Transport Canada Safety and Security
Transports Canada Sécurité et sûreté

Aviation Safety Letter

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Learn from what others are doing right..
Issue 4/96

That Others May Live

On July 7, 1996, three members of Canada's Civil Air Search and Rescue Association (CASARA) died when their PA-28 crashed and burned on Snowcrest Mountain near Nelson, British Columbia. The pilot, Richard Dendys, and spotters William Bing and Richard Ayotte were searching for another PA-28 that had gone missing the previous day.

Nelson is in a narrow valley surrounded by mountains. The CASARA aircraft did a shuttle climb to gain altitude before proceeding on course to their assigned search area. The crew did not make the first mandatory half-hour communications check-in with search headquarters. Nor did they respond to subsequent calls from other search aircraft. Smoke from the post-crash fire led the crew of a 442 Squadron Buffalo to the scene. The aircraft had hit the mountainside with little or no forward speed.

Strong wind currents were reported by another pilot in the area. It is suspected that the PA-28 was caught in a strong downdraft that it could not out-climb, and it mushed into the mountainside in a near stalled condition.

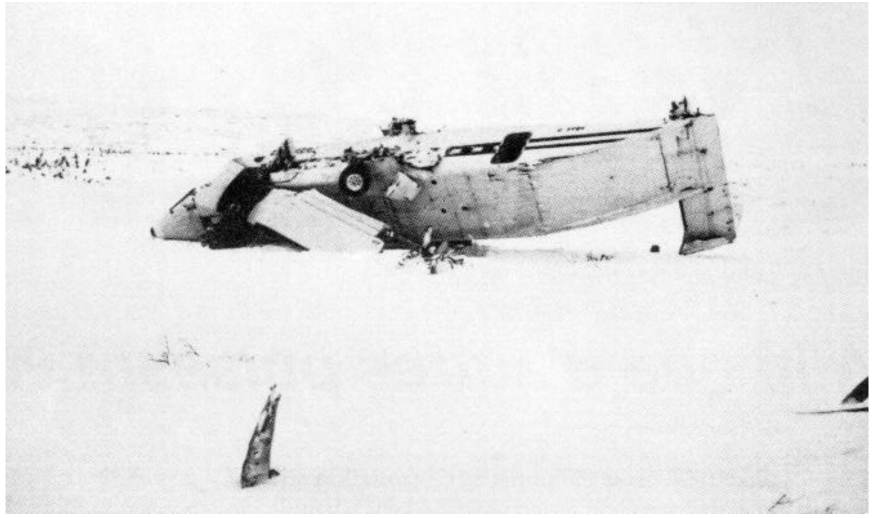
The original missing PA-28 was found that same day by a helicopter pilot investigating a report of a low flying aircraft in a very narrow valley known as Grohman Creek. That pilot and one of his two passengers were rescued with serious injuries. The other passenger died in the crash.

CASARA was formed in 1986 from a number of independent provincial volunteer groups. Its goal is to provide a nation-wide organization that will foster aviation safety and augment the Canadian Forces search and rescue (SAR) forces. CASARA is jointly sponsored by Transport Canada and DND. CASARA now has over 3700 volunteers — pilots, navigators, spotters — and has over 500 aircraft available at 105 locations across Canada. They fly 500-1000 hours per year on SAR missions and contribute an additional 200-300 hours per year to assist provincial and territorial authorities. In addition, CASARA spotters have logged many thousands of hours in military SAR aircraft. In 1991, CASARA won the prestigious Mynarski trophy for their significant contribution to Canada's SAR program.

This CASARA crew joins the ranks of 29 other searchers who, over the years, have given their lives so That Others May Live.

Canada

Decision to Continue



But they all survived.

In December 1993, an SD3-30 crew was transporting 11 company employees from Kuujjuarapik to Umiujaq on the eastern shore of Hudson Bay.

The crew had received a complete weather briefing from their company dispatcher prior to their flight. He told them a wave over Hudson Bay with a warm front extending southward would move eastward through their route during the afternoon.

There was no terminal forecast for their destination, but the area forecast was for a broken ceiling at 3000 feet with visibilities intermittently three to six miles in light snow showers with local ceilings of 600 to 1200 feet and visibilities of one half to three miles in snow and blowing snow. Winds were forecast to be 250 degrees True at 35 gusting to 45 knots.

Terminal forecasts for aerodromes 126-210 miles north of their destination were for "occasional partially obscured ceiling 800 feet overcast, visibility one mile in light freezing drizzle and light snow."

Immediately after takeoff, the crew contacted the Kuujjuarapik FSS to air-file a flight note with a cruise altitude of 5000 feet. They requested the latest weather information. The FSS gave them the 45-minute-old hourly observation: partially obscured, a balloon-measured ceiling of 100 feet overcast with visibility at one mile in light freezing drizzle, temperature and dew point both minus two degrees Celsius, wind at 230 degrees magnetic at 20 knots. Five minutes later, the FSS updated the crew with a seven-minute old special — indefinite ceiling 100 obscured, visibility three quarters of a mile in light freezing drizzle, light snow and fog. The FSS updated the crew again five minutes later with another special taken only three minutes before — again, it indicated partially obscured conditions with a balloon-measure ceiling of 100 overcast, visibility one mile in light freezing drizzle, very light snow and fog, including light blowing snow.

Seven minutes later, as the crew was commencing their descent, the Community Air Radio Station (CARS) operator informed the crew of current weather — it was unchanged from earlier reports except that the winds were now 260 degrees M at 23 knots and there was mechanical turbulence on the approach (the CFS includes the following warning: *Severe turbulence may be encountered when winds exceed 20 knots).*

During their 26-minute flight, the crew received a total of four separate weather reports from Umiujaq. All indicated an obscured ceiling at 100 feet, serious icing in freezing drizzle and probable severe turbulence on approach *(there is no published instrument approach at Umiujaq, nor are there any de-icing facilities).* Yet the crew decided to continue with the approach.

> *During their 26-minute flight, the crew received four separate weather reports: "obscured ceiling 100 feet, light freezing drizzle and probable severe turbulence on approach," and yet, they decided to continue.*

(As an aside, the airport had NOTAMed the only runway at Umiujaq closed due to snow seven days prior to this occurrence, and it had remained closed continuously. Neither the company dispatcher nor the FSS passed the NOTAM to the crew. Nor did the CARS operator advise the crew of the NOTAM although he gave the crew a detailed description of the runway conditions. The fact that the runway was NOTAMed "closed"

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

did not get to play a part in the story because the crew never made it to the threshold.)

The TSB accident report (A93Q0245) records the final minutes of flight as follows: 30 miles from the aerodrome, the crew began the descent from their 5000-foot cruise altitude. At seven miles, now at 700 feet, the crew said they could see the ground. After passing a GPS waypoint (before reaching the downwind position), the crew continued their step-down procedure to about 200 feet AGL. At that altitude, the visibility was reported by the crew to be over one and one half miles, and the crew stated they could recognize references on the ground and position the aircraft for landing. When turning onto final, the captain initiated a turn with at least 35 degrees of bank, and the aircraft stalled. The captain initiated a stall recovery and called for full power. The aircraft did not gain sufficient altitude to overfly the high terrain, and it crashed.

The co-pilot indicated that he had observed a 1/8 to 1/4-inch thick layer of ice on the unheated portion of the windshield. The crew did not check the wings. Nor did they use the de-icing boots. Post-accident examination of the wreckage found a l/4-inch thick layer of ice almost completely covering the de-icing boots, and another layer of ice along the wing chord.

Forced by strong tail winds on downwind and base legs, the pilot had to manoeuvre at low altitude in a high bank-angle, constant-altitude turn to remain in visual contact with the runway and to remain clear of higher terrain. The high bank-angle and the accumulation of ice caused a significant increase in the aircraft's stalling speed. The aircraft stalled at an altitude where the pilot could not lower the nose to gain speed and, behind the power curve, could not climb over the higher terrain.

Unbelievably, the two pilots and two of the eleven passengers received only minor injuries. The rest of the passengers were uninjured. Most of the occupants evacuated the wreckage through the main cabin door. A few passengers kicked out windows and evacuated through them. Shortly after evacuating the wreckage, the intrepid survivors decided to walk to the airport. Forty-five minutes later they finally saw the lights from their destination.

Call for Nominations for the TC Aviation Safety Award

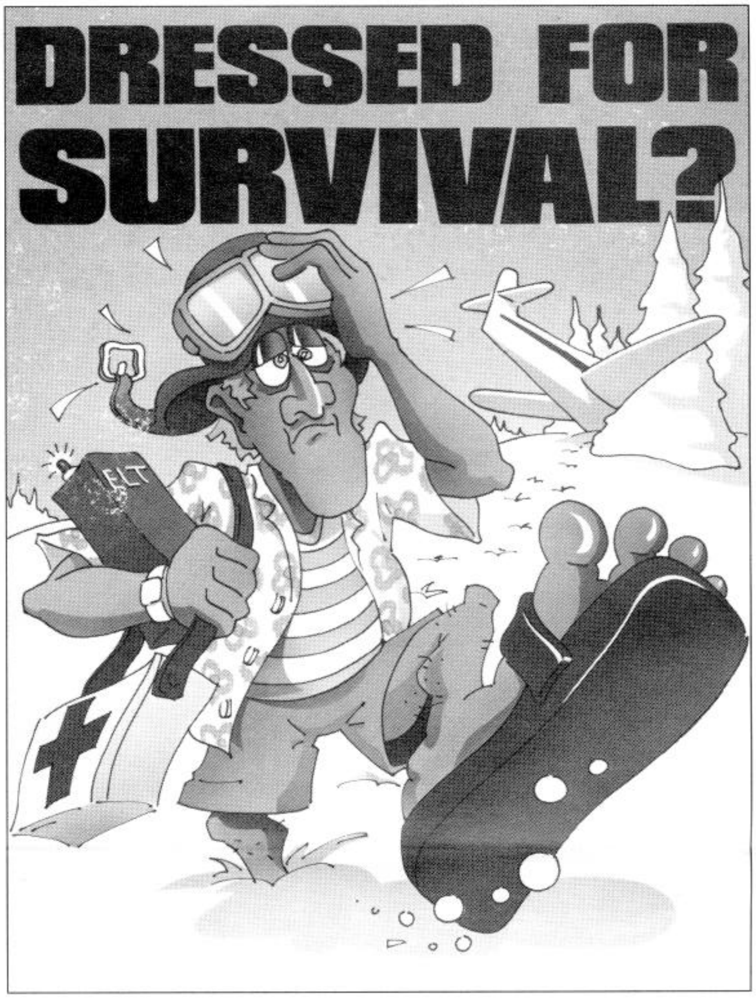
Do you know someone who deserves to be recognized?

The Transport Canada Aviation Safety Award is presented annually to stimulate awareness of aviation safety in Canada by recognizing persons, groups, companies, organizations, agencies, or departments that have contributed in an exceptional manner to this objective.

You can obtain an information brochure explaining award details from your Regional Aviation Safety Officers. The addresses are on this page. The closing date for nominations for the 1997 award is December 31, 1996.

The award will be presented during the ninth annual Canadian Aviation Safety Seminar to be held in Calgary in April 1997.

SARTORIAL SPLENDOUR ... and the Canadian North



The development of heated, long-range aircraft has been a mixed blessing for crews who fly from, say, Florida, to calorically-challenged regions of Canada. A costume comfortable in Florida will speed up serious frostbite upon deplaning in the "quelques arpents de neige" that so inspired the Group of Seven, who presumably huddled together for warmth during their painting sessions.

Similarly, a costume (ahem) suited to the tundra will make unacceptable demands on 24-hour deodorants in the close confines of a modern bizjet. Because most flights go as planned, many aircrew go about their business in attire best 'suited' for heated, hermetically sealed office towers. Most of the time, that works.

Occasionally, there are exceptions. Last winter, a medevac aircraft flew an ailing Canadian resident from Fort Lauderdale, FL to Barrie, ON. The trip went without incident. On takeoff for the return flight, an engine problem threw the aircraft out of control and into a snow bank at the side of the runway. The snow, thrown around by the aircraft's sudden, high-speed arrival extinguished an ensuing flash fire.

The two pilots and two paramedics were shaken but uninjured. One of the paramedics set out to get help, wearing, as the Toronto Star described it, "only a light jacket, track pants and running shoes, and ran two kilometres in the frigid cold to summon help." At least he wasn't impeded by heavy clothes.

This crew was lucky. This incident had the potential for serious injury. Inadequate clothing can shorten survival time. How often do you dress the same way these people did?

Reporting Turbulence Encounters

The PA-31 flight had been relatively routine except for the turbulence — occasional moderate and several tense minutes of severe turbulence. But aside from being a little shaken, everybody was OK.

It was several days later when the AME discovered the damage during a routine maintenance check: distorted exhaust shield assembly, distorted leading edge nacelle plate and both inboard and outboard nacelle skin. Further investigation revealed numerous sheared and loose rivets under the skin between the shear plate and the engine-mount bracket, and other sections of skin.

It was only after questioning the pilots that the AME learned of the severe turbulence encounter. It was fortunate that the damage had not been more extensive.

Severe turbulence is defined in the *A.I.P.* MET 3.7 section as: "Turbulence in which the aircraft is violently tossed about and is impossible to control. **It may cause structural damage**" (emphasis added by the editor).

Not only should turbulence reports be filed with ATC to inform other pilots. The encounter should also be reported to your AME so that he/she can verify that the aircraft is still airworthy for others to fly. △

Exempt from the ELT Order? Maybe You Shouldn't Cancel IFR!

It's a simple phrase. uttered many times daily. "Whizbang Air 372 is cancelling IFR, going tower (or some other frequency)."

Most of you know this means filing a VFR flight plan, unless you're landing immediately. But you may not realize that if you are operating under the exemption to the ELT Order, cancelling IFR means that you now must have an ELT installed. Granted, the ELT exemption does not apply too widely. It applies to multi-engine, turbo-jet aircraft of more than 12,500 pounds (5700 kilograms) MCTOW that are being operated in IFR flight (i) over land within controlled airspace, and (ii) south of latitude 66.30 N.

As all you keen students of the ANOs and CARS recall, the exemption is now set out in ANO 2, No. 17, the ELT Order, and will appear in CARS later this year. Aircraft which meet *all* those conditions don't have to carry an ELT. Aircraft which don't, do.

Most often, it's an Air Mega-Chair pilot who cancels IFR, five miles back from Megalopolis airport. If the aircraft lands a trifle short — or a trifle long — many people will instantly know about it. The search part of SAR won't be a problem.

But suppose you have a smaller aircraft and an unpeopled or supervisorily challenged airport. Let's say you are cleared out of controlled airspace at 18,000 feet some 80 miles from your destination; you cancel IFR and proceed thence VFR.

"Far-fetched", you say? Not really. A recent TSB report told us of an MU-300 which used 4750 feet of the 4500-foot runway at the Jasper-Hinton airport last year, and came to rest in the boonies. Although the aircraft was somewhat re-arranged, all crew members and passengers were uninjured.

For some time, the aircraft had operated VFR. It no longer met the terms of the ELT exemption. Consequently, it was required to carry an ELT. It didn't. This operator is not unique. Others are — equally inadvertently — doing the same thing.

Look at it from a risk assessment perspective. ELTs are intended to summon help to crash sites. Some aircraft are exempt from carrying them because their operations keep them close to the jungle we call civilization. Should they crash, everyone will know about it instantly and dispatch help.

Not so the MU-300, nor many corporate or air taxi aircraft which help keep the wheels of commerce turning by flying to places not normally served by air carriers, large or small. The MU-300 cancelled IFR, left controlled airspace, did not refile VFR, but flew under VFR conditions for some time before landing. During that time, the passengers and crew were not protected by Flight Following or an ELT. The crew *may* have known about the risk, and accepted it. But what about the passengers? Would they have accepted the risk?

The Safety Board did not think it acceptable. They said, "...had the aircraft crashed at any time during the approach or at any time after cancelling IFR, there would have been no ELT signal to indicate a downed aircraft. The fact that there was no flight monitoring exacerbates the situation. If no one is advised or aware of an occurrence (because of the lack of an ELT or lack of flight monitoring) immediate medical attention for the injured would not be available."

Exemptions are granted if *all* conditions pertaining to them are met. Operating outside those conditions increases the risk. No harm came of this occurrence. However, the potential for serious harm was there.

Because most corporate aircraft hop-scotch all over the country, most of them probably carry ELTs. Others, like the MU-300, are exempted. And those paying the bills may not think an ELT is worth the additional cost, given the limited time their aircraft operates under VFR.

After the fact, their passengers — and their lawyers — may think otherwise. When doing your ELT risk assessment, remember that ELTs cost less per hour to operate than lawyers.

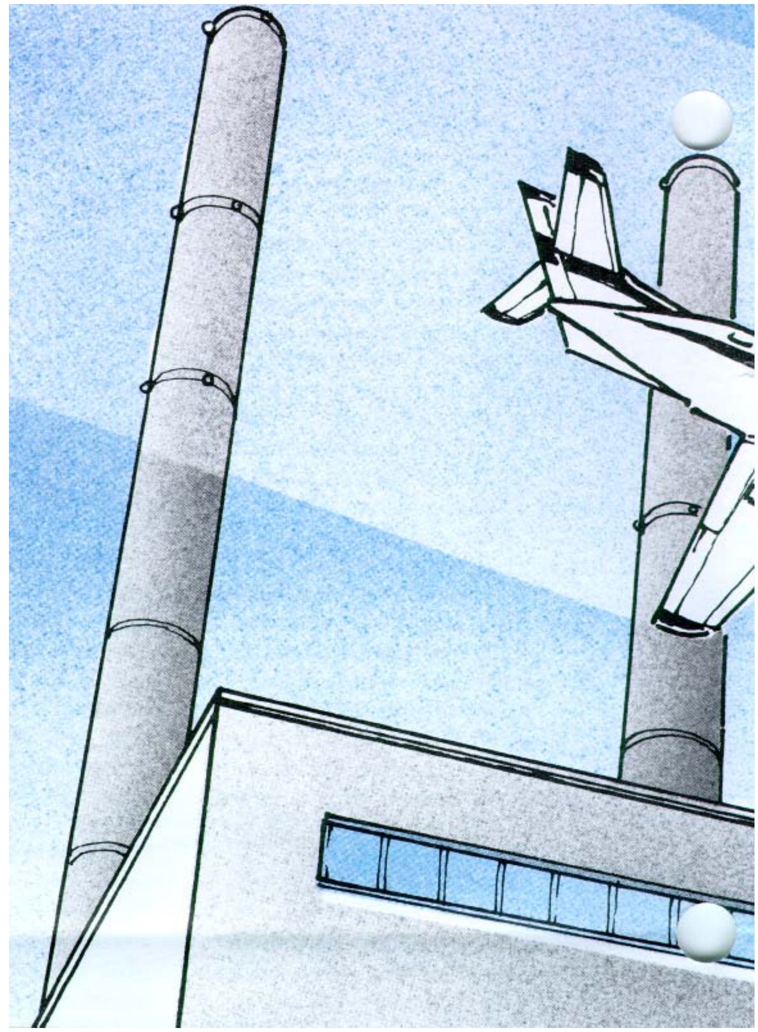
The Courier Attitude

Courier contracts are typically awarded to the lowest contract bidder who can provide the on-time reliability specified in the contract. So couriers keep exact records of departure and arrival times. Because route segment times in the contract assume maximum aircraft speed, courier pilots feel that they must push the operation to keep these times at a minimum. Contract times do not consider delays due to weather, traffic, or mechanical breakdowns. In a poor economic climate, all individuals involved feel the pressure to meet the contract specs and preserve their jobs. Without passenger comfort to consider, pilots feel that they are able to go to the maximum safe aircraft limits on a routine basis.

The "courier attitude" exists and leads to modified standards for courier flights by the pilots who fly these aircraft and by the controllers who direct them.

The SA 226-AT Merlin crew was expecting radar vectors to the straight-in final approach for the ILS approach. At 45 miles from the airport, ATC cleared them from their cruise altitude of 13,000 feet down to 6000, and at 18 miles, cleared them to the minimum radar-vector altitude of 2000 feet. Initial rate of descent was 1800 feet-per-minute, groundspeed was 290 knots.

As ATC advised the crew that they were 10 miles from the Final Approach Fix, radar tapes showed the aircraft descending through 7400 feet with a groundspeed of 290 knots. Six miles from the fix, ATC again advised the crew of their position (radar showed the aircraft descending through 5900 feet still at 290 knots groundspeed). Three miles from the localizer ATC advised the crew again of their position and asked if they were able to get down, if they would be able to continue from their present position. The crew replied in the affirmative and stated that it would not be a problem (radar showed the aircraft at 4500 feet, groundspeed unchanged at 290).



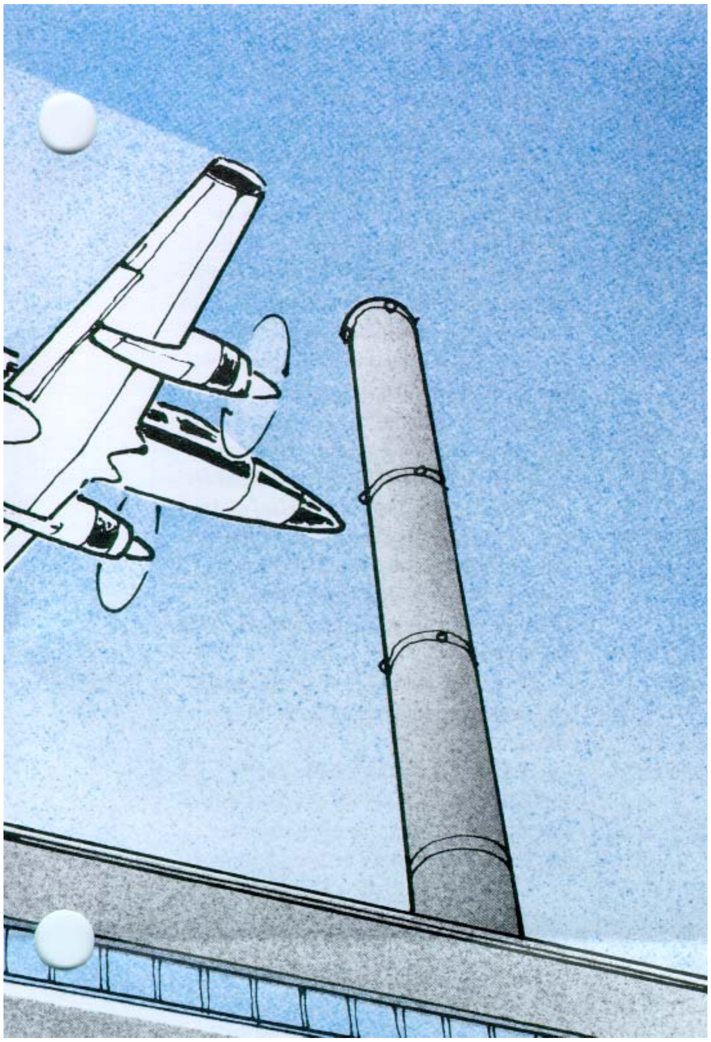
As the aircraft approached the localizer, the intercept vector was 98 degrees to the inbound track, groundspeed was 300 knots, and rate of descent had increased to 4200 fpm. Just prior to the aircraft intercepting the localizer, the controller issued a 70-degree right turn providing a 28-degree intercept angle. The aircraft shot through the localizer 2000 feet above the glideslope with the groundspeed showing 300 knots.

Rather than overshoot and attempt another approach, the crew decided to attempt to re-intercept the final approach course and to descend to the minimum descent altitude for a non-precision approach. Twelve seconds after issuing the 'IO-degree turn, the controller issued a further 60-degree right turn and then another 20 degrees right to re-intercept the localizer (radar now showed the aircraft descending through 2100 feet, still at 290 knots).

Descent limits for the approach were: 395 feet ASL for the ILS approach, 500 feet ASL for the non-precision LOC, LOC/NDB approach. Witnesses 1.3 miles east of the localizer, watched the aircraft miss a large generating plant by a mere 50 feet at an altitude of 140 feet ASL. The gear and flaps were still UP. The crew finally executed the missed approach.

The second approach was uneventful.

The "Courier Attitude" — The approach was not stabilized at any time on the final approach course, and the crew was modifying their approach inside the final fix at a critical time when their total attention was required. To continue the unstabilized approach seems to have been an acceptable risk. Without the



worry about passengers, they flew the aircraft very aggressively.

Pressure to stay on schedule, and pilots' natural desire to make a successful landing on the first try create situations where pilots fly their aircraft to the maximum safe limits. Courier pilots have accepted tight approaches similar to the one described, and have managed to successfully carry them out. These two pilots reported that had it been a passenger flight they would not have continued the approach after they went through the localizer. But as courier pilots — very high, very fast, scooting through the centreline two miles from the FAF with the gear and flaps still up — not a problem!

The "Courier Attitude" — The controller knew that it was a courier flight and he was surprised when they were unable to intercept the final approach course on the first attempt. He also felt that the vectors given were well within the capabilities of the flight crew and the aircraft.

The TSB report (A94A0078 — *worth reading in full)* notes other contributing factors in this near-CFIT.

Complacency:

Both pilots had flown into this airport many times. The approach briefing was routine and ineffective. They anticipated that the controller would vector them onto final with a minimum of manoeuvring. They were confident that they could manage speed, altitude, and angle of descent to position the aircraft for the ILS final.

Crew Coordination:

Failure to follow proper altimeter setting procedures resulted in the 220-foot difference in altimeter readings. Neither adequately performed his function as PF or PNF. The fact that both had considerable experience as captains may have contributed to an attitude where each may have thought that the other had the situation well in hand. Airspeed control to put the aircraft at its gear-extension speed (normal for beacon crossing) would have made it possible for them to turn the aircraft quicker to successfully intercept the final approach course.

Training:

Although both pilots had received CRM training in the past, they had no recent training. Because no jump seat is available, Transport Canada conducts PPC rides while the inspector functions as PNF — two-pilot check rides would have provided the opportunity to better emphasize, evaluate and encourage good CRM procedures.

Controller Procedures:

The controller vectored the aircraft to a close-in high-angle intercept. He should have seen that the aircraft would not be able to negotiate the 70-degree turn to roll out established on the localizer. Despite his query to the crew if they were able to make the approach and their affirmative reply, he did not fully monitor the approach. He relied on past experience in vectoring courier aircraft to decide that they would be able to successfully complete the approach.

Having seen the aircraft fly through the localizer, given the aircraft's high speed, knowing that the weather was at approach limits, and having found it necessary to give the aircraft a reintercept vector of 50 degrees from the back side, it could be argued that the controller should have given a safety alert to the crew to highlight the danger of the rapidly developing situation.

Caution isn't cowardice — nor is carelessness, courage.

Flying the Alaska Highway . . . VFR?

The following is based, in part, on a CTAISB accident report, but also on my experience as a long-time mountain flier. The transition from flat-land flying to mountain flying is a difficult one for many pilots. In flat country or over the water, if you are uncertain, you can climb to a safe, familiar altitude and go for miles until you get your head together or get help. In the mountains, if you are not in clear VFR conditions, you had better be on instruments, at an altitude well above MOCA.

Food for sober second thought in this tale has been inserted in italics for emphasis. — Ed.

The TSB accident synopsis reads:

"The Piper PA 32-301T Saratoga departed Fort Nelson, British Columbia, on a visual flight rules flight to Beaver Creek, Yukon. When the aircraft failed to arrive at the destination, a search was initiated. The missing aircraft was found six days later by a Canadian Forces Search and Rescue aircraft. It had struck a steep, rocky slope in mountainous terrain at 6000 feet above sea level. The aircraft was destroyed and both occupants sustained fatal injuries.

The Board determined that the pilot attempted to continue visual flight in adverse weather conditions."

Preflight

The pilot, a retired US Navy pilot with about 5000 hours military 350 hours civil experience, and his son were on a long-range pleasure flight from California to Fairbanks, Alaska, via the Alaska Highway route.

They had arrived at Fort Nelson after two days of flying from California. The next morning, the pilot received a detailed telephone briefing from the Flight Service Specialist at Fort Nelson, covering the enroute weather along the Alaska Highway route from Fort Nelson west to Watson Lake, Teslin, Whitehorse, and Burwash.

The area forecast indicated that a series of trowals were moving across northern B.C. and southern Yukon, producing low ceilings, rain and fog. The Fort Nelson to Watson Lake leg was forecast to be good with ceilings 3000-5000 feet above ground. Very marginal VFR was forecast from Watson Lake to Teslin with overcast ceilings at 4000 feet ASL and layers to 20,000 feet in a very moist airmass *(airport elevations rise from 1250 feet ASL at Fort Nelson to 2262 feet ASL at Watson Lake, 2313 at Teslin, 2305 at Whitehorse and up to 2647 feet ASL at Burwash).* Visibilities were forecast at two to five miles in rain and fog. Occasional rime and mixed icing were forecast in cloud above the 6000-foot freezing level *(the Watson Lake-Teslin run is about 120 NM, and the terrain between the two aerodromes rises well above the 6000-foot level).* Conditions were forecast to remain poor throughout the day.

The pilot also received the latest actuals from along the route:

Watson Lake: 200 feet overcast, 4000 overcast, visibility six miles in light rain, temperature/dew point spread zero — both three degrees, winds three knots (AWOS report explains the two overcast layers). *Question the forecast accuracy or at least think about the local effects of terrain.*

Teslin: 1800 thin broken, estimated 4500 broken, 5500 overcast, visibility 15 in light rain, temperature/dew point both seven.

Whitehorse: special at 09:30 a.m.: partially obscured, measured 700 overcast, visibility two in light rain/fog, temperature/dew point both seven degrees *(again questions about forecast accuracy and terrain effects).*

Burwash (85 miles from destination): 1500 scattered, estimated 3500 broken, 9000 overcast, visibility 20 in rain showers, temperature four, dew point three.

(A VFR planner should especially note the temperature/dew point spread at all these locations, particularly in September, in the mountains.)

At the end of the weather briefing, the pilot remarked to the FSS Specialist that it would be a day to "hunt and peck". He indicated that he would either return to Fort Nelson or "stay at the one I can get to" if he encountered unfavourable weather. (*If?*)

Witnesses who spoke to the pilot before his departure from Fort Nelson reported that he appeared to be excited about "flying the Alaska Highway" for the first time. A Yukon pilot very familiar with the route offered to give the pilot a pre-flight route briefing — the pilot declined. (*Local knowledge, especially in the mountains, is generally far superior to any other advice obtainable.*)

The same Yukon pilot departed Fort Nelson 45 minutes prior to the PA 32, en route to Whitehorse. He landed at Watson Lake due to the poor weather one half hour before the PA 32 passed overhead. He reported ceilings of 100 to 200 feet and low visibilities 14 miles southeast of Watson Lake. His report was later passed to the Saratoga pilot as he PXed his position near Watson Lake.

History

The pilot had owned the Saratoga since 1983. It was turbocharged, fitted with an oxygen system, and equipped and certified for VFR, IFR, day and night flight in non-icing conditions. It had been maintained in accordance with regulations. The aircraft had hit the 32-degree mountain slope in a wings-level, nose-level attitude. Due to the complete destruction of the aircraft at impact, it was impossible to determine whether any pre-impact problems had contributed to the accident — none could be identified, but flight control surfaces were accounted for and the engine had been developing considerable power at impact.

Enroute

The enroute tale is short. He departed Fort Nelson at 10:26 a.m. At 12:13 p.m., he contacted the Watson Lake RCO and advised that he was 24 miles south of Watson Lake at 6000 feet. He requested and was passed the current weather for Teslin, and was advised of IFR ceilings further to the west at Whitehorse.

The Search

When the aircraft failed to arrive at destination, a search was started. Poor weather prevented effective searching for several days.

Two days after the aircraft was reported missing, a hunter called the Rescue Centre. He reported hearing a light aircraft flying overhead early in the afternoon on the day of the accident. He believed that it was the same aircraft flying from east to west three or four times (*hunt and peck?*). He reported that, at his position 50 miles west of Watson Lake, the ground visibility was one mile in mixed rain and snow. He also reported that all the mountain peaks and ridges were obscured in cloud with the cloud base below the 5300-foot-ASL level.

Searchers concentrated their efforts around the area of the report, and several days later located the crash site six miles north of the Alaska Highway.

A VFR chart with the proposed route highlighted was found in the wreckage. However, the crash site is on the centreline of the R5 air route between Watson Lake and Whitehorse — six miles north of the highway. The aircraft ADF set was tuned to the Watson Lake NDB. The 6000-foot level of the site coincides with the pilot's last reported altitude, but it is 2800 feet below the published Minimum Obstruction Clearance Altitude (MOCA) for the route. The wings-level nose-level aircraft attitude at impact would indicate that the pilot took no evasive action to avoid the mountain. The toxicological tests found no evidence of incapacitation or physiological factors that could have affected the pilot's performance. Also found in the wreckage were the remnants of a hand-held GPS.

(*After failing to get through VFR, was the pilot trying to get to the reported better weather at Teslin using his ADF and hand-held GPS?*)

Don't Expect the Remote to Tell You ... If the ELT is OFF or ARMED

Investigators probing a recent crash came upon the aircraft's ELT. Its function switch was in the OFF position. Consequently, after the crash, the ELT exhibited all the volubility of your average Sphinx. "So what?" you say. "ELTs have been doing that since they were invented. What makes this one so different?"

This ELT was equipped with a cockpit control and monitor. With the control, the pilot can reset inadvertent alarms triggered by landings where the down time was confirmed by the local seismograph. The pilot can also trigger the ELT if he or she sees that the flight is about to be rudely interrupted by some wayward mountain.

However, if the ELT is not ARMED, none of the above is possible. The good news is that an ELT with its function switch in the OFF position will not transmit a false alarm. The bad news is that it won't transmit any real ones either.

If your ELT has one of those fancy remote controls and monitors up in the cockpit, you may think that you have all the bases covered. But, unless you have peeked at the ELT itself, hidden back there in the tailcone, you could have a problem.

The remote control and monitor tells you what an ARMED ELT is doing. It won't tell you what an unarmed ELT is doing.

Do you have real ELT in your aircraft? Or is it one of those Venus de Milo models? You know, unarmed. Why not look and see? △

Bob Merrick

Passenger at the Controls for Takeoff

As the Stinson 108/2 was departing Little Coles Lake, B.C. on August 31, 1992, the pilot permitted the front seat passenger, **who had no formal flying training**, to perform the takeoff. As the flying passenger turned toward the shore, raising the nose to avoid higher terrain ahead, the aircraft stalled and spun into the trees.

The two passengers were flung out of the aircraft on impact. The pilot perished in the post-crash fire, and the "flying pax" survived only a day before succumbing to his injuries. The seriously injured rear seat passenger managed to crawl to a lake-side cabin.

Would you let an untrained passenger handle the takeoff?

The aircraft was operating on a Flight Itinerary, and since there was no ELT on board, there was no Search & Rescue effort until the passenger's wife sounded the alert two days later. Searchers quickly found the sole survivor.

A more timely flight plan and an ELT on board might have saved the life of the "flying pax." △

Recency Requirements — Self-Paced Study Program

The *Canadian Aviation Regulations* (CARs), Part IV Personnel Licensing and Training, Subpart 1 — Flight Crew Permits, Licences and Ratings, Division I — General, 401.05(2)(a) require that the holder of a flight crew permit or licence, other than a glider pilot licence, successfully completes a recurrent training program within 24 months preceding a flight.

The CARs Personnel Licensing and Training Standard 421.05(2) details seven ways to comply — one being the completion of a self-paced study of human factors, meteorology, flight planning and navigation, and aviation regulations, rules and procedures. This program will be updated annually and published in the *ASL*.

The first annual self-paced study program appears on page 13/14 of this issue as a tear-out. It may be used from October 10, 1996 to October 9, 1997 to satisfy the Recency Requirements.

If you choose this method, answer the questions using the references shown, check your responses on this page and correct them as required. Sign, date and keep it. You may be requested to produce it at some future date. △

Answers

1. 29.90 in. Hg.
2. Light snow and mist.
3. Variable at 3 KT.
4. Sky obscured, vertical visibility 200 feet.
5. CYYC at 300 feet.
6. Greater than 6 SM.
7. Broken at 10,000 feet and broken at 25,000 feet.
8. 240°T at 7 KT.
9. Probability of 40% CB and moderate rain.
10. Between 0400Z and 1100Z. (40% chance of CB and moderate rain with CBs at 1,000 feet and visibility of 2 SM.
11. False
12. Declare an emergency.
13. Used when a SAR time is to be different than that automatically provided.
14. after the aircraft departs.
15. upwind side.
16. At least 5 minutes.
17. a clearance.
18. 200
19. 5 NM and 3,000 feet AAE.
20. No.
21. the circuit traffic altitude.
22. 123.2
23. 5 to 10 NM.
24. Modes C & S
25. 121.5
26. 1530, June 19, 1996.
27. Because the time quoted is approximate.
28. pilot-in-command.
29. 30 & 40 respectively.
30. Stall speed will be increased.
31. a broom or squeegee.
32. the freezing of wet surfaces or pooled water.
33. disorientation.
34. mode C.
35. Yes.

Birds and Bedlam

Cont. from page 12

AWACS wreckage.

strikes since 1950. Are the birds winning the war in the sky?

Large birds are the greatest threat to aircraft. The force of impact depends on the the bird's weight and the aircraft's speed. A large number of heavy birds striking an aircraft travelling at high speed can exceed the design limits of its airframe and engines.

Most of today's engines are designed to absorb a 1.5 lb. bird volley, although early designs and smaller engines were not built to this standard. The latest generation of high bypass ratio turbofan engines are required to withstand a 2.5 lb. bird volley, but their larger intake areas and reduced noise means they are struck more frequently.

Reporting is critical to managing this hazard. The FAA estimates that only 15% of bird strike incidents are reported in the U.S. Despite our much lower level of aircraft activity, Canada had 28.5% as many reported strikes as the U.S. in 1994. In 1993, Canada accounted for 21.3% of the world's bird strikes reported to ICAO. We estimate that only 30% of Canadian bird strikes are reported.

Approximately 85% of reported bird strikes occur within the airport environment, 50% occuring during takeoff or landing. In 1995, Canadians reported 58 precautionary landings, 18 aborted takeoffs, 15 forced landings, 22 engine ingestions, 3 engine shutdowns, and 8 penetrated airframes as a result of bird strikes. Pilot reports increased from 132 in 1994 to 319 in 1995 — a 141% jump! That's good news, if the increase reflects better reporting and not a growing problem.

Bird strike reports help engine and airframe manufacturers improve designs, and airport operators make environment management decisions. The bird hazard is serious. As a pilot, you have a vital role to play by reporting birds and bird strikes, and if you see birds near the runway, you may want to postpone your takeoff decision until the birds are dispersed.

For bird strike report forms and more information on the hazard contact:

Bruce MacKinnon
Transport Canada (AKPP)
18C, Place de Ville
Ottawa, Ontario, K1A 0N8
Phone: (613) 990-0515
Fax: (613) 957-4260

Just Briefly

Good Night Pre-flight Check?

The Cessna 150 pilot was planning local night circuits. Immediately after takeoff, he experienced attitude control problems. Only with the control column fully forward could he maintain level flight. He declared an emergency and managed to complete one circuit landing with the emergency response crew standing by.

The emergency crew removed the 85-pound cement tie-down weight that was still attached to the tail.

How Thorough is Your Test Flight Pre-flight?

Maintenance had just completed a check that required a wing removal on the DC-3. As the test-flight crew levelled the aircraft after takeoff, they used aileron trim to correct a left-wing-heavy condition, but trimming only made the problem worse. They immediately reversed the trim selection and turned for home, landing safely.

Post-flight investigation revealed that the trim was operating in reverse — not the first, nor probably the last time for "Murphy" to strike.

Little patience on a Not-so-good Day!

On final approach to the runway, the Piper Malibu struck a snow bank 125 feet short of the threshold. The impact and the following hard landing caused substantial damage to the wings and the landing gear. The pilot taxiied to the hangar where he inspected the damage.

No doubt angry with himself, frustrated and impatient, he decided to taxi the aircraft into the hangar, but did not appreciate that the damaged aircraft now sat on the ground in a tail-high, nose-low attitude. As he entered the hanger, the aircraft's vertical fin hit the top of the door and the propeller slammed into a steel tow bar.

Birds and Bedlam

Takeoff aborted by bird strike.

Birds are beating up aircraft — badly — and recent history suggests that they may be winning the world-wide air war.

March 30, 1996: A B767 lost one engine on takeoff from Vancouver Int'l Airport after striking a flock of ducks *(ASL 3/96).* The aircraft returned to the airport for a precautionary landing after dumping fuel over the ocean. Damage — $2M plus.

May 18, 1996: A B747 lost one engine to a bird strike on takeoff from Lester B. Pearson Int'l Airport and dumped thousands of pounds of fuel over Lake Ontario before returning for a precautionary landing.

January 20, 1994: A Falcon 20 departing Le Bourget struck Lapwings causing an uncontained engine failure and a fiery crash killing 10 people.

January 1, 1996: A Boeing 747-200 on takeoff from Cairns, Australia struck several large birds destroying two of its four engines.

We estimate that bird strikes cost the North American aviation industry more than $500 million per year. Rapid growth in air travel and bird populations are leading to a growing awareness of this serious threat to aircraft and passengers. As well, high profile accidents in the United States in 1995 have attracted significant attention.

June 3, 1995: A Concorde, on final approach to JFK Int'l Airport, struck a large number of geese. After the emergency landing, all passengers evacuated safely, but the geese had destroyed engines #3 and #4. Damage: $6 million.

September 18, 1995: An A320, landing at LaGuardia Airport, struck Canada Geese. Engine and airframe damage totalled' $2 million. Loss of service added another $500,000.

September 22, 1995: A Boeing 707 E3 AWACS aircraft crashed after takeoff from Elmendorf Air Force Base, Alaska *(ASL 3/96)* killing all 24 crew members.

> A dramatic increase in the bird population has raised the stakes.
> Are the birds winning the war in the sky?

31 dead geese were found on the runway. Added to the tragic loss of life, dollar costs reached $189 million.

September 25, 1995: A Cessna Citation carrying Newt Gingrich, Speaker of the U.S. House of Representatives, struck geese on takeoff from Mackinac Island. The pilot aborted the takeoff but couldn't keep the aircraft on the runway. Luckily, nobody was hurt.

December 10, 1995: On a night approach to JFK Int'l, a B747 struck geese at 7500 ft. AGL. The crew saw a flash of white before being struck by what felt like sandbags. The impact destroyed two engines and extensively damaged the airframe. Repairs cost approximately $6 million.

The dramatic increase in bird numbers, particularly large birds, has raised the stakes. Ring-billed Gull populations in the Lower Great Lakes region have increased approximately 12% per year since the mid-1970s. In the Ottawa area alone, the population has grown from 5 nesting pairs in, 1974 to over 6000 pairs in 1995. Approximately 30% of Canadian bird strikes involve gulls.

The number of Canada Geese migrating through North America has doubled in the past 25 years, with a noticeable influx of non-migratory, resident geese. Canada Goose populations in other parts of the world are increasing by 8% per year.

Some results of this population explosion have been a 400% increase in goose strikes to aircraft at JFK Int'l Airport since 1984, and over 237 strikes involving gulls in Canada during 1995. The increasing population is not good news for air traffic.

The Israeli Air Force has lost more aircraft to birds than in war. In Europe and Israel, more than 168 military aircraft have been confirmed lost to bird

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Valid October 10, 1996 to October 9, 1997

TRANSPORT CANADA SELF-PACED RECENCY REQUIREMENTS STUDY PROGRAM

Refer to *Canadian Aviation Regulations* 421.05(2)(d)

NOTE:
- The answers may be found in the A.I.P. Canada references in brackets at the end of the questions. A.I.P. amendments may result in changes to answers or references, or both.
- This self-paced study program may be used up to and including October 9, 1997.

METAR CYYC 151100Z 09005KT 1 1/2SM -SN BR OVC003 00/00 A2990
RMK F6SF2 SLP009=

METAR CYVR 151100Z VRB03KT 1/4SM FG VV002 09/08 A2963 RMK F8
SLP998=

1. What is the altimeter setting in the CYYC METAR? (MET)

2. What is the present weather in the CYYC METAR? (MET)

3. What is the wind direction and speed in the CYVR METAR? (MET)

4. What is the sky condition reported in the CYVR METAR? (MET)

5. Which station in the METAR has the lowest cloud layer and at what height? (MET)

TAF CYYC 101645Z 101717 30003KT P6SM SCT250 FM2240Z 24007KT P6SM
SCT100 BKN250 TEMPO 2204 BKN100 BKN250 FM0400Z 24007KT P6SM SCT050 BKN100
PROB40 0411 2SM TSRA BKN 010CB OVC 100 FM1100Z 24007KT P6SM SCT100 SCT250 RMK
NXT FCST BY 23Z

6. What is the visibility in the CYYC TAF at 1900Z? (MET)

7. What is the forecast sky condition in the CYYC TAF at 0100Z? (MET)

8. What is the forecast wind in the CYYC TAF at 0900Z? (MET)

9. What weather is forecast in the CYYC TAF for 0900Z? (MET)

10. From the TAF, during what time period should you not plan to fly circuits at CYYC airport? (MET)

11. When "Cleared for the option" is authorized by ATC, a pilot is not permitted to do a low approach and overshoot. (True / False) (GEN 5.1)

12. What must a pilot do to ensure a traffic priority when low on fuel? (RAC 1.8)

13. What is the purpose of the "SAR Time" block on a flight plan form? (RAC 3.15)

14. When using ADCUS on a flight plan, pilots must be aware that customs are not notified until ______________________________. (RAC 3.15)

15. Pilots of NORDO or RONLY aircraft who have received permission to enter a Control Zone should join the circuit from the ______________________________. (RAC 4.3)

16. How many minutes prior to entering a Control Zone is it recommended that a pilot contact the tower? (RAC 4.4)

17. In addition to establishing radio communications before entering a Class B or C Control Zone, a pilot must have received ______________________________ . (RAC 4.4)

18. With SIRO in effect, when cleared to hold short of a runway, pilots must remain ______ feet short of the closest edge of the runway being intersected. (RAC 4.4)

19. The specified area for an MF or ATF is normally a circle with a ___ NM radius capped at ____ . (RAC 4.5)

20. At an uncontrolled aerodrome where no MF procedures are in effect, is it permissible to join straight into the base or final approach legs? (RAC 4.5)

21. Pilots departing the circuit at an uncontrolled aerodrome should climb on runway heading until reaching ____ . (RAC 4.5)

22. Where there is no UNICOM, the ATF will normally be ______ MHz. (RAC 4.5)

23. Communications procedures for entry into an MF or ATF area should be initiated ______ NM prior to entering. (RAC 4.5)

24. What transponder modes will be detected by an aircraft equipped with ACAS/TCAS? (RAC 12.10)

25. You should maintain a listening watch on frequency___.___MHz where practicable while flying en route. (SAR 3.4)

26. 96007 NOTAM CYOW OTTAWA/MACDONALD - CARTIER INTL
CYOW NBD 236 U/S TIL APPROX 9606191530
The Ottawa NDB should be operational again at______ Z , on_______________ . (MAP 5.6)

27. CYOW RWY 07/25 U/S TIL APPROX 9601191800
Why is a canceling or replacing NOTAM required ? (MAP 5.6)

28. In all cases, the ultimate responsibility for determining that aircraft critical surfaces are free from frost, ice or snow rests with the ___________________________ . (AIR 2.12)

29. Frost, ice or snow similar to medium or coarse sandpaper on the leading edge and upper surface of a wing can reduce lift by as much as _____________ % and increase drag by as much as ____________ %. (AIR 2.12)

30. What effect will frost, ice or snow on a wing have on the stall speed? (AIR 2.12)

31. To remove heavy wet snow from an aircraft it is best to use _____________ . (AIR 2.12)

32. When an aircraft that has been de-iced in a heated hangar is rolled out into sub-zero temperatures, the pilot-in-command should be particularly alert for ________________ . (AIR 2.12)

33. Flight into white out conditions or flight into cloud affects our vision and sense of balance in the inner ear and may cause ____ . (AIR 3.9)

34. What transponder equipment is required for entry into the Winnipeg TCA? (AIC 2/95)

35. Do you require a mode C transponder to fly in the Regina TCA? (AIC 2/95)

Valid October 10, 1996 to October 9, 1997

Signature: ________________________________ Date: ____________________