots day in and day out, and can perceive the little subtleties that make a difference in safe flying abilities, and will give you the knowledge to recognize hazardous situations well before they occur. Recurrent training will do more than save your life; it will ensure that you are a safer, happier and more confident pilot.

Happy flying! 

to the editor

Zenair Incident

Dear Editor,

I am the owner of the Zenair aircraft depicted in the story published in *Ultralight and Balloon* issue 1/2001. The article is not accurate as it states that I failed to shut down the engine before striking the other aircraft. The article should have said that I did in fact shut the engine down before I even applied the brakes. Here is an account of the event after the time I requested taxi clearance back to the long term parking.

While taxiing back to the parking area the engine suddenly jumped up to, or near full throttle. I quickly shut off both magnetos and the engine came to a stop. The aircraft had already gained considerable speed, due to the high power to weight ratio, so I abruptly jammed on the brakes in order to gain control of the aircraft. The brakes failed to apply evenly causing the aircraft to veer sharply to the left. The propeller contacted the strut of the Cessna 150 causing the wing to collapse. The propeller was not turning at the time of impact

*Andrew Joyner
Burnaby, B.C.*

Rotax Fails from Fuel-Feed Fault

Dear Editor,

While I commend Mr. R. Henson for taking the time and effort to write about his problem with, and solution to, the fuel-feed problem in Transport Canada's *Aviation Safety Ultralight and Balloon* newsletter issue 1/2001, I take exception to many of his comments.


In a Challenger U/L, one can only determine that there is adequate fuel for sustained flight by securing the aircraft and ground running it at full power for at least two minutes. The 5- to 10-second ground run at full power while on the runway is insufficient to determine a secure fuel supply. Upon run-up, the fuel pump should fill up the float bowls.

Note that the Mikuni fuel pump for snowmobiles does not have a bleed hole, only the aviation fuel pumps do. Therefore, it should not be modified by plugging the hole because the hole allows any excessive oil and pressure to escape, should oil vapors from the crankcase condense in the impulse line. The Rotax installation and maintenance manual requires that the pump be mounted with its bleed hole facing down. It is impossible, unless the leak is very large, for a small hole (about 1/64 in) to cause any lean running or affect the fuel pump. The pump is designed to lift fuel 24 inches; any lift of more than 24 inches should be bolstered by the use of an electric fuel pump. It is important to ensure that the impulse line is fairly stiff in construction, because a thin flexible hose can collapse partially and reduce the effectiveness of the fuel pump.

Primer bulbs are not recommended for aviation use. Instructions in the air cleaner kit promotes saturating the unit with filter oil, but in reality only a light mist is necessary.

*B. Robertson, President, Light Engine Services Ltd.
St. Albert, AB.*

Mr. Robertson believes that in the case mentioned above, it is possible that the filters were moisture laden, causing an over-rich condition and an engine stoppage. Prolonged idle and/or long approaches at idle tend to load up the filter with two-stroke oil. A simple solution is to keep the engine rpm up a bit on final, and not allow the engine to run for excessive periods of time on the ground at idle speed. The engine should be ground-run at an rpm that keeps the engine smooth (on the Challenger, 2900-3000 rpm). Mr. Robertson reiterates the invitation for all to contact Light Engine Services for help to solve any engine problems that they may encounter.

We thank Mr. Robertson very much for his comments and assistance on these important safety issues. —Ed. 

Information from the NTSB¹ and TSB² Files

Balloons

Winds become treacherous for a balloonist and his passengers

: On January 26, 2002, a Cameron Balloons, made a hard landing in rough terrain. The commercial pilot was fatally injured. Of the six passengers on board, two were seriously injured, and four sustained minor injuries. The balloon was substantially damaged. Visual meteorological conditions prevailed, and no flight plan was filed.

According to two ground crewmembers, the pilot launched a pibal (weather balloon) from the take-off site, which indicated that the low altitude surface wind was nearly calm. The balloon's envelope was inflated without difficulty, the passengers boarded,

and the flight commenced. Initially, the balloon drifted at a slow rate of speed in a northwesterly direction. The pilot was in radio contact with his ground crew who were monitoring his progress. When the wind speed increased, the pilot notified a crewmember that he planned to land shortly, unassisted; there were no roads in his vicinity. The balloon touched down two times on open terrain, but the pilot chose to continue flying for unknown reasons. The flight ended after the balloon traveled approximately 13 NM. During the landing sequence, the balloon impacted the side of a home's block wall, and a passenger was ejected from the gondola. The balloon went over the wall and touched down hard against several dirt berms, and the pilot was ejected from the gondola.

The remaining five passengers stayed in the gondola as it slid to a stop about 300 yd downwind while the envelope deflated. A witness to the accident, who provided first aid prior to the arrival of paramedics, estimated that at the site the wind speed was never less than 15 mph. At times there were gusts to about 35 mph, and dust was blowing in the air.

Adverse weather conditions : Prior to departing for a cross-country balloon flight, the pilot received a weather briefing from an automated flight service station (AFSS). The pilot was briefed that the wind speed was 28 mph on top of the mountains the flight was to cross. The pilot reported that, "we decided that it was a little fast, but doable." The pilot reported that he was unable to obtain weather information for his destination prior to the flight due to the lack of weather reporting facilities east of the mountains. The balloon departed with a light and variable wind. It ascended to 11 250 ft MSL and its groundspeed increased to 52 mph as it crossed over the mountains. After crossing the mountains, the balloon descended to 500 ft AGL where the wind speed was 32 mph. As the flight continued, the pilot selected a field and attempted a high-wind landing. During the landing sequence the pilot and a passenger were ejected from the basket. The balloon then took off and ascended to 1 000 ft with the remaining passenger, who was a balloon pilot. The passenger took control of the balloon and landed safely 6 mi. from where the pilot and passenger were ejected.

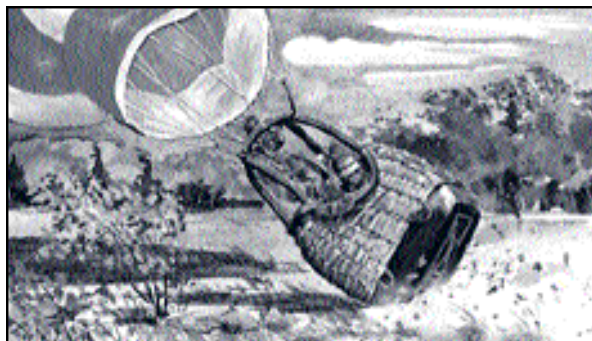
The NTSB determines the probable cause(s) of this accident as follows: inadvertent flight into adverse (high wind) weather conditions, which resulted in a hard landing. A contributing factor was the high wind weather condition.

Landing incident : The Cameron A-120 balloon was performing a sight-seeing flight with one pilot and four passengers on board. During touchdown in a field, the basket bounced once and on the second touchdown the pilot, who was positioned at the rear of the basket, sustained a serious fracture to the left ankle. The four passengers were uninjured and the balloon sustained no damage. The wind speed was reported to be at 5–8 knots. 🌪️

Ultralights

Fuel exhaustion : From TSB Initial Notification (#A0100328): A Quad City Challenger II/A advanced ultralight, powered by a Bombardier Rotax engine, was being flown on a local flight. After less than an hour, the aircraft was in an extended circuit, turning base for the runway, when the engine failed due to fuel exhaustion, necessitating a forced landing in a plowed cornfield 3–4 km east of the airport. On the landing roll, the left main landing gear dug into the soft surface of the field, collapsed (as designed to do in such circumstances) and was torn from the aircraft. The nose landing gear was also damaged and there was some minor skin damage. Neither occupant of the aircraft was injured.

Landing incident : During a local flight, the pilot of a Zenair Zodiac ultralight, was landing on a frozen river, when the nose gear broke through the snow and the aircraft nosed over. Damage to the aircraft was reported to be substantial, with a broken propeller, nose gear and left main gear, however the lone occupant was uninjured.



Gusty winds : The TSB reported that the Kitfox IIA advanced ultralight was on approach to a grass strip, when it encountered gusty and variable winds. The pilot was unable to slow the rate of descent, which resulted in a hard landing. Damage to the propeller, windshield, right wing tip, main under carriage, and lower fuselage was extensive. The pilot and passenger were uninjured.

Foreign object damage (FOD) in the cockpit : Windsor (CYQG)—An ultralight aircraft departed Runway 30, and was instructed to turn right on departure. The aircraft was observed turning left immediately after departure. The aircraft headed directly towards the control tower, at approximately 100 ft AGL vertically and 500 ft laterally. Abeam to the tower, the aircraft made an immediate left turn and continued to descend. At 25 ft, the aircraft did a 180° turn and landed on Runway 30. A local mechanic later advised the tower that the pilot of the aircraft had jammed the aircraft control cables with a headset.

A very close call : From TSB Notification (#A02O0087): A commercial pilot student was conducting a pre-flight-test check ride on the Cessna 172 aircraft approximately 15 NM from the airport. The Quad City Challenger II/A advanced ultralight was being operated by its owner on a pleasure flight from a private strip. Both aircraft were in level cruise flight at 3 500 ft when they collided. The Cessna was heading approximately north at an airspeed of 90–100 knots indicated at airspeed (KIAS), while the Challenger was heading approximately northwest at 70 mph (60 KIAS). The Cessna's right main gear tire struck the top surface of the left wing of the Challenger and left a tire mark approximately 4 ft long, starting at the left wingtip, about one foot aft of the leading edge and running inboard parallel to the leading edge. Neither pilot saw the other aircraft before feeling the jolt of the collision. Both aircraft were controllable after the collision; each returned to its respective point of departure and landed without incident. The only evidence of the collision on the Cessna was blue paint marks on the right main tire. Preliminary inspection of the Challenger indicated two bent wing ribs and stretched fabric. Weather at the time of the incident was good VFR, the sky was clear and there were no restrictions to visibility. 🇺🇸

¹ National Transportation Safety Board ² Transportation Safety Board of Canada

Medication and Flying

All pilots have noticed the effects of common illnesses on their ability to accomplish the seemingly normal responsibilities of cockpit management. And haven't we all experienced the effects of over-the-counter medication taken to fight such illnesses as colds, fever, and upset stomach?

The changing weather in the fall, and the coming of winter often bring about physiological changes that affect our health, physical strength and emotional state. In short, we take a beating, and with it our ability to perform adequately under all situations that we may encounter in flight undeniably suffers.

Is my license valid? As pilots, we should take this question into consideration, since our qualifications are only valid if we meet the initial issuing requirements. This means, among other things, that our health must be as good as or better than when we had our last medical. Don't laugh, because any mishap, whether you're flying privately or professionally, that may have been caused or influenced by a medical status beyond that allowed by the requirements, may leave you more liable than you would have thought. Your job may be in jeopardy; in the event of a serious accident, you or your family may be left to pay the damages.

Since we are not all the same, our bodies react differently to different medication. Pharmaceutical companies know this and are required by law to post warnings to inform consumers of the various effects a drug can have on an individual.

Medical treatment such as acupuncture, chiropractic medicine, homeopathy or any other



medical treatment may promote secondary effects on the body and impair your ability to respond to normal pilot responsibilities. You must always ensure that any physician you consult knows of your status as a pilot in order that it may be taken into consideration when you are being given medical advice. In addition, to be safe, healthy and to retain your ability to fly, read the warnings on the label of any medication you are about to take.

This should be part of your preflight checklist. There are no excuses; please don't mix drugs. This includes beer, alcohol, and common cold or allergy medicine. Mix all that with an 8 000 ft cabin—or any altitude—and constantly variable atmospheric pressure, affecting the body's absorption rate, and the synthesis of precious oxygen needed for your skills as a pilot, and it can make for a hazardous ride. Add in an emergency or two, and we're all in trouble. Remember; always fly in good health and good spirit. 🇺🇸

Accident Shorts...

Note: All aviation accidents are investigated by the Transportation Safety Board of Canada (TSB). Each occurrence is assigned a level, from 1 to 5, which indicates the depth of investigation. CLASS 5 investigations consist of data collection pertaining to occurrences that do not meet the criteria of classes 1 through 4, and will be recorded for possible safety analysis, statistical reporting, or archival purposes. Therefore, the short narratives below that specify "CLASS 5", are unlikely to be followed by a TSB Final Report.

TSB File A01Q0090 (Class 5) —On June 6, 2001, a Cessna 172 carrying a flight instructor, a student pilot and a passenger, was on a VFR flight from Trois-Rivières to Grandes-Piles when it ran into high-tension wires that crossed the Saint Maurice River, near the village of Grandes-Piles. The wires, which were at 17.76 m (60 ft) above the water, were marked with orange conical markers. In an azimuth of 298°, with the sun at about 5° above the horizon, the pilot was blinded by the sun and the reflections in the water, and did not see the electrical wires. The aeroplane crashed into the river about 200 ft from the east shore. The occupants of the aeroplane were rescued by some shoreline residents. The aeroplane sank within minutes.

TSB File A01Q0169 (Class 5) —On October 13, 2001, a Cessna 185E on a local VFR flight, flew over Lac Chabanel, Quebec at very low altitude, pulled up and made a tight turn. During this manoeuvre, the aeroplane stalled and crashed to the ground in the forest at a 60° angle. The occupants died on impact and in the fire that destroyed the aeroplane. There was no evidence of engine failure in the investigation; the weight and balance of the aeroplane were within their limits.

TSB File A02P0136 —On July 17, 2002, a Cessna 172N was on takeoff from Runway 25 at Boundary Bay. As the wheels left the ground, the nose was seen to pitch up very steeply, the aircraft climbed to 100–150 ft, stalled, pitched its nose and right wing



down and crashed. There was a post-impact fire, which was extinguished by a witness. The pilot was seriously injured and three passengers were killed. A Class 3 TSB Investigation is in progress.

TSB File A02O0287 —On September 7, 2002, a flight instructor and a student were conducting a training flight in a float equipped Cessna 172. The aircraft crashed after a touch and go and came to rest inverted in a swamp adjacent to and at the south end of Lake St. John, near Orillia, Ontario. The aircraft was substantially damaged. Both occupants sustained serious injuries. A Class 3 TSB Investigation is in progress.



Foreign, mid-air collision —On October 1, 2002, two IL-38 transport aircraft of the Indian Navy collided in mid-air near Dabholim airport in Panaji, India, killing 17 people—12 personnel on board and 5 people on the ground. Several more on the ground were injured. Reports said the planes were flying parallel to each other, as part of the squadron's silver anniversary celebration, when their wings got entangled. This tragedy brings back memories of the March 29, 1985 mid-air collision of two Canadian Forces C-130 Hercules transport aircraft in Edmonton, under similarly eerie circumstances, killing 10 airmen. The two Hercules were also performing a ceremonial flypast when the accident happened. While these military applications are rare in civilian aviation, there are many of you who fly in formation on a regular basis, and we hope you can reflect on them. △

It's better to be on the ground wishing
you were flying...

than to be flying wishing you
were on the ground!

Switchology

by Gerry Binnema, System Safety Specialist, Pacific Region, Transport Canada

Step into a modern airplane and what kind of cockpit layout will you find? The standard six instruments, the gear handle to the left of the throttle quadrant, the flaps to the right. The power controls will be in the standard order of throttle, prop and mixture. But this standard wasn't established overnight. Look into the cockpit of a 40s or 50s vintage aircraft and you could find any combination of locations for the various instruments and controls. Obviously, this lack of standardization created problems for people who went from one aircraft to another, so it was necessary for the manufacturers to agree on where to put what.

Although the standard cockpit layout is now quite predominant throughout the general aviation fleet, there are still many older aircraft that do not fit the standard. To make matters more confusing, some manufacturers switched from a non-standard layout, to a more standard layout in the middle of production of certain models. For instance, some Beech aircraft were manufactured with the gear handle on the right side of the power controls while later models had the controls on the left side. This means that stepping from one aircraft to another, even though they may be the same make and model, can bring some surprises.

The DHC-2 Beaver has a surprising reversal in its fuel selector control, one that is not mentioned in the Aircraft Flight Manual (AFM). The early models were built with a fuel selector with the "OFF" selection at the 12 o'clock position. This was modified at S/N 1313, to a fuel selector with the "OFF" selection at 6 o'clock, and the centre tank at 12 o'clock.



A modification kit (#2/1303) was offered for earlier aircraft. However, the AFM only illustrates the earlier, pre-mod fuel selector. Additionally, the throttle and propeller controls are also reversed between earlier and later production Beavers. Many operators have a fleet of Beavers with various combinations of fuel selectors and power control configurations, resulting in the potential for confusion.

These differences between aircraft are not generally a problem when a pilot is operating at a normal level of awareness and attentiveness. A brief glance at the control will be enough to confirm what the control is and what position it should be moved to. The problem comes when our attention is reduced due to a variety of human factors, or when our attention is distracted by other problems in the flying environment. This is when we start working from our old habits, and we will move a control the wrong way, or move the wrong control.

What is the solution? Obviously, we need to maintain a high level of awareness regarding the potential differences in the controls, but is there more that can be done? Some suggestions might include:

- i) enhance training on differences between aircraft, including the first symptoms that would occur when an incorrect selection is made;
- ii) establish habits or procedures that would reduce the likelihood or severity of making a wrong selection at a critical time, (i.e. always selecting the Beaver fuel selector to the 3 or 9 o'clock position for takeoff and landing, to avoid the confusion regarding which position is "OFF");
- iii) establish a habit or procedure of looking at, touching, and saying out loud the name of the non-standard controls whenever using an aircraft with an unfamiliar layout;
- iv) avoid flying aircraft that are likely to cause confusion; and
- v) modify all the aircraft in the fleet to the standard configuration.

The first three suggestions could be put into place with relative ease. The last two would require greater commitment, but may be something to establish as an objective for the long term. The most important aspect is to be aware of the problem and to take it seriously. A wrong selection can be made easily, and the results can be deadly. △

COPA Corner—Who Needs a Maintenance Schedule?

by Adam Hunt, Canadian Owners and Pilots Association (COPA)

If you own any type of aircraft then the answer is—you do! A maintenance schedule is the way you keep track of the work that needs to be done on your aircraft. In fact, unless you own a basic ultralight, advanced ultralight, paraglider or a hang glider, then the law requires you to have a maintenance schedule.

Looking at the rules

When the CARs were introduced in 1996, they included a new requirement for all aircraft to have a maintenance schedule, except hang gliders and ultralights. CAR 605.86 spells it out clearly—a maintenance schedule is required for all certified and amateur-built aircraft, including airplanes, balloons, helicopters, gliders, airships and gyrocopters. The accompanying CAR Standard 625 tells you how to accomplish that. That Standard even contains a Transport Canada pre-approved maintenance schedule that private aircraft owners can use. It is all in CAR 625: “Owners of non-commercially operated small aircraft and balloons who choose to comply with Parts I or II of Appendix B as applicable, and Appendix C, need not submit any documents to the Minister for formal approval. Owners need only to make an entry in the aircraft technical records that the aircraft is maintained pursuant to the maintenance schedule.”

Well, reading that, it looks like all you have to do is make a logbook entry specifying that you will use CAR 625 Appendix B and C and you can forget about maintenance schedules for as long as you own the airplane, right?

What do the aircraft maintenance engineers (AMEs) say? Making a logbook entry does not necessarily make an airplane legal to fly, as it does not give assurance that maintenance was performed as per the requirements. Just making that required logbook entry won't tell your AME when that fire extinguisher in the plane needs replacing or whether there are any outstanding airworthiness directives (AD) applicable. What you and your AME need to see is a maintenance schedule that includes the maintenance and/or replacement due date of all time-limited components. CAR 625 Appendix B and C are a great place to start in making up a functional schedule, as they list all the items that need to be covered in the annual inspection (Appendix B) and those items which are “out of phase” with the annual inspection (Appendix C).

What items need to be included? The approach many owners take is to have columns for the item to be completed, the date or airframe hours last done, the periodicity or time between inspection or replacement and the date or hours next due. Some



items will specify a date when they are due and others will be an airframe or engine time. Some specify both a calendar date and airframe hours, so your system will need some flexibility.

What things should be on the maintenance schedule? One of the items that should definitely be on your maintenance schedule is the date of your annual inspection. This is specified in CAR 625 as being not more than 12 months following the date of the last annual inspection. That means if the last one was May 1, 2002, your next one will have to be signed off no later than May 1, 2003, if you want to fly on May 2.

Oil changes at 25- or 50-hour intervals, as applicable, are good to include, as are any recurring ADs or Service Bulletins that have calendar times or airframe hours, or both, when they have to be completed. A good example is the well-known Canadian AD CF 90-03R2 that requires an inspection of the aircraft muffler on all Canadian aircraft that have heaters which use muffler heat to operate. This AD requires an inspection every 150 hr or annually, whichever comes first. You will need to use a system to track both the calendar and airframe hour limits on those types of inspections. One way to do that is to use two lines on your table.

Another area to think about is supplement type certificate (STC). Do any of the modifications with STCs on your aircraft have special inspections or maintenance action required? These STCs “Instructions for Continued Airworthiness” (ICA) are important to keep your plane airworthy and will soon be required to be entered in your technical record, through an upcoming CAR amendment.

The rest of the items will come from a quick read through CAR 625 Appendix C—the “out of phase items” list. Do you have a fixed pitch propeller? They need to be removed and inspected every five years. Variable pitch props are generally required to be sent for overhaul every ten years. Once you have thought about the annual inspection date, recurring ADs and Service Bulletins, STC ICA and CAR 625 Appendix C “out of phase items,” you will probably have a complete maintenance schedule. A complete maintenance schedule will keep your plane well maintained and give you and your AME confidence that everything is taken care of! For more information on COPA, have a look at www.copanational.org. △

Blown Auxiliary Power Unit (APU) During De-Icing Illustrates Need to Brush-up on Ground Icing Program

On March 6, 2001, in Dorval, Quebec, a F28 aircraft was being de-iced in strong, gusty wind conditions with engines and the APU running. Despite all precautions taken by the crew applying the fluids, some fluid entered the APU inlet. The fluid passed through the compressor and entered the combustion chamber as hot, compressed additional fuel that had not been processed by the APU's fuel control unit. The APU reacted to the extra fuel as it was designed to do—more fuel, more fire, faster rotation—by auto-accelerating, the design limits were exceeded and a rotorburst occurred. The aircraft sustained substantial damage: the centrifugal compressor turbine was broken in five distinctive sections, with extensive blade/aerofoil damage and shaft failure. The containment ring failed to retain the turbine components and turbine debris punctured the firewall shroud mostly towards the ground and punctured the aircraft skin.

Air operators and service providers should ensure that all personnel involved in the application of de-icing/anti-icing fluids are aware of this incident. Additional precautions must be taken when strong winds make control of fluid application difficult, and consideration should be given to asking the flight crew to shut down the APU if there is any doubt that fluid cannot be prevented from entering the APU inlet.



Safety action taken as a result includes the release on November 28, 2001, of Commercial and Business Aviation Advisory Circular (CBAAC) 0194, titled *Aircraft Ground Icing Update*. This circular was re-issued as CBAAC 194R on September 20, 2002, to include holdover timetables for winter 2002-2003. This comprehensive circular is intended to inform air operator personnel of recent developments and issues pertaining to aircraft ground icing operations. The following statement is found in CBAAC 0194R:

Lesson Learned—Anti-icing Fluid Causes APU Rotorburst

Air Carrier Advisory Circular 072R, issued on January 20, 1997, contains the following statement regarding the danger of spraying de-icing/anti-icing fluids into the inlet of an APU: "Particular care should be exercised for the APU inlet, because fluid ingestion could cause an APU runaway condition or, in an extreme case, an

APU rotorburst."

The validity of this statement was proven with the F28 incident described above, and also as a result of a similar incident to another F28 in the United States on March 2, 2002. We encourage you to review both TC circulars 0072R and 0194R, at www.tc.gc.ca/CivilAviation/commerce/circulars/menu.htm. △

Is Your Checklist Older Than You?

By Kenneth Armstrong, Victoria, British Columbia

Are you flying an older aircraft with an archaic checklist or perhaps an amateur-built or ultralight with no checklist whatsoever? If you have invested tens of thousands of dollars and/or thousands of hours on your dream only to find you can't safely fly with an inadequate checklist, you are one of many.

Having just completed client training on a 1959 Piper Comanche, I noted the pilot operating handbook (POH) checklists were woefully inadequate—completely

skipping safety related items! The checklists stenciled to the panel ignored items such as transponder use, security of occupants and internal loads, mixture control and carburetor heat.

In the case of custom-built aircraft, the great deal of individuality in equipment often results in inadequate preflight preparations when checklists that may have been provided prove inadequate. With ultralights or other recreational aircraft, checklists are

uncommon. Checklists and their use are two safety-oriented tools that low time pilots can use to their advantage to ensure comfortable, "no surprises" flight. In fact, this is a discipline where a low time pilot can operate at the professional pilot level by simply reading and responding to the various items. Since few of us take the time to completely memorize these "flying inventories of action," it is mandatory to have one available to increase our flight safety. Most experienced pilots will be

able to recall hair-raising episodes that were a result of not using, or skipping too quickly, through a checklist.

Liability considerations preclude my providing a generic checklist in this publication; however, a little effort will allow you to patch together a useful list to augment your safe and efficient flying.

If your aircraft is a simple, single engine plane, you can start by combining whatever checklist you currently have with additional items you wish to add by studying the POH for a more modern aircraft—they tend to have far more detail. Most pilots are comfortable with computers and can easily improve and update their personal checklist file and then print it out in a size that fits a plastic protective sleeve.

Sections of the checklist should include at least the following: pre-flight planning; walk-around inspection; pre-start checks; after start and avionics checks; pre-taxi checks; during taxi checks (brakes, instruments etc.), run up, pre-takeoff, post-takeoff, climbing checks; level off and enroute checks; upper air work checks; pre-descent checks; pre-landing checks; post-landing checks; and, after shut down checks. It's wise to conduct a quick after flight inspection of the aircraft to ensure the anti-collision lights aren't flashing and the fluid levels are topped up and nothing unusual is hanging off the aircraft. This can avoid a maintenance delay when you next plan to fly the aircraft.

These checklist sections can

be augmented with others and are suggested as a basic minimum. While dire emergency checks should be memorized as they require immediate action, other less critical emergencies can be printed out. Other checklists for specialty work are also prudent. For instance, a helicopter about to undertake fire suppression operations with a bucket or a fixed wing aircraft about to carry out parachute drops.

Remember, a really detailed, complete checklist will not only make you safer, it will also make you look good. Using the checklist allows you to avoid those little miscues such as landing with the gear up or having to cancel a mission when you learn the master switch was left "on" overnight and the battery is dead. △

CASS 2003—April 14–16, 2003—Montreal, Quebec

Transport Canada, Quebec Region, is proud to be hosting the 15th annual Canadian Aviation Safety Seminar (CASS) on April 14, 15 and 16, 2003, at the Montreal Hilton Bonaventure in beautiful downtown Montreal, Quebec. The theme for CASS 2003 is "*Aviation Human Resources: The Core of Our Industry*." It was developed to address the challenges the industry will face in the areas of personnel selection and recruitment, training, retention and knowledge transfer as they relate to safety.

People are an invaluable resource in any field. But with the impending retirement *en masse* of the boomer generation, the aviation industry faces a significant challenge: managing the transfer of knowledge and skills from one generation of operational, technical, managerial and safety professionals, to the next.

Two obvious solutions emerge: the boomer generation must be prepared to retire later with the commensurate challenges associated with an aging workforce, or the groundwork for succession must be initiated now. Both will be needed to ensure business continuity against a backdrop of continued

growth in aviation activity causing an increased demand for better safety performance. Moreover, various sectors of the industry will be competing against one another for quality personnel from an ever-shrinking pool.

The challenge, regardless of the solutions adopted, will remain to manage the transfer of knowledge and skills from one generation to the next, where each possesses vastly different characteristics and expectations.

To meet this, the aviation industry must understand the issues revolving around these generational differences to devise strategies to ensure a seamless transfer and improve safety simultaneously. It must recruit and retain quality staff and provide the means for transferring knowledge and skills successfully.

CASS 2003 creates an opportunity to hear high profile speakers from the academic, operational, regulatory and management worlds on this subject. In addition, participants will have the opportunity to discuss and find solutions to their mutual human resource problems in a workshop setting.

For more information, check our Web site: www.tc.gc.ca/CASS. △



Collision with Wire in Reduced Visibility

On October 13, 1999, a pilot and two passengers departed from Boyce Lake, Ontario, in a float-equipped Cessna A185F aircraft, on a VFR flight to Temagami, Ontario, a distance of approximately 15 NM. At approximately 09:15 eastern daylight time (EDT), a witness near a transmission tower south of Temagami heard an aircraft approaching. The aircraft subsequently came into view, and almost as soon as it was visible, the aircraft struck the anchor wires of the transmission tower and then the tower. The aircraft descended to the ground where an explosion occurred and an intense, post-crash fire broke out. None of the occupants of the aircraft survived. This synopsis is based on the TSB Final Report A9900244.

The pilot had approximately 550 hr of total flying time, including 220 hr on the occurrence type. Prior to the accident, the pilot had flown from Temagami to Boyce Lake to pick up the two passengers. During this flight, he reported by radio twice, but gave no indication that he experienced any navigational difficulties en route due to weather. The pilot was known to land on lakes and wait when weather was deteriorating.

No aviation weather reports or aerodrome forecasts (TAF) are available for Temagami. However, on the day of the occurrence, a weather package, including significant meteorological reports (SIGMET), area forecasts (FA), aviation routine weather reports (METAR), TAFs, wind and temperature aloft forecasts (FD), notices to airmen (NOTAMs) and radar reports, was faxed to the operator from NAV CANADA's Canadian Sault Ste. Marie FSS. The occurrence flight route was covered by the weather package and was available to the pilot prior to his departure.

An FA issued at 07:30 EDT that day called for a broken, occasionally scattered layer of cloud based at 3 000 ft ASL with a prevailing visibility of 6 SM. Areas with visibility of 2 SM in rain showers and mist were forecast and local ceilings of 400 to 1 000 ft AGL in precipitation, with occasional visibility of 1 to 3 SM in mist. The TAF reports for North Bay, 42 mi. south of the occurrence site, and for Sudbury, 47 mi. southwest of the occurrence site, both included reports of temporary low visibilities, light rain showers and mist. The METARs for the same areas all reported low ceilings, light rain and fog.

At the time of the occurrence, weather in the area was reported as being variably foggy with occasional drizzle falling. The lights from the tower were reported as visible from approximately 1 400 ft, though not clearly because of drizzle and

fog. The aircraft could be heard approaching but was not sighted until an instant before the collision with the tower. A second company aircraft departed the float base to search for the downed aircraft. The horizontal visibility was reported as good, but the high ground on which the tower was located was hidden from view by low cloud. The search aircraft passed within 1 mi. of the accident site on more than one occasion while the wreckage was still burning and neither occupant saw the wreckage or smoke.



The tower was approximately 250 ft high and was painted alternately white and orange with lights at the mid-point and the top. The tower lighting and markings were appropriate for the structure in accordance with regulations. It appeared on the Sault Ste. Marie VFR navigation chart and also on the map the pilot used for navigation. It was reported that the pilot was aware of the tower and its location, and the obstruction lights were on at the time of the occurrence.

Analysis—There were no equipment malfunctions prior to or during the flight. The tower was appropriately painted, its lighting was in accordance with existing regulations and was turned on at the time of the accident. Its location was depicted on the map used by the pilot for navigation. The weather information available to the pilot prior to the occurrence flight was adequate and accurate. There was no indication that deteriorating weather conditions were encountered on the flight from Temagami to Boyce Lake; however, on the return trip, the pilot encountered an area of showers and reduced visibility. The TSB determined that the pilot continued flight in deteriorating meteorological conditions and likely did not see the tower and anchor cables in time to avoid the collision. △

Want to know more about stalls and spins? Go to :
www.tc.gc.ca/civilaviation/general/Flttrain/Mis/Spin/notes.htm