Transport Canada / Transports Canada

Aviation Safety Letter

Learn from the mistakes of others and avoid making them yourself... **Issue 1/2000**

Flight 2005—Raising the Flight Level

As you change flight levels, you need to pay close attention during the transition.

We can all be proud of the recent assessment by the International Civil Aviation Organization, which confirmed that Canada's Civil Aviation safety program is second to none in the world.

However, with the predicted increases in traffic levels, in order to keep the number of accidents from increasing and to maintain public confidence in aviation safety, we need to lower the accident rate. I believe that our national Civil Aviation team and our partners in the aviation community can improve upon the safety standard. *Flight 2005* is about making that push to a higher safety standard—raising the flight level.

To remain successful we must challenge the status quo, refine existing practices, adopt new best practices, focus on where we want to be in the next five years and what strategies we need to embrace to get there. *Flight 2005* has been designed to establish Civil Aviation's contribution to the Department's strategic plan for transportation safety and security. With the collective thoughts of both Transport Canada Civil Aviation staff and industry stakeholders, we now have a framework within which to partner towards this new safety level.

This safety framework identifies our operating principles and values, describes the directions for the next five years, provides safety targets, and shows what the key results will be. *Flight 2005* represents an effective partnership—one that will enable us to meet our vision of having the safest civil aviation system in the world. You can read about *Flight 2005* at the following Web site: http://www.tc.gc.ca/aviation/index_e.htm

The *Aviation Safety Letter* will, in subsequent editions, help you become familiar with our new safety goals and plans and find out how you can contribute to the achievement of our targets. While they may seem ambitious, I believe they are attainable through the dedication and professionalism of the Transport Canada Civil Aviation team and our partners in the aviation community.

I wish you good and safe flying.

Art LaFlamme

Art LaFlamme
Director General, Civil Aviation

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Canada

First IFR approach in IMC

On March 14, 1998, a pilot rented a Piper Seneca aircraft for a private flight to transport four passengers from Calgary to Grande Prairie, Alberta, for the weekend. He departed Calgary on an instrument flight rules (IFR) flight at 07:55 Mountain standard time (MST), and the flight was carried out at 8000 ft. above sea level (ASL); a clearance for an instrument landing system (ILS) approach to Runway 29 was issued and acknowledged by the pilot as the aircraft neared destination. The weather at the time was a 200-ft. ceiling with a reported visibility of 1/8 of a statute mile (SM) in fog. While on approach, the aircraft descended, struck a lamp standard adjacent to a highway, entered a steep left turn, and struck the ground. The aircraft cartwheeled onto its nose and came to rest upright, facing in the opposite direction. The five occupants were fatally injured. The accident occurred at 10:33. This synopsis is based on Transportation Safety Board of Canada (TSB) Final Report A98W0043.

The pilot commenced flying training in 1995, attaining his private pilot licence (PPL) in December of that year. He then continued his training and obtained a commercial pilot licence, and by Nov. 30, 1997, had obtained endorsements for multi-engine rating, instrument rating, and class-four instructor rating. He had accumulated a total of 428 hrs on single- and 60 hrs on multi-engine aircraft. During his training for the commercial licence and the instrument rating, the pilot logged 46 hrs of under-the-hood instrument time and 2.3 hrs of actual instrument time. He had not flown an approach in instrument meteorological conditions (IMC) before the occurrence flight.

On the day of the occurrence, the pilot called the flight service station (FSS) in Springbank, Alberta, at 05:34 for a weather briefing and to file an IFR flight plan. The FSS specialist provided a general synopsis, the current weather for Calgary, Red Deer, Whitecourt and Grande Prairie, pilot reports of icing, as well as forecast icing in cloud and the winds. Calgary was reporting a ceiling of 700 ft. overcast with a visibility of 8 to 10 SM. Red Deer was 2500 ft. overcast with a visibility of 15 SM in snow. Whitecourt was 1400 ft. scattered, 2000 ft. overcast with a visibility of 4 SM in light snow, and Grande Prairie had a special report at 05:23 with 400 ft. overcast and a visibility of 2 SM in fog. Grande Prairie was expected to improve later in the afternoon. The aerodrome forecast for Grande Prairie, which the pilot did not receive, did not show the deteriorating conditions until amendments were issued. The ceiling and visibility did start to lower at 05:23, and continued to decrease until 13:20, when conditions began to improve. The pilot called to revise his departure time at 07:05, but he did not ask for or receive the updated weather. The report at 06:00 for Grande Prairie was wind calm, 3/4 SM visibility in mist, vertical visibility 200 ft., temperature -7°C, and dew point -9°C. At 07:00 the visibility had decreased to 1/4 SM in freezing fog, and the vertical visibility was 100 ft.

At 07:48 the pilot called for his IFR clearance and the flight departed at 07:55. The clearance for the approach to Grande Prairie was acknowledged by the pilot and he confirmed that he had the automatic terminal information system (ATIS) report for Grande Prairie. When asked what his intentions were in the event of a missed approach, the pilot indicated that he would climb to 4300 ft. ASL and return to the QU beacon, the procedure as described in the *Canada Air Pilot*. Inbound to the airport, when asked by the FSS specialist if he had ATIS, the pilot replied that he had information "D". At the time, ATIS "D" stated:

Grande Prairie Airport information D weather at 17:00, wind calm, visibility 1/8 fog, vertical visibility 200 ft., temperature minus 6, dew point minus 8, altimeter 29.98.

The pilot reported by the beacon on the glide path to Grande Prairie FSS. The next transmission was a "Mayday" call followed, five seconds later, by an emergency locator transmitter (ELT) transmission.

At 08:28 and 09:05, two other aircraft had flown the ILS approach to Runway 29, but had to carry out missed approaches and fly to their selected alternate airports. The crew reported that they had entered cloud at about 900 ft. above ground level (AGL), and that they did not see the ground from the decision height of 200 ft. AGL.

Radar data show that from the Grande Prairie beacon, which is the outer marker for the ILS approach to Runway 29 located 3 NM from the runway, the pilot was not accurately tracking the localizer for the duration of the inbound flight. Turns to the left and right during the descent show that the localizer needle would not be centred. The rate of descent appeared to be normal for the speed of the aircraft.

Investigation showed that the left side of the left engine struck a lamp standard at a height of about 18 ft. AGL. The lamp was located about 1200 ft. from the end of the runway and 1400 ft. left of the runway extended centre line. The undercarriage and flaps appeared to be in the retracted position. The aircraft was not equipped or certified for flight into known icing conditions.

Analysis—Although the aerodrome forecast did not indicate

Transport Canada / Transports Canada

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

that the ceiling and visibility at Grande Prairie would decrease to 100 ft. and 1/8 mi., conditions were IFR and below landing limits for the morning. Before the departure from Calgary, the ceiling was down to 200 ft. and the visibility was 1/4 mi. The pilot did not request an update of the current weather during the flight north. Both the air traffic controller and the FSS specialist asked the pilot if he had the ATIS before he commenced the approach, and the controller confirmed what the pilot intended to do in the event of a missed approach. The responses would indicate that the pilot had the weather and that the missed approach would be as described on the approach plate for Runway 29.

The pilot had not asked for the weather when he revised the departure time; therefore, he was not aware that conditions had deteriorated. In light of the weather conditions that existed and the forecast that was provided, experienced pilots would normally ask for an update at every opportunity to help them make decisions.

This was the pilot's first approach in IMC. The aircraft likely entered cloud at about 900 ft. AGL, and the rate of descent appears to be constant. The aircraft continued to descend through the decision height of 200 ft. AGL until it struck the lamp standard. It could not be determined why the pilot continued his descent below decision height, or why he carried out the approach in the weather conditions that existed. Since indications are that the undercarriage was up, and the sudden left turn suggests that the right engine was developing ample power, it is likely that the pilot was initiating an overshoot just before striking the lamp standard.

The TSB could not determine why the pilot carried out the approach in the weather conditions that existed or why he continued descent below 200 ft. AGL. △

Collins RTA-842 Weather Radar

The new Beech 1900D had finally arrived. Among a number of improvements was the new weather radar system, which, in the cockpit, seemed to look like the same one in the older Beech 1900s. One of the benefits of this system is that only 24 W of power are required to operate it compared to the former 5000-W unit. Some days later, during a routine flight, the crew had selected the radar on to monitor the weather along their flight path. No cloud was being painted on the screen. Suddenly, the aircraft entered a cloud that contained hail, consequently damaging the leading edges. The crew reported that the radar was not painting cells if there was another moisture-containing cloud in the way. A similar experience met the crew of their other new Beech 1900D. After a lengthy investigation by maintenance and operations, it was determined that manufacturer training for the flight crews was needed to update them on managing this more sensitive new equipment.

The adage, "familiarity breeds contempt" could hold no better than here. In this case, the flight crew thought they were familiar with the radar system to the point that they presumed that the defect was with the equipment—not their training. △

✻✻ Happy New Year ✻✻

Get to Know Your RASOs—Patrick Kessler and Sophie Lanoix, Quebec Region

Patrick Kessler and Sophie Lanoix.

Originally from France, Patrick Kessler developed a passion for flying objects when he was very young. In addition to studying engineering, he obtained his private pilot licence when he was 17. Fascinated by the helicopter and its technology, he worked as an aircraft maintenance engineer, which allowed him to travel to Africa and the Caribbean and to discover his adopted country, Canada. He then worked in the area of technical training, then as a flight instructor at the Chicoutimi CÉGEP. Now back in the heart of the industry, Patrick worked as a safety manager for Inter-Canadien before joining Transport Canada as an Inspector, General Aviation, and finally as a Regional Aviation Safety Officer (RASO).

Sophie Lanoix took her professional pilot training at the Centre québécois de formation aéronautique (Quebec Aeronautical Training Centre) from 1993 to 1996, and then became a ground-school and flying instructor in Saint-Lazare, Quebec. Sophie was offered a position at Transport Canada, System Safety, in November 1998 and has since travelled across the province to promote safety. To do this, she gives presentations on safety awareness and conducts safety visits. She writes articles on safety to be published in various aviation magazines, and her duties include evaluating safety trends, managing the Civil Aviation Daily Occurrence Reporting System (CADORS), and supporting the SÉRABEC program, the Quebec chapter of the Civil Air Search and Rescue Association.

You are encouraged to voice your safety concerns or comments to Patrick in Quebec City at (418) 640-2107, or to Sophie in Dorval at (514) 633-2967, or to any member of the Quebec Region System Safety team at (514) 633-3249. △

Back to Basics

by Mike Doiron, Regional Aviation Safety Officer, Atlantic Region

A Cessna 152 aircraft had just returned from a local training flight at Waterville, Nova Scotia. The following pilot, who had 175 hrs total flying time, planned to conduct a local solo training flight from the right seat for instructor practice. The walk-around showed no problems and the run-up was uneventful.

After takeoff, at 200–300 ft., the pilot experienced a rapid loss of engine RPM. He did a quick check of mixture and throttle to ensure they had not backed off. When all showed normal settings, the pilot realized that it was time to switch to the emergency plan.

The pilot showed self-discipline and composure in resisting the urge to return to the airport at such a low altitude. When a suitable landing area was identified, the pilot pulled back on the power and concentrated on the task ahead. He managed to get the aircraft on the ground, but bounced in the rough field, which caused the aircraft to veer to the left and strike a tree, resulting in major damage to the left side of the aircraft. There was no post-accident fire and the pilot escaped with minor injuries.

Lesson learned: It can happen to anyone. The pilot was in the habit of practising mentally for emergencies at each takeoff and reacted appropriately. He appreciated the reduced reaction time for engine malfunctions at low altitude. The pilot had trained at removing the fire extinguisher from its holding bracket while in flight. The pilot made the transition from the cockpit to the landing area and focused on flying the aircraft without being preoccupied with the cause of emergency. The use of the shoulder harness likely reduced the extent of the injuries. It may not be possible to eliminate all aviation risks, but experience and training can help reduce the severity of an occurrence. △

Classic demonstration of the visibility conflict between low- and high-wing light aircraft. Unbelievable midair collision at Plant City Municipal Airport, Florida, on December 11, 1999.
Photo courtesy of WFLA Tampa, Florida.

Being Cool Can Be Carried Too Far

by Bob Merrick

In much of modern life, being cool is "where it's at," but too much coolness in your aviation life could be life-threatening.

Aviation has come a long way since pioneering Canadian aviators wrapped themselves in bunny bags, daubed themselves with whale grease and set out in their open-cockpit planes to help build a country. Back then, engine reliability was a somewhat fanciful dream, navigation was an occult art, and aviators embarking on long flights fully expected to spend time in the bush before arriving at their destination. Thus, they went prepared.

Much of the aircraft's payload was given over to survival gear. Using the stuff they brought along, early aviators could build a house, then machine the various parts needed to restore their HS-2L to serviceability. They knew that if they went down, rescue would be a long time coming.

Not so these days. Now, the emphasis has shifted to prompt extraction of distressed aviators from their involuntary campsites. As well, modern aircraft and modern navigation systems have greatly reduced the incidence of unexpected camp-outs. Thus, most aviators and their passengers give little thought to the consequences of engine failure or navigational shortcomings. They know that search and rescue (SAR) or the Civil Aviation Search and Rescue Association (CASARA) will be along soon. In summer, such an attitude is not necessarily excusable, but perhaps understandable. In winter, such a cavalier attitude can be fatal.

Winter is upon us and now is the time to review a personal survival kit, just in case a flight terminates at a point many miles from anywhere. After a simple forced landing, the first act should be to *turn on the emergency locator transmitter (ELT).* Unless you are a skilled woodsperson, a wintertime forced landing is an emergency, and that's what the ELT is there for. So get it beeping now.

In most of Canada, most of the time, you would want to have mitts, tuques, snow boots and scarves at hand if the aircraft goes down. Cargo pants are currently trendy and cool, and they have pockets for stowing such items. Waterproof containers of windflamer matches are also essential, and there is no way of having too many of them.

If your camp-out results from something more vigorous than a mere forced landing, first aid to the injured will loom large in your list of first things to do. Again though, you should manually flip the ELT function switch to the "on" position. Yes, the impact should do it, but it doesn't hurt to turn the switch on. Leave it on until a SAR TECH turns it off. Then do your best with the first aid; remember that those with injuries will likely feel the cold more than you will.

Attracting attention to your campsite is urgent. The ELT will summon help, but the help may have trouble seeing you. Plumes of smoke will help advertise your presence, and the oil from your engine, or some pine boughs, will help you make a dandy smudge on the horizon. A signaling mirror is also useful when the winter sun bursts through the clouds.

SAR aspires to provide same-day service to all distressed aviators, but, even under the best of circumstances, they are often thwarted by weather. Staying warm is essential; tuques, mitts, scarves and warm boots should be worn or in your pockets for all winter flying. It can get excruciatingly cold in the interval between the end of the crash or forced landing and the first crackle of the fire that you plan to start with those windflamer matches. You can also get hungry, so a couple of granola bars or similar nourishment will help prevent major league tummy rumbles.

Statistically, most pilots are unlikely to ever find themselves in a position where they need SAR's service. But that should not preclude taking minimum precautions. What survival gear do you routinely keep close at hand while experiencing the joys of winter flying? What survival gear *should* you routinely keep on hand? Are the two answers the same? If not, perhaps you are working too hard at being cool. If you're out in the cold, "cool" may be deadly. Check your survival kit today. △

GPS Direct . . . Or Is IT?

The following account highlights the critical importance of maintaining proper map-reading skills and, more importantly, the need to always know your position on your visual flight rules (VFR) map even though you are flying a global positioning system (GPS) direct route.

A pilot and two passengers flew to Lac Portneuf, Quebec, in a float-equipped Cessna A185F on June 9, 1997, for a fishing trip and had planned to return home to Pittsfield, Maine, on June 13, 1997. The aircraft took off as scheduled on June 13 with a planned refuelling stop at Lac-Sébastien, 51 NM to the southwest; however, the pilot returned to Lac Portneuf because fog and low visibility prevented him from reaching his destination. The pilot delayed the departure until the next day. On June 14, the takeoff was delayed again because of fog and rain, but the pilot and his passengers eventually departed at 08:45 from Lac Portneuf on a VFR flight to Lac-Sébastien.

Around 09:30, witnesses about three miles west of Lac-Morin heard the sound of an aircraft engine pass overhead, soon followed by a sound of impact. They did not see the aircraft because the visibility was restricted by thick fog. The aircraft did not arrive at its destination as scheduled on the flight plan, and searches were undertaken. It was found at about 13:30 on the same day. It crashed at the 2500-ft. level of the east side of a mountain that rises to 2650 ft. above sea level (ASL) in straight-and-level flight on a magnetic heading of 250°. The aircraft was destroyed and the three occupants were killed. This synopsis is based on Transportation Safety Board of Canada (TSB) Final Report A97Q0118.

Is this the neatest toy or what?! Navigation is a piece of cake now!

The pilot and both passengers were wearing seat belts but these gave way under the force of the impact, and the three occupants were thrown from the aircraft. The pilot was certified and qualified to fly day VFR only. The TSB determined that the installation of the floats was not documented in the aircraft's technical log books, as required by regulation. The aircraft was properly equipped for instrument flying. Further, it was fitted with an autopilot that kept the wings level and with a GPS navigation receiver. This navigation system is more efficient than traditional means of navigation and therefore reduces the pilot's workload.

The GPS installed in this aircraft displays the aircraft's geographical position, ground speed, time of arrival, distance, and track to programmed locations; it does not display ground elevation. The GPS receiver in the aircraft would indicate the bearing and distance to the destination at all times no matter where on earth the aircraft was physically located. Pilots tend to rely on this information and do not have to attend to where the aircraft is geographically located because they know they are not lost and they can always fly directly to their destination. The aircraft had no radio altimeter or ground proximity warning system, nor was either required by regulation.

An emergency locator transmitter (ELT) was installed and in working order, but the signal was not received by any aircraft or the Search and Rescue Satellite Aided Tracking (SARSAT) system because the antenna broke off on impact. About 08:00 on the day of the accident, the pilot observed a commercial aircraft flying southwest, so he telephoned a Lac-Sébastien aircraft operator to obtain current meteorological information at his destination. He was informed that conditions were favourable for visual flight, and that the ceiling was 2000 ft. ASL. At 08:20, the pilot submitted a VFR flight plan and he was to leave Lac Portneuf at 08:45 and proceed direct to Lac-Sébastien at an altitude of 2500 ft. ASL. According to the flight plan, the flight time was 45 min, with an endurance of 2 hrs. The chosen route was over a heavily wooded area with lakes, mountains and valleys; the elevation of the summits ranged between 2000 and 2900 ft. ASL. The pilot did not request or receive any weather information relating to the planned route from the FSS.

Conditions at Lac Portneuf were favourable for VFR flight on takeoff. In the area where the accident occurred, visibility was very restricted or almost zero in fog. At the time of the crash, a bush pilot who knew the area well reported that the peaks of the mountains were concealed by clouds. Four hours after the accident, the pilot of the search and rescue (SAR) helicopter observed localized low clouds in the area of the accident.

The east side of the mountain where the aircraft crashed has a steep slope and is densely wooded. The seaplane hit the ground, and then a rock face, in a slightly nose-up attitude with 5° of left bank. The wings broke off at impact and the cabin was heavily damaged. Examination of the engine and the propeller at the site suggest that the engine was turning on impact; however, the examination could not determine the power that it was producing. There was no evidence suggesting that the aircraft had suffered a structural failure, flight control problems, electrical problems, power loss, or that fire broke out during flight.

A controlled flight into terrain (CFIT) accident is when an airworthy aircraft inadvertently strikes the terrain or water without the crew's suspecting the tragedy is about to happen. According to CFIT accident statistics collected by the TSB, pilots often tried to see the ground to fly VFR even though the flight was taking place in clouds, at night, in whiteout, or in other conditions that did not permit visual flight. More than half of such CFIT accidents occurred in VFR flight. In 1995, the TSB recommended that Transport Canada (TC) initiate a national safety awareness program addressing the operational limitations and safe use of GPS in remote operations. TC issued several special aviation notices since, which detailed the use of GPS in Canadian airspace, and also published a number of articles on GPS in recent issues of the *Aviation Safety Letter.*

Analysis—The prevailing weather conditions at the points of departure and arrival were favourable for visual flight, but the pilot could not have known that local conditions along the way were poor, as the area is largely uninhabited and weather information was not available. Faced with deteriorating weather conditions, which made continuation of the flight hazardous, the pilot had to make a decision either to find a suitable lake for landing or to make a diversion. The pilot decided not to land, but to deviate from the direct route and try to reach his destination by veering southeast in order to fly in visual meteorological conditions (VMC).

It is likely that the pilot was not aware of his true position in relation to the terrain and topography of the area and was relying on the GPS to get to his destination because the weather conditions required him to focus the greatest part of his attention on manoeuvring the aircraft to maintain VMC. In low-altitude flight, the pilot would have difficulty following his progress on the VFR navigation chart, on which the elevation of the terrain appeared. Consequently, although the pilot knew where Lac-Sébastien was located in relation to his aircraft, he did not know his exact position and was flying at an altitude lower than some of the surrounding terrain.

The TSB could not determine why the pilot decided to continue the flight in adverse conditions, but it is likely that the nearness of the destination and the pilot's reliance on the GPS had an influence on his decision. The desire of the pilot and the passengers to return home after the first delay may have influenced the pilot's decision to undertake the flight.

In the end, the TSB determined that the pilot continued his flight in adverse weather conditions and probably did not have the necessary visual references to avoid hitting the steep slope of the mountain. Likely contributing to this occurrence was the pilot's reliance on GPS instead of the navigation chart while attempting to maintain VMC. △

If It Hurts So Much, Why Would You Do It?

On January 9, 1998, at 19:25 local time, a Boeing 727-200 departed Houston, Texas. While climbing through 6000 ft. the crew heard a loud bang followed by intense vibration in the airframe. The noise level in the flight deck became so high that communication among the flight crew was almost impossible. The reasons for the noise and vibration are as follows: The No. 1 engine had lost a number of fan blades, resulting in violent vibrations that caused the cowling doors to become unlatched. The No. 2 engine also lost fan blades, and the No. 3 engine had a damaged pylon. The radome had been destroyed and departed the aircraft along with the radar antenna. The pressure bulkhead was penetrated, and the leading edges of both wings were damaged. The Kruger flap on the right wing was punctured, as was the wing adjacent to the flap. The right inboard slat and the wing area adjacent to the slat suffered the same fate. The first officer's pitot tube was torn from the aircraft, rendering his airspeed indicator unusable. Overall, there was about $5,000,000 damage to the aircraft.

The cause of the incident was the aircraft's collision with a flock of migrating snow geese, a situation that occurs far too often in North America these days, likely because of burgeoning populations of some species of waterfowl. However, the extent of the damage to the aircraft was probably greater than to be expected because of the high-speed departure trial that the aircraft was involved in. The Federal Aviation Administration (FAA) does not allow aircraft to fly above 250 kt. below 10,000 ft. mean sea level (MSL) in the United States, but trials were being conducted at the George Bush Intercontinental Airport (IAH) allowing aircraft to exceed 250 kt. on departure to test for gains in efficiency. At the time of impact, the B727 was flying at 280 kt. and still accelerating. The captain concluded that the high-speed departure program was "not a good idea." The outcome of the incident may not have been so favourable except for the fact that he had two second officers on board, providing a four-person flight crew to work through the check lists.

A discussion on the nuances of airworthiness requirements and speed restrictions below 10,000 ft. would fill several *Aviation Safety Letter* newsletters, but suffice it to say that the impact force resulting from a bird strike increases with the square of speed, and every 10 kt. of increased speed results in considerably greater damage. Whether or not efficiencies are gained by high-speed departures is debatable, and, furthermore, aircraft components such as engines, windshields, and leading edge devices are not designed to withstand high-speed impacts with large birds. In Canada, the *Canadian Aviation Regulations* (CARs) allow aircraft to exceed 250 kt. below 10,000 ft. above sea level (ASL) on departure or in accordance with a special flight operations certificate. Since most bird activity occurs below 10,000 ft. and high-speed departures likely keep you in that airspace longer, why would you want to exceed 250 kt. when the only advantage might be a few minutes of time saved? Is it worth the risk to yourself, your passengers, and your aircraft?

For additional information, please contact: Bruce MacKinnon
Wildlife Control Specialist
Transport Canada
Aerodrome Safety Branch
Phone: (613) 990-0515
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CASS 2000—May 8 to 10, 2000 in St. John's, Newfoundland

Historic St. John's, Newfoundland, hosts the 12th annual Canadian Aviation Safety Seminar (CASS) 2000, May 8, 9 and 10 at the Delta St. John's Hotel and Conference Centre. The theme for CASS 2000 is "Safety Management," and topics will include human factors in aviation accidents, safety management in daily operations, company safety management programs, aerodrome safety issues, barriers to effective air traffic communications, cabin safety, key safety issues from the Transportation Safety Board of Canada, and more.

CASS 2000's goal is to provide participants, particularly small and medium commercial operators, with specific and usable strategies to guide them in incorporating sound safety management practices in their operations.

These strategies could help break the chain of events that may lead to an occurrence. To help achieve this goal, the CASS 2000 Committee has lined up several high-quality speakers, including Mr. Kevin W. Ward, Director of Civil Aviation, Civil Aviation Authority of New Zealand. CASS 2000 has something to offer anyone who has a responsibility for safety: chief executive officers, operations and maintenance managers, aircraft maintenance engineers, safety officers and crew members.

In addition to offering delegates informative discussions from keynote speakers, System Safety, Atlantic Region, has scheduled two days of aviation-related workshops on Monday, May 8, and Tuesday, May 9. Space will be limited for workshop sessions—please register early! Plan on attending, celebrate the millennium, Viking landings and relive the era of trans-Atlantic flights. Names like Amelia Earhart, Alcock and Brown are as familiar to Newfoundland as the icebergs and whales that frequent the coast. Experience the hospitality and history that are unique to this part of the world.

Visit the CASS 2000 Web site for further information, the latest on seminar speakers and workshops or to register:
http://www.tc.gc.ca/aviation/syssafe/cass2000/homepage.htm
CASS registration fee: C$295 (fee: $256.53 + HST: $38.47).

For further information, or to register contact System Safety, Atlantic Region, at (506) 851-7110 or send a fax to (506) 851-3022. △

Upcoming Regional Events

The following schedule for upcoming courses and/or workshops is tentative. Please contact your regional office for exact location and cost.

Crew Resource Management (CRM). This course is designed to provide knowledge and skills by using all available resources to achieve safe, efficient flight. The course covers the topics for initial training as identified in paragraph 725.124(39)(a) of the *Commercial Air Service Standards*.

Company Aviation Safety Officer (CASO). This program is designed to provide both the theory and practical application of topics such as incident reporting, tracking and analysis; the company safety survey; risk management concepts; accident prevention; the safety committee; and emergency response planning. This course covers the topics as identified in subsection 725.07(3) of the *Commercial Air Service Standards* (Air Operator Flight Safety Program). System Safety would like to encourage company management participation, so for the CASO course only, we are offering ***one free seat*** to each CEO, Operations Manager, Chief Pilot, Chief of Maintenance or Chief Flight Attendant for every company employee that attends.

Pilot Decision Making (PDM). This course covers the decision-making process, hazardous attitudes and behaviour, judgment, risk management and communication skills. It satisfies the requirement of section 723.28 of the *Commercial Air Service Standards, VFR Flight Minima—Uncontrolled Airspace* for a "recognized Pilot Decision Making course".

Human Performance in Aviation Maintenance (HPIAM). The concept of HPIAM is to provide awareness to the maintenance personnel and management in order to reduce the risk of an accident or incident.

Atlantic Region

CRM	February 14-15	Moncton, N.B.	April 1-2	Gander, Nfld.
	March 4-5	Goose Bay, Lab.	May 13-14	St. John's, Nfld.
PDM	January 31	Saint John, N.B.	March 25	Goose Bay, Lab.
	February 5	Moncton, N.B.	April 29	Gander, Nfld.
HPIAM	February 8-9	Gander, Nfld.		

Courses and workshops are available on demand. For further information, please contact Rosemary Landry at (506) 851-7110.

Quebec Region

Skills Review Seminars *(all in French except where noted)*

January 21	St-Hubert	March 1	Bromont
January 26	Rouyn	March 2	Lachute
February 16	Quebec City	March 31	Les Cèdres *(in English)*
February 19	Chicoutimi	April 8	Val d'Or
February 24	Victoriaville	April 9	Mont-Laurier
February 26	St-Frédéric	April 27	Dolbeau
		April 28	Trois-Rivières

PDM March 15 Montreal — **CASO** April 11-14 Montreal

For more information or to register, please call (514) 633-3249.

Ontario Region

HPIAM March 1-2 Thunder Bay

For information or to register for the above course, or for information on the Toronto area Monthly Aviation Safety Seminars schedule, please contact Nicole Nel at (416) 952-0175.

Prairie and Northern Region (PNR)

CRM January 18-19 Yellowknife — February 23-24 Whitehorse

PDM: This course is available on request with a minimum of 12 participants.

For information on courses and workshops in PNR, please contact Carol Beauchamp at (780) 495-2258; fax: (780) 495-7355; or e-mail: beaucca@tc.gc.ca

Pacific Region

CRM	February 24-25	Victoria	April 26-27	Abbotsford
CASO	February 22-23	Victoria		

PDM: Third Thursday of every month—Richmond.

January 19	Sechelt	March 15	108 Mile House
February 23	Victoria	March 15	Dawson Creek
March 13	Sandspit	April 10	Nanaimo
March 14	Prince Rupert	April 11	Courtenay

For information on courses and workshops in Pacific Region, please call: (604) 666-9517; fax: (604) 666-9507.

to the letter

Still confused?

Dear Editor,

I would like to offer a comment regarding issue 3/99 of the *Aviation Safety Letter.* In the cover article, "TAF" is incorrectly used as an acronym for "terminal area forecast," when in fact the correct terminology for TAF is "aerodrome forecast."

John Foottit
NAV CANADA
Ottawa, Ontario

Thank you John for this obvious slip. The use of proper meteorological terminology is a constant challenge, and many people still refer to aerodrome forecasts as "terminal" forecasts. The acronym "TAF" still needs some hammering in. Now in the same vein, if only the media could finally distinguish Transport Canada from the Transportation Safety Board of Canada.—Ed.

Aviate, Navigate and… Educate!

Dear Editor,

Rod Ridley's article titled "Aviate, Navigate and Communicate" in issue 2/99 of the *Aviation Safety Letter* (ASL) struck a chord. I'd like to share my views on why many aviators—both fixed- and rotary-wing—have poor radio procedures. I feel the training and example given to students by schools, instructors and other pilots are inadequate. The only formal instruction that most of us received during our training was the self-study session designed to get our Radio Operator's Certificate. I received very little tuition in the use, protocols and importance of the radio. Most of this I was expected to glean from the A.I.P. COM section and from day-to-day use of the radio.

This resulted in a "need-to-know" education, rather than a thorough training in how, when and why to use the radio. My early position reports were fumbled, embarrassing efforts but gradually became routine and clear, and at least I warned others of my presence, no matter how bad my messages were. Since then, I have realized that most pilots use the radio only when they must. Perhaps the root of the problem goes back to the pilots' student days, when they were scared of messing up and sounding stupid, so they talked as little as possible, and this became a habit.

As well, many experienced pilots do not submit regular position reports, even when they know there are other aircraft around! We hear them asking for weather information or filing flight plans, but they are not giving position reports or, heaven forbid, pilot weather reports (PIREP). I believe that Transport Canada (TC) needs to co-ordinate an initiative with NAV CANADA, flight schools and pilots. More rigorous training requirements would be in order, and seminars on this subject should be delivered to flight schools across Canada.

Steve Satow
Edmonton, Alberta

Steve, we reviewed your concerns with the flight training office and it would seem that this is the first letter or any type of communication referring to this subject. One experienced TC examiner has never encountered a problem in this area, and to ensure that others had not seen differently, exam results on exercise 31, "Radio Communications," were evaluated and only 4 out of 1356 had a failing grade on that exercise. Therefore we believe there is no justification for making changes to the training program. Perhaps the particular flight school you attended has some deficiencies in this area, and you may want to discuss this with the appropriate regional TC office. As you know, proper radio communication is a regular and emphasized topic in the ASL, and it is always included in various safety presentations already being delivered by TC. We will continue to highlight this subject in all of our promotional and educational activities.—Ed.

Flight Planning

Dear Editor,

I am a flight service specialist working at the London Flight Service Station (FSS) and I would like to submit a solution to a problem that, I'm sure, affects all FSSs. When an aircraft is overdue on a visual flight rules (VFR) flight plan/itinerary, one of the first steps FSS must take is to check the destination airport. At remote airports, and/or at night, this can be a fairly complex undertaking that often involves sending the police to the airport in question.

To minimize this problem, pilots should include a contact phone number that is most likely to allow FSS to reach them directly in their flight plan or itinerary. This could be a home phone number of the friends/relatives visited, the hotel where they will be staying, or even a cell phone. This would allow us to establish more quickly the pilots' whereabouts, and the search could be terminated before more drastic search and rescue (SAR) actions are taken.

Rob Elford
London FSS

Where Your Mouth Is

Helicopter Survival Rescue Services (HSRS) of Dartmouth, Nova Scotia, was in town recently, and given all my efforts in promoting underwater escape training, I had no choice when asked to take the plunge. The dunking is only one element of the sea survival course, which includes a comprehensive morning lecture on how to survive a controlled or uncontrolled ditch, how to use life jackets and life rafts, and how to work as a team to optimize survival. Highly recommended initial or recurrent training for anyone who flies above water. For more info on training facilities, refer back to ASL 4/98, or contact the editor. △

Underwater "cage" in action.

Declaring an Emergency

Reprinted from the UK Flight Safety Committee's Focus on Commercial Aviation Safety, *Autumn 1999 Issue, with permission. Although nearly identical to Canadian procedures, the following information reflects procedures in the UK. For the specific Canadian application, read your A.I.P. section COM 5.10.*

There has always been a reluctance by many pilots to declare an emergency, in spite of the clear advice to do so if the situation warrants. This attitude may have filtered down from the airlines who shun what they see as adverse (and increasingly sensational) publicity when, for example, a "local-standby phase" is declared by ATC. In other cases, pilots can be reluctant to "make a fuss," displaying perhaps a macho attitude in believing they can handle the situation. The thought of having to go through a reporting procedure may also deter some.

When something goes wrong, sometimes our pilot mindset can be such that we believe circumstances do not warrant any outside assistance. A light twin-engine aircraft, for example, is certificated for single-engine performance, and in an engine failure situation it is often hoped that flight can be sustained without incident. However, this and any other type of emergency or reduced performance situation (such as icing) should be advised to ATC so that they understand your predicament and can plan assistance accordingly.

Failure to clearly state the nature of a problem not only prevents ATC from providing assistance, but also (in the worst case) may deprive accident investigators of any leads to explain what led to the burnt-out wreck before them. Remember that there are two levels of communication, distress and urgency.

Distress is defined as being threatened by serious and/or imminent danger and requiring immediate assistance (use MAYDAY, pronounced three times in Canada).

Urgency is defined as a condition concerning the safety of an aircraft, or of some person on board or within sight, but which does not require immediate assistance (use PAN, pronounced three times in Canada).

The urgency situation is probably the one which is not advised as often as it should be. If you declare an urgency situation, it is possible that the problem may be resolved (or alleviated) before it becomes a distress situation. If the problem is resolved or a safe landing made, don't forget to cancel the MAYDAY or PAN. △

SANTA

Santa Claus, like all pilots, gets regular visits from Transport Canada (TC), and it was shortly before Christmas when the TC examiner arrived. In preparation, Santa had the elves wash the sled and bathe all the reindeer. Santa got his logbook out and made sure all his paperwork was in order. The examiner walked slowly around the sled. He checked the reindeer harnesses, the landing gear, and Rudolf's nose. He painstakingly reviewed Santa's weight and balance calculations for the sled's enormous payload.

Finally, they were ready for the checkride. Santa got in, fastened his seatbelt and shoulder harness, and checked the compass. Then the examiner hopped in carrying, to Santa's surprise, a shotgun. "What's that for?" asked Santa incredulously. The examiner winked and said, "I'm not supposed to tell you this, but you're gonna lose an engine on takeoff." △

The Convenience Store Syndrome

"Hi mate . . . ready for the ride of your life?"

Have you ever stopped at a convenience store and ran in quickly to get what you need, leaving your car engine idling? Sure you have—we all have. In our fast-paced society, with a million errands to do in 10 min, why bother shutting off the engine? Short of having a thief steal your car during the few seconds you're away, the car will still be there and waiting. In fact, some will even argue it's better for the engine.

Not surprisingly, some pilots have decided to try this with their aircraft; the results may differ wildly from leaving your 1978 Volaré in the parking lot of your nearest 7-11. A recent case in point: the pilot of a 1990 Robinson R22 Beta, with one passenger on board, landed his helicopter at an oil field to check a building. To avoid a lengthy shutdown, he applied the friction lock to the collective and cyclic and left the helicopter with the engine running. When he got to the building, he heard the engine RPM increase. The pilot turned around to see the helicopter lift off the ground and then nose over into the muskeg. Damage to the helicopter was substantial.

In another incident, the pilot of a 1986 Air Tractor AT-301 taxied to some fuel pumps, then stopped, leaving the aircraft unchocked and the engine at the "idle power setting," before leaving the cockpit to make a telephone call. A ramp attendant, who was neither a pilot nor an engineer, was refuelling the aircraft when a sudden gust of wind got the aircraft moving. The ramp attendant jumped into the aircraft and, in an attempt to stop it, inadvertently opened the throttle and the aircraft started to move faster. The ramp attendant then jumped clear of the aircraft.

The pilot heard the power increase and ran out but was unsuccessful in his attempt to get on board and stop the aircraft. The aircraft headed towards a hangar, and the hangar doors started to open as the aircraft got closer. The aircraft was not properly aligned with the door opening and about six feet of the left wing struck the hangar door, which put the aircraft in a left turn; then its right wing struck and substantially damaged a Grumman American AA5-B. The aircraft completed its journey when the propeller struck and heavily damaged a parked automobile.

There were no injuries during these two nasty occurrences, except for torn metal, bruised egos and very embarrassing insurance claims. If you want to learn from the mistakes of others, never leave an aircraft unattended with the engine running, not even for a very short period. Simply shut it down. The benefit of avoiding a start cycle is long forgotten when the expense of a totally preventable accident sets in. △

14th Annual Human Factors in Aviation Maintenance Symposium

Transport Canada hosts the 14th Annual Human Factors in Aviation Maintenance symposium in Vancouver, British Columbia, on March 28–30, 2000. This year's symposium ventures beyond human factors awareness and looks at the practice of safety management as a holistic approach to understanding and mitigating human error.

For years it has been acknowledged that one of the greatest threats to aviation safety is human error. This has resulted in a proliferation of "human factors" solutions. While the accident rate attributable to technical factors has been reduced to almost zero, the human error accident rate has remained consistent. The Vancouver symposium aims to address the problem head-on with respect to aircraft maintenance and manufacturing. Visit the symposium's Web site at: http://www.tc.gc.ca/aviation/mainten/aarpc/hfiam.htm

For further information, contact Jacqueline Booth-Bourdeau at (613) 952-7974 or boothbj@tc.gc.ca, or send a fax to (613) 952-3298. △

178 seconds

If you're ever tempted to take off in marginal weather and have no instrument training, read this article before you go. If you decide to go anyway and lose visual contact, start counting down from 178 seconds.

How long can a pilot who has no instrument training expect to live after he or she flies into bad weather and loses visual contact? Researchers at the University of Illinois found the answer to this question. Twenty student "guinea pigs" flew into simulated instrument weather, and all went into graveyard spirals or rollercoasters. The outcome differed in only one respect: the time required until control was lost. The interval ranged from 480 seconds to 20 seconds. The average time was 178 seconds—2 seconds short of 3 minutes.

Here's the fatal scenario:

The sky is overcast and the visibility poor. That reported five-mile visibility looks more like two, and you can't judge the height of the overcast. Your altimeter says you're at 1500 but your map tells you there's local terrain as high as 1200 ft. There might even be a tower nearby because you're not sure just how far off course you are. But you've flown into worse weather than this, so you press on.

You find yourself unconsciously easing back just a bit on the controls to clear those non-too-imaginary towers. With no warning, you're in the soup. You peer so hard into the milky white mist that your eyes hurt. You fight the feeling in your stomach. You swallow, only to find your mouth dry. Now you realize you should have waited for better weather. The appointment was important—but not that important. Somewhere, a voice is saying "You've had it—it's all over!"

You now have 178 seconds to live. Your aircraft feels in an even keel but your compass turns slowly. You push a little rudder and add a little pressure on the controls to stop the turn but this feels unnatural and you return the controls to their original position. This feels better but your compass in now turning a little faster and your airspeed is increasing slightly. You scan your instrument panel for help but what you see looks somewhat unfamiliar. You're sure this is just a bad spot. You'll break out in a few minutes, but you don't have much time left.

You now have 100 seconds to live. You glance at your altimeter and are shocked to see it unwinding. You're already down to 1200 ft. Instinctively, you pull back on the controls but the altimeter still unwinds. The engine is into the red and the airspeed, nearly so.

You have 45 seconds to live. Now you're sweating and shaking. There must be something wrong with the controls; pulling back only moves that airspeed indicator further into the red. You can hear the wind tearing at the aircraft.

You have 10 seconds to live. Suddenly, you see the ground. The trees rush up at you. You can see the horizon if you turn your head far enough but it's at an unusual angle—you're almost inverted. You open your mouth to scream but . . .

. . . you have no seconds left.

A five-minute delay is better than a five-minute flight.

Concept by Sergeant Muenlgassner.
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