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Aviation Safety

Ultralight and Balloon

Learn from the mistakes of others and avoid making them yourself . . . **Issue 1/2001**

Mid-air Takes Two Lives

The pilot of a Piper PA-18-150 Super Cub had just departed his private strip in Mattawa, Ontario, in good VFR visibility conditions. He intended to do a couple of local circuits alone as a first flight after having recently installed skis. He was to depart later with a passenger to visit a nearby fishing camp. After takeoff, the pilot flew circuits over the southwest area of the town. Simultaneously, the pilot of a Kitfox IV/A was flying local VFR circuits. The Piper Super Cub was observed flying northeasterly towards the town and the Kitfox was observed flying southwesterly over the town when the two aircraft collided over Sid Turcotte Park.

This is a worst case interception of about 90° to each other and possibly at the same altitude in level flight. This could have been prevented if one or both pilots were maintaining a scan that included good head movement to observe targets in blind spots, such as behind door posts, as would have been applicable in this case. The collision angle fosters speculation that both were stationary targets near or behind a door post or window post and thus both remained invisible to each other until the collision. I could list numerous cases of this near airport/local flying type of mid-air collision; however, I would like to focus on avoidance. There are several tools that pilots can use for local separation, including radios, prior discussions, landing lights or, in the case of ultralights, the spotlight, pre-flight briefing with other area pilot or pilots doing simultaneous flights in a particular area and, last but not least, using proper procedures around airports. — Ed.

Where do procedures apply? Procedures mean following the widely accepted doctrine for altitudes, tracks and, if applicable, radio calls while operating within or near a circuit, including the approach for overflying the airport or private strip for the purpose of landing. Private strips are no different from airports because other aircraft can be present. The circuit rules published in the A.I.P. are designed to protect pilots against such accidents by establishing set procedures to allow pilots to form an organized circuit and landing pattern. There are procedures for radio-equipped aircraft and for those operating NORDO. Last but not least is scanning out of the cockpit—LOOK OUT. Do not focus on one area; look all around the aircraft and change the nose position of the aircraft to detect targets hidden by posts or other obstructions. Scan for ground shadows of other aircraft that might be above you and too close, particularly on VFR days. Leave in-cockpit chores, such as programming GPS or folding maps, until you are clear of the circuit, and keep totally focused on the area all around your aircraft, allowing yourself to be interrupted only by necessary radio calls and responses. This is defensive flying and, if practiced, can eliminate you from becoming a mid-air statistic. I also speak from my own many close encounters; during some these encounters I actually observed that the pilot in the other aircraft did not see my aircraft or my avoidance manoeuvre.

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Ground Collision

Zenair collides with Cessna 150.

The pilot of an amateur-built Zenair CH 250 was involved in a ground collision because of faulty brakes. The same type of accident resulting from faulty brakes also occurred a few years ago at an airport in eastern Canada where substantial damage occurred to both aircraft, in that case a Piper Cherokee was involved. Therefore, history has a habit of repeating itself. Fortunately there were no injuries. In the current case, the Zenair had taxied to the runway intent on departing; however, upon entering the runway, the pilot noted that the engine RPM did not reduce when the throttle control was moved to the idle position, so he cancelled his flight plan and requested clearance back to the long-term parking area. While taxiing back to the parking area, one of the aircraft's brakes failed, and the aircraft swung off the taxiway toward a parked Cessna 150. The pilot attempted to shut down the engine using the magneto switches, but he was unable to stop the engine before his propeller contacted the other aircraft. The propeller of the Zenair chopped into the wing of the Cessna 150, severing it. The Zenair was also substantially damaged.

Look at Your Feet

A learning experience! Mental stress can prevent us from correctly performing the simplest tasks. I think this is a good time to write a reminder about the possibility of incorrect control inputs by the pilot. I have read an account of this happening in helicopters where the pilot was actually correcting an apparent loss of tail rotor control and almost lost the aircraft until he had the presence of mind to look at the position of his feet. It then became immediately apparent that he was pressing the wrong input to correct the rotation and, in fact, was aggravating it.

This could happen in any aircraft, particularly ultralights such as the Challenger type where pedals are located very close together. One might think the correct rudder input is pressed to stop a spin rotation when there are actually several things that could be wrong. Both feet could be pressing in such a way that they interfere with full rudder input. The pressure could be on the heels with no aerodynamic input. Where pedals are located very close together, the wrong foot could inadvertently get onto the pedal—not very helpful if the opposite input is needed. Therefore, if you find yourself losing control in an unusual situation, take a look at where your feet are placed and note that they are putting pressure in the correct place to obtain the control input that the brain is calling for. If you are unable to stop a turn or even a spin, look at the ball. If it is in the corner of the instrument "step on it." Or, for example, if the ball is to the extreme right of its travel, press or step on the right rudder to put the ball toward the centre; if the aircraft is spinning, recovery should be immediate. This little mental gem will also help you keep the ball in the centre where it is supposed to be during normal level flight or co-ordinated turns.

There are numerous accident reports of aircraft involved in fatal crashes, including ultralights, yet no aircraft component failures, weather factors or other obvious deficiencies are found and the cause is simply listed as "undetermined." The safety message is if you find yourself in an unusual situation and losing control of the machine, check that you are actually getting the control inputs the brain is calling for by looking at your feet placement and the position of all the controls—you may be surprised that such a simple mistake is possible.

Avid Suffers Rudder Cable Failure

The student pilot was doing circuits in an amateur-built Avid Flyer at Stettler, Alberta, when the right rudder cable came apart, causing a loss of control. The aircraft spiralled down from about 1000 ft AGL and impacted the ground in a swampy area. There were no injuries. The pilot/owner advised the TSB that the rudder cable failed at a Nicopress splice. He stated that the Nicopress fitting that formed a loop on the rudder cable allowed the cable to slip and that the loop came apart, causing the loss of rudder control. He stated that he had done a thorough walk-around and had noted that this fitting on the Avid Flyer is visible for inspection during a normal pre-flight inspection. He was at low altitude when this happened and landed in a watery area, which assisted in decelerating and absorbing the aircraft on impact. The issue of swaging Nicopress fittings is well documented in publications used by AMEs and, to help the ultralight community with this important safety item, I had previously prepared and published two articles, one of which can be found in Ultralight and Balloon 1/99.

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Sécurité aérienne — Ultra-léger et Ballon est la version française de cette publication

Fellow Aeronauts and Ultraflyers, No More Barbs!

For the past 16 years I have researched accident and incident reports and attended many meetings with your representatives, both ultralight and balloon organizations, helping to foster better regulations and, most of all, promote safety within sport flying activities. I have participated with you as a professional pilot by obtaining a balloon pilot licence to better understand this sport. I have flown several types of ultralights on both land and water and, while I admit this is fun, it must be taken seriously and practiced with care. Accidents can spoil a fun sport very quickly. I have used all of the resources at my disposal to bring you the latest safety issues and, hopefully, I have helped some of you avoid the mistakes of others. So after more than 50 years of maintaining, navigating, piloting and writing about aircraft, I have decided to retire from Transport Canada and hand over the reins of this rewarding part of my work.

I appreciate your many letters indicating support and satisfaction with the majority of my safety articles. I will miss the negative barbs when you remind me of an error, which by the way, I usually discover about the same time you readers do—when I open my own copy received in the mail.

Mistakes are about negative information, and that is why we all need to be reminded about mistakes—it is necessary and it is healthy for the industry. Some mistakes we cannot eliminate; for example, the ones created by lack of training, attention to detail or carelessness. The worst accidents are often caused by events that may be completely "out of character" for the person responsible, so we have to guard against this human deficiency that tempts people to take chances and ignore the correct procedures required of good airmanship.

The Ultralight and Balloon has grown from an early four-page letter devoted only to ultralights to eight pages that capture the safety issues for both ultralights and balloons.

Safety in the air starts on the ground with a well-built, well-maintained aircraft coupled with the right attitude of the pilot. Human factors enter the picture when pilots fail to pay attention to the basics, ignore the rules and become complacent. Remember that the air, not unlike the sea, can be very unforgiving of the unwary.

At this point, I would like to add that the success of the Ultralight and Balloon as a safety vehicle dedicated to helping you learn from the mistakes of others is also due to the support received from Transport Canada management at all levels and, particularly, the immediate support staff who perform a host of functions related to editing, translating, reviewing, promoting on the Web and generally making certain that high standards of quality and format comprise each issue. Without these people, publication of the quality product you receive would be impossible. Thanks also to the TSB for sharing the results of investigations —a very important part of this publication.

It has been a pleasure to serve your interest in safety over so many years, and I will miss you. I also wish the new editor, whomever that might be, a long and continued success in the publication of the Ultralight and Balloon and in promoting whatever form or changes the future may hold for this valuable safety initiative. *Goodbye, Joe Scoles*

to the Editor

Rotax Fails from Fuel-feed Fault

Challenger similar to the aircraft described in this letter.

Here is an edited version of a letter that was sent to the Prairie and Northern regional office from Ross Hesom of Morden, Manitoba. Congratulations Ross for taking the time to thoroughly explain the cause of and solution to a serious Rotax engine situation. —Ed.

The following is a summary of the circumstances of a forced landing in Ross' Challenger II advanced ultralight aeroplane (AULA) in June 2000.

During a first attempt to take off after normal run-up and pre-flight, the engine coughed and died when power was applied. I taxied back to the ramp where my passenger deplaned and the engine could be rechecked to locate the problem.

The first thing that I checked after returning to the ramp was the carburetor float bowls. I thought that since this aircraft had been standing for two weeks during some very wet and humid weather there may have been water in the fuel as a result of condensation. The float bowls were spotless, so I drained and replaced them. When I replaced the float bowls, my hand brushed against the underside of the air filter element and became drenched in two-cycle oil. I removed the element and washed and re-oiled it according to the instruction manual. I removed the spark plugs to ensure that they were all in good condition. These were only five hours old, since the aircraft had 30 hr. total time and the plugs were replaced at 25 hr. Having found the excessive oil in the air filter, I decided that the symptoms matched and that I should perhaps do a few engine runs prior to takeoff.

I then proceeded to the end of the runway, lined up and applied full power. The engine revved to full power (6400 RPM) and that is normal. I allowed it to run at full power for a few seconds; I then went through the process again and again for the length of the 4000 ft runway and then back to the threshold. Confident that the problem had been solved, I proceeded to take off for a test circuit. The climb-out was perfect, the crosswind and downwind legs were textbook and the base leg was nearly perfect. I turned onto final approach and, being a little too high, decided to throttle back. I misjudged the strength of the wind and found that my sink rate was greater than expected. When I applied power to arrest the sink rate, the engine started to rev and then went back to idle and remained there. By now I only had about 200 ft of altitude AGL and was approximately half a mile from the runway over a canola field. I set up a glide of 45 mph, then tried a number of times to get the engine to respond with no results. I touched down on the canola at 45 mph, and a wheel broke off during the forced landing as a result of the terrain and canola exerting forces beyond the design strength of the undercarriage.

In conclusion, I have made the following observations, which I believe, in combination with a dirty air filter, to be the reason for the engine failure.

1) I had not re-primed the fuel lines after completely draining the float bowls.
2) The fuel pump supplied by the factory had a little bleed hole to allow moisture to escape because of the conditions they are subjected to on snowmobiles. This allows air to be drawn into the crankcase and leans the mixture as well as reduces the vacuum pressure to the fuel pump. It should be noted that these fuel pumps are designed to run with a flooded suction or a very short (six inches) lift. In the Challenger, the lift that the pump is required to perform is 15 to 24 in. depending on fuel levels in the tank.
3) The hose connecting the fuel pump vacuum intake to the crankcase was too soft for the application and may have been collapsing partially, thus rendering the fuel pump less effective.
4) Having a fairly new primer squeeze bulb, it is assumed that the springs in the valves are relatively tight, thus

causing a further restriction on the fuel flow.

I have remedied the possibility of the same thing happening again by doing the following:

1) Silver soldered the bleed hole in the vacuum line closed.
2) Removed the primer squeeze bulb and replaced it with a secondary electrical fuel pump.
3) Replaced the hose from the crankcase to the fuel pump with a braided hose.
4) Revised the checklist to include priming the fuel lines.

I have sent a copy of this report to National Ultralight Inc. and to the International Challenger Owners Association so that they can learn from my experiences.

I receive the *Aviation Safety Ultralight and Balloon*, and I thought you could pass a message on to other owners of Rotax 912 engines about a serious problem that happened to me on a recent flight. After takeoff I noticed all the windows were steaming, then I noticed the cylinder head temperature was increasing rapidly. I called Penticton Radio, advised them of the problem, and returned from about nine miles out on a straight-in approach for a safe landing. By this time, the engine temperature had reached an unsafe level of over 300°.

The problem was located on top of the Rotax engine where a water distributor system made out of pot metal has a line or hose to the four cylinder heads and an inlet hose where the system sits on top of the engine. This places it up against the electrical box where a stud had been wearing a hole into the water box. Once the wear line opened up a hole, the engine coolant pressure blew out antifreeze, which caused the mist in the cabin and an overheated engine. The problem took about five years to show up. I think everyone who uses this engine should check to see if this bolt has rubbed a hole into this water distribution system on his/her unit. This may save an engine failure or accident. The inspection method and only way to see this problem is to push over the tank by hand so you can see the problem stud.

—Gerald Joyce, ultralight owner/pilot

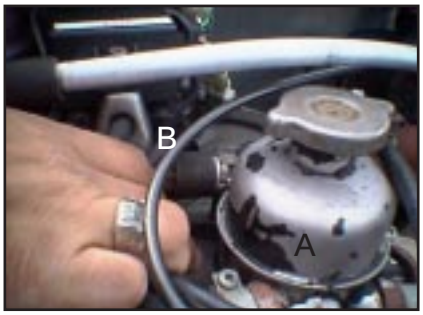


Photo of similar system indicates location of the problem. Note: To avoid this problem, the water distributor (A) should be positioned on a rubber base pad and located to avoid any contact with other components, such as the electrical box (B).

Harv's N3 Pup Rule

The following letter describes a possible safety concern.

I purchased an N3 PUP last spring and, after a few walk-around inspections, I noticed that the aileron was scored on the inside because the bolt that holds the rear strut was interfering with its travel. The threaded end was protruding too far out. This could have caused the aileron to get stuck in either the up or down position. To fix this I had the options to either saw off the excess bolt, use a shorter bolt or turn the bolt around so that the head was facing the rear of the aircraft. I chose to reverse the bolt even though it is an uncommon practice to have bolts reversed. I felt this was the best fix and, upon further inspections after many flights, I find that this bolt has not come loose, although I will keep an eye on it. I would like to inform others for the purpose of accident prevention as a result of a similar problems since the bolts could affect aileron travel on both sides of the aircraft.

—Harv Rule, Owner

The following letter was received from Don Abrahamson, an AME and ultralight pilot/instructor.

Thank you for an excellent newsletter; I enjoy every issue. In reference to the SeaRey accident caused by a misinstalled bolt, many airplanes have spots that experience has shown to be critical tasks. It is the responsibility of every person doing work on any aircraft to make him- or herself familiar with those areas and apply due diligence (*including, and most importantly, a second pair of eyes to review the completed work —Ed.*). It is also our responsibility to share this information so that others may learn from our mistakes. It may also be wise to read between the lines because it is not always easy to write about the dumb things we do.

Secondly I notice a fair number of cases where aircraft are damaged on the landing roll. Perhaps an article could explore this scenario where the pilot has landed; that is, the pilot stopped flying but the airplane continues for a couple more hops. I know I have been on a couple of those ego-smashing flights where the pilot flying (that's me) wasn't. Thanks and keep up the good work.

Don is absolutely correct in his assessment of the "lost control on landing roll" type of accident and he has described the solution much more eloquently than I do when I reiterate that the landing is not complete until the aircraft comes to a complete stop. —Ed.

If you think safety is too costly, try an accident!

Ultralight Incidents

The pilot of an **Air Creation** departed St-Mathieu-de-Beloeil airport in Quebec during the morning of December 3, 2001, for a VFR flight to Île St-Marc-à-St-Ours. The aircraft was reported missing later in the day when it did not arrive at its destination. After a search conducted as a result of reports of smoke and flames earlier in the day, the aircraft was found in a field north of Beloeil around 0405Z on Dec. 4.

The two occupants were killed; the aircraft was destroyed by fire. There was enough fuel for five hours of flying on board. The aircraft was not equipped with an emergency locator transmitter (ELT). The weather was VFR throughout the period.

The pilot of a ski-equipped **Lil Buzzard** was taxiing for departure on Cache Lake when one main landing gear axle broke, with additional damage to the propeller, undercarriage and fuselage. The pilot was alone and uninjured as a result of the mishap.

The **Buckeye Industries** powered parachute was being operated from a grass field next to some power lines. The aircraft became airborne and started a turn to the east. The pilot was unable to correct the situation, and the canopy and lines became entangled in the power lines. The cart contacted the ground, causing damage to the fan, fan shroud and landing gear. The parachute was torn by the power lines. The pilot received some bruising during the impact.

The **Ultravia Pelican Club** was spotted by a nearby resident about 500 yards from the shore upside down on a shoal. The pilot uses the backyard of his property as a take-off and landing area for his ultralight aircraft. The property is part of the Lake Huron shoreline. He was flying low over the water, at approximately five feet AGL, as he approached for landing. Approximately 500 yards from the end of the runway, the landing wheels struck the water. The aircraft flipped, incurring substantial damage. The pilot, who remained at the scene, was uninjured.

The TSB Duty Investigator noted that the pilot has been involved in previous accidents in 1991, 1993, 1994 and two accidents in 1997. *The operational safety message in this report as outlined by the chain of accidents suggests that the pilot is either poorly trained or is simply operating on the edge, taking too many risks that result in multiple accidents. —Ed.*

On March 20, 2001, the pilot of a ski-equipped **Pelican Club** departed the Saint John Airport for a local pleasure flight. During the flight, the engine, a Rotax 532, began to run rough and lose power. The pilot proceeded to carry out an uneventful precautionary landing on the river. He found the source of the engine failure was an unclamped engine primer line that had worked loose. The loose line resulted in air being sucked into the fuel system, which affected the engine's ability to produce full power. Once the line was securely reattached, the pilot elected to taxi back to the departure area, near his home. During taxi, both skies contacted an ice ridge, causing the gear to fail; as the aircraft came to rest on its belly, the wooden propeller was broken. The pilot was not injured.

The pilot and passenger of a **Zenair Zodiac** advanced ultralight were returning to St. Albert after a flight to Drayton Valley, Alberta, when the engine quit. The pilot made a forced landing in hilly terrain, causing extensive damage to the landing gear. The occupants were not injured. The engine had only 10 hr. at the time of the occurrence. The pilot had refuelled prior to the flight and had been airborne about 1 hr. and 45 min. Transport Canada maintenance personnel examined the aircraft and found that both the left and right tanks feed fuel to the engine by gravity flow and that there is no fuel tank selector to the engine. Each tank is equipped with an electric fuel gauge. After the hard landing, the right-hand fuel gauge indicated 3/4 full even though there were only three litres of fuel left in the right tank (empty for all intents and purposes). The left tank had about 35 L of fuel left, which was indicated by the left fuel gauge. These indications suggest that there was an unserviceable fuel gauge on the right side and suspected fuel restriction from the left tank that could have starved the engine of fuel.

The pilot of a **Birdman Chinook** experienced an engine failure on approach to the airport at Whitehorse; however, he made an emergency landing at nearby Schwatka Lake. The pilot/owner determined that the engine quit as a result of fuel exhaustion. Since he had just acquired the aircraft, he was not very familiar with it and apparently this aircraft has no fuel gauges. His flight time was calculated using a cruising burn rate; however, he suspects that his burn rate may have increased because he was using a higher power setting to avoid approaching inclement weather conditions.

Running out of fuel is rarely excusable and should not be taken lightly. Fuel management is the pilot's responsibility. A knowledge of the fuel flow and the amount of fuel in the tank when starting the trip, plus reserve fuel to meet contingency and legal requirements for the flight, is essential. Not knowing the precise flow rate would be more prudently dealt with by the addition of contingency fuel. Fuel management boils down to four things: a confirmed amount of fuel at the start of a trip, burn rate, a timepiece, and sufficient extra fuel to meet legal requirements and en route contingencies. —Ed.

The **Quad City Challenger** had departed on skis from the snow area west of Taxiway Alpha in Thompson, Manitoba, when the FSS operator noticed the

aircraft descend and disappear from sight after takeoff. The operator activated crash response procedures. Shortly thereafter, information was received that the aircraft had landed safely and that the pilot had restarted the engine and would taxi to the apron. Further information indicated that the cause of the incident was a stuck primer check valve that resulted in fuel starvation. There were no injuries or damage to the aircraft.

The **Terratorn Tierra II** had reached an altitude of about 50 ft after takeoff from Barrhead, Alta., when the engine lost power. The pilot landed straight ahead; however, he was seriously injured during the process and his aircraft received substantial damage.

The pilot was operating a **Six-Chuter Skye Rider** powered parachute in the vicinity of Aldergrove, B.C., when the parachute collapsed. The machine plummeted to the ground, seriously injuring the pilot and sole occupant, although the injuries were not life-threatening.

The pilot of an amateur-built **Murphy Rebel** was conducting a VFR flight from Parry Sound, Ontario, to Sundridge airport. As he was about to land on the snow-plowed runway, a gust of wind from the right caused the aircraft to drift left, allowing the left main landing gear to contact a snow bank outside the confines of the runway. The aircraft then veered to the right side of the runway. The right main landing gear became embedded in a snow bank and the aircraft overturned and come to rest inverted, tearing off the gear and damaging the fuselage, tail fin and propeller in the process. The pilot, who was the sole occupant of the aircraft, was not injured.

Some Balloon Incidents in the U.S.

Elsewhere in this publication I wrote a farewell message as I plan to retire from TC after completing this issue. So to all you balloonists who have been so helpful and safety-conscious over the many years I have worked with you to enhance safe ballooning in Canada, goodbye and safe ballooning. —Joe Scoles.

There have been very few serious balloon incidents recorded in Canadian databases since the previous issue, so I looked at a few recent accidents filed in the National Transportation Safety Board (NTSB) database. Why make mistakes when we can learn from the bad experiences in other countries?

On Oct. 8, 2000, a **Galaxy 7** balloon owned and operated by the pilot made a hard landing during a sightseeing flight in California. The balloon sustained minor damage, and the commercial-rated pilot was seriously injured. One of the fare-paying passengers received minor injuries, and one passenger was not injured.

The pilot reported to the NTSB investigator that the speed of the wind increased during the flight. On takeoff it was between two and four miles per hour; however, when he landed it was about 10 mph. He also told the investigator that during touchdown he encountered gusty wind conditions. Apparently the gusts caused the rough landing that ejected the pilot from the basket, where he sustained serious injury during the landing phase.

On August 11, 2000, a **Balloon Works Firefly II** encountered unusual wind conditions and collided with the ground after the envelope partially collapsed about four miles northeast of the Deer Valley Municipal Airport in Phoenix, Arizona. The pilot told FAA inspectors that a pre-flight weather briefing contained no flight precautions for the proposed flight area. The launch site is in a flood control basin near the dam and is surrounded by hills. As the balloon neared the lee side of one hill, it was subjected to a downdraught followed immediately by an updraught. The pilot said he believed he encountered a wind rotor. The rapid changes in air mass movement distorted the balloon envelope and resulted in spilling some of the heated air. The balloon then entered a rapid descent and collided with the ground.

On April 9, 2000, a **Balloon Works Firefly** sustained substantial damage at Anthony, New Mexico, when it drifted into power lines following the landing. The private pilot and her two passengers were not injured. According to the pilot, the passengers disregarded her instructions and exited the basket before the balloon was secured following landing. The burners had been shut down and the valves placed in the off position. The pilot said that when the passengers disembarked, the decrease in weight caused the balloon to rise and it drifted into nearby power lines. The lines arced and caused fire damage to the envelope. The pilot remained in the basket until it came to rest.

The NTSB determined that the probable cause of this accident was the failure by the pilot to keep the burner operating until the balloon was secured. A factor was the passengers disregarding the instructions they had been given by the pilot.

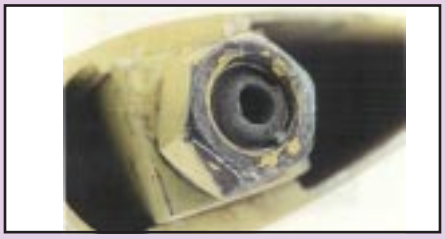
To shut down or not shut down the burner at the point of landing is a very controversial point among Canadian balloonists as most are taught to shut off the burner at the point where landing is assured. — Ed.

Nordic VI Stalls—Two Fatalities

The aircraft had undergone some painting work that required removal and reinstallation of the wings on the day of the accident flight. After this work, a witness noted that the pitot tube was not installed (the pitot tube is required for correct airspeed readings to the pilot in flight). After the pilot performed about three touch-and-go landings (crow hops) on the long runway, the aircraft was observed climbing and turning left after departing the airport at St-Lambert-de-Lévis, Quebec, when it suddenly pitched up to the right then plunged to the ground out of control. The cause of the accident was assessed as the result of a stall from which the pilot failed to recover. The pilot was relatively inexperienced, having about 20 hr. training and four hours on the Nordic VI. His total experience may have been as high as 60 hr. of previous flight time, according to the report.

The TSB Lab examined a broken fitting that secured the wing strut to the aircraft and determined that the failure of a wing attachment strut fitting was due to overload, probably as a result of the aircraft striking the ground in a stalled condition.

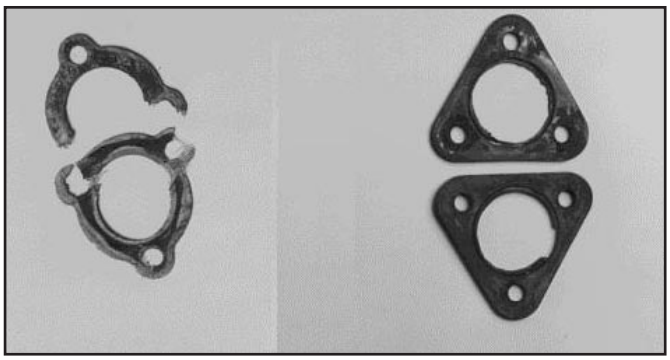
Upper end of a typical aft strut attaching the wing on a similar aircraft type.



Close up of the fracture surfaces from the right strut of the accident aircraft.

Ref: TSB A99Q0071

Rotorway Exec Exhaust Gasket Maintenance



Exhaust gasket (left) and flange (right) as removed from the burned helicopter engine. The flange illustrates to some extent the properties of the weld that the owner felt were of poor workmanship.

Exhaust gasket failures were reported by several Rotorway Exec owners to be the cause of a number of in-flight problems. In one Canadian case, the owner reported that a leaking exhaust gasket coupled with a poorly welded flange caused an in-flight fire that resulted in a forced landing; the machine was consumed by the fire. This helicopter was equipped with an after-market turbocharger. Although the manufacturer does not support this installation, according to the owner it was not the problem. In a second case, the Canadian owner reported that a failed exhaust gasket resulted in an autorotation (emergency landing) because the escaping hot gases burned a coolant line, resulting in engine failure.

Attachment of the exhaust system is very critical on any engine because failure or gas leakage can set the machine on fire or cause heat damage to nearby components, as described above.

Canadian owners of these machines may wish to visit Internet chat rooms and the Rotorway Exec Web site for the latest information and installation procedures for the exhaust gasket in use.

I contacted the manufacturer's representative of Rotorway Exec to request their views on these reports. The representative responded by telephone indicating that their exhaust gaskets had been tested for the temperature and pressure levels normally associated with the engine and components as sold in kits and that no testing or design support was available for after-market products, such as the installation of various after-market turbochargers. Furthermore, their products must be maintained in accordance with the their maintenance manual and ongoing maintenance periodic checks, some of which include checking the exhaust system and re-torquing the exhaust hold-down nuts at specified intervals, particularly in the case of new machines and during new or overhauled engine break-in periods. —Ed.