CONTENTS

SPECIAL BULLETINS

COMMERCIAL AIR TRANSPORT

FIXED WING

ROTORCRAFT

GENERAL AVIATION

FIXED WING

ROTORCRAFT

SPORT AVIATION / BALLOONS

CONTENTS (Continued)

ADDENDA and CORRECTIONS

None

(ALL TIMES IN THIS BULLETIN ARE UTC)

ACCIDENT

Aircraft Type and Registration:	Brandli Cherry BX-2, G-BXUX
No & Type of Engines:	1 Continental Motors Corp C90-12F piston engine
Year of Manufacture:	1999
Date & Time (UTC):	21 July 2008 at 1940 hrs
Location:	Clipgate Farm Airstrip, Canterbury, Kent
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to the landing gear and associated mechanism, propeller and engine shock-loaded
Commander's Licence:	Private Pilot's Licence
Commander's Age:	61 years
Commander's Flying Experience:	429 hours (of which 322 were on type) Last 90 days - 5 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and AAIB examination of the aircraft

Synopsis

Whilst taking off at a relatively high weight from an undulating grass airstrip, a partial failure of the wooden structure supporting the right main landing gear occurred. The aircraft climbed away safely and, after several low passes along the runway for observers to assess the damage, the landing gear collapsed when the aircraft landed. It was determined that the structure which failed had probably been weakened over a period of time by the aircraft's operation from the undulating grass surface of the runway at its home airfield.

History of the flight

The aircraft was based at Clipgate Farm Airstrip, whose grass runway is, in places, uneven. The pilot had planned a short local flight with a friend, who was also a pilot. The takeoff progressed normally until rotation, at which point a significant "crack/bang" was heard; the aircraft continued to accelerate and climbed away. The pilot climbed the aircraft to circuit height, but found that he was unable to retract the landing gear. Both occupants thought that a part of the gear may have broken off, although no debris was visible on the runway surface.

The passenger used a mobile phone to contact the airfield owner, who asked for someone to attend the airfield in order to inspect the landing gear while the aircraft

conducted a low pass. This was done and the observer advised that the right landing gear leg appeared to be partially retracted and trailing rearwards. The pilot then contacted the pilot of another aircraft by radio, who was a Light Aircraft Association (LAA) Inspector who had taken off shortly before G-BXUX, and requested that he land and conduct a similar inspection during another low pass. These observations confirmed the earlier findings and additionally noted that the left main gear and nose leg appeared to be in their normal extended positions.

The pilot and passenger decided to request that the emergency services attend the airfield, following which they would carry out what they expected to be a crash-landing. They also discussed the operation of the canopy, including the method of its emergency release, should that be necessary.

After the arrival of the emergency services, the pilot flew a long, flat approach and touched down approximately 60 m beyond the threshold. The landing gear collapsed immediately on touchdown and the aircraft skidded on its belly for about 40 m before coming to rest. Both occupants were uninjured and left the aircraft without difficulty.

Initial examination of the aircraft revealed that the right wheel had completely detached from its leg during the landing, due to a failure of a weld in a steel fitting at the bottom of the leg. This had required repair on an earlier occasion. The pilot considered the possibility of the weld having partially failed during the takeoff roll which would have allowed the leg to dig into the ground and, potentially, impart high load to the structure. However, there were no marks on the runway to support this sequence of events.

Landing gear description

The Brandli Cherry BX-2 is a two seat, low-wing monoplane, with retractable landing gear, constructed primarily of wood covered with fibreglass cloth. It is designed for 'home' construction. The landing gear is directly operated by a system of cables and pulleys connected to a handle mounted below the instrument panel. Each main landing gear retracts upwards into the wing, rotating about a longitudinal pivot in the area where the cockpit floor joins the fuselage side, formed by forward and aft located bearings. The main and nose legs extend with the aid of gravity and are retracted by means of a spring-assist mechanism. Operation of the gear handle also operates the main gear downlock by rotating two pulleys, one for each main gear leg, mounted on the front of the main spar. Each of these is connected to a cam plate on the rear face of the spar where the cam slot engages with a roller on a 'downlock block'. This simply consists of a block of wood, hinged along its lower edge, where it joins the main structure in the fuselage keel area. When the gear is extended, the cam rotates the downlock into a position such that the top of the leg, ie the portion above the pivot, rests on stops attached to the block's upper edge where landing loads from the leg are reacted.

Figure 1 shows the interior of the aircraft together with the relevant components. A fuselage crossbeam, located aft of the main spar, functions as a structural member which provides for the location of the rear pivot bearing of each main landing gears.

Aircraft examination

It was apparent that some structural damage had occurred in the region of the right landing gear pivot, in that the rear pivot bearing, located in the end of the fuselage crossbeam, had moved in a rearwards

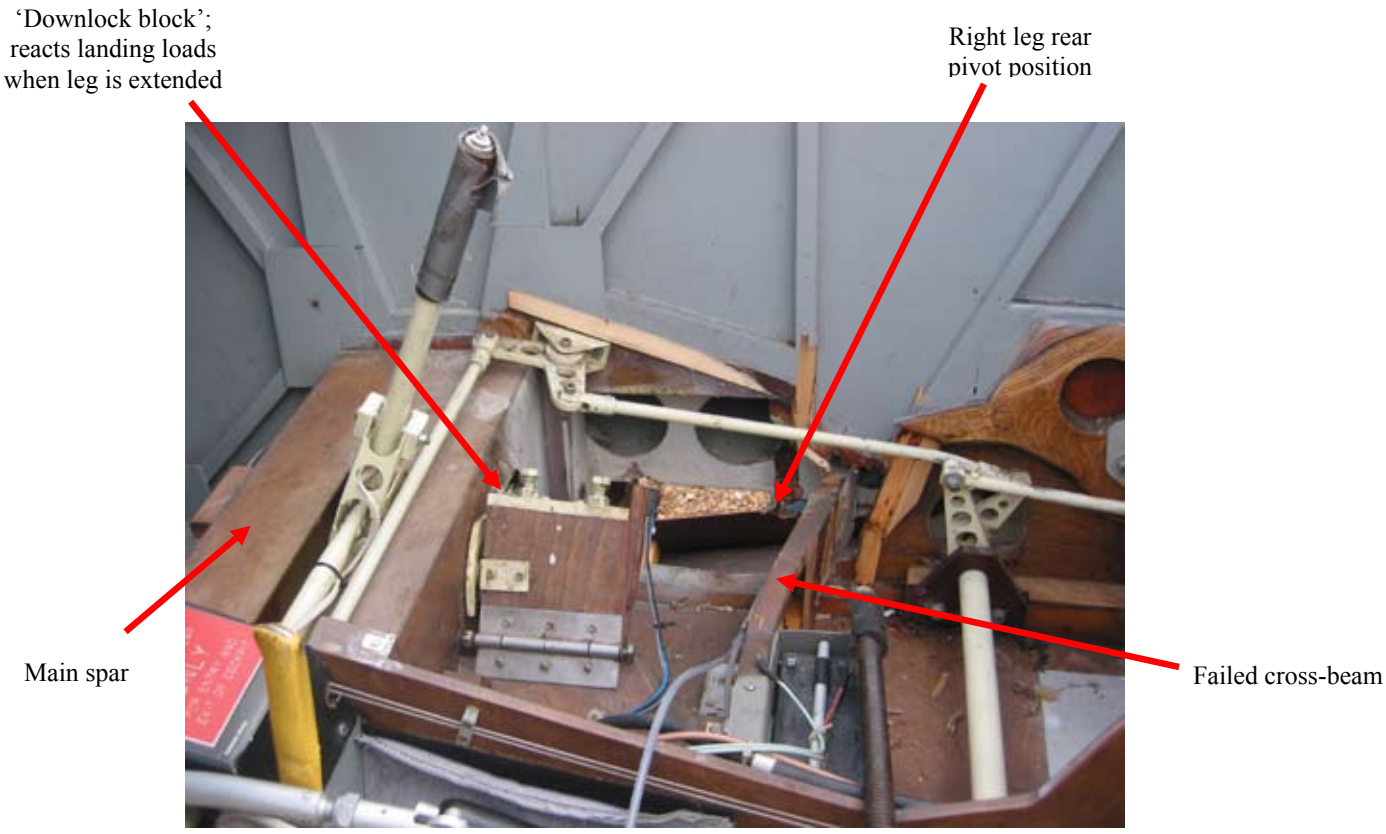

Figure 1

View of right hand side of cockpit

direction. This movement of the bearing was associated with a failure of the crossbeam. It was difficult to differentiate between the damage arising during the takeoff event and that which occurred on landing. However, the fact that the leg was observed to be trailing when the aircraft was airborne suggests that the rear pivot bearing was no longer properly located which, in turn, means that the cross-beam had failed by this time.

Figure 2 shows a partial reconstruction of the failed section of the crossbeam, with the rear pivot of the leg located in a wooden block at the outboard portion of the beam. It is apparent that the wood fibres around part of the circumference of the rear face of the locating hole have been crushed by the bearing bush, to the extent that they are standing proud of the surface. This damage is consistent with the leg moving in a rearward and upward direction. It is likely that the crossbeam would need to be secure and in position in order to react the forces generated by the leg in damaging the bearing hole. If so, it follows that at least some of the damage to the hole preceded the beam failure. It should be noted that the crossbeam consisted not of a single plank of timber, but was in fact built up using square-section Sitka spruce strips, top and bottom, with facings made from ply. This was typical of the lightweight construction methods used throughout the aircraft.

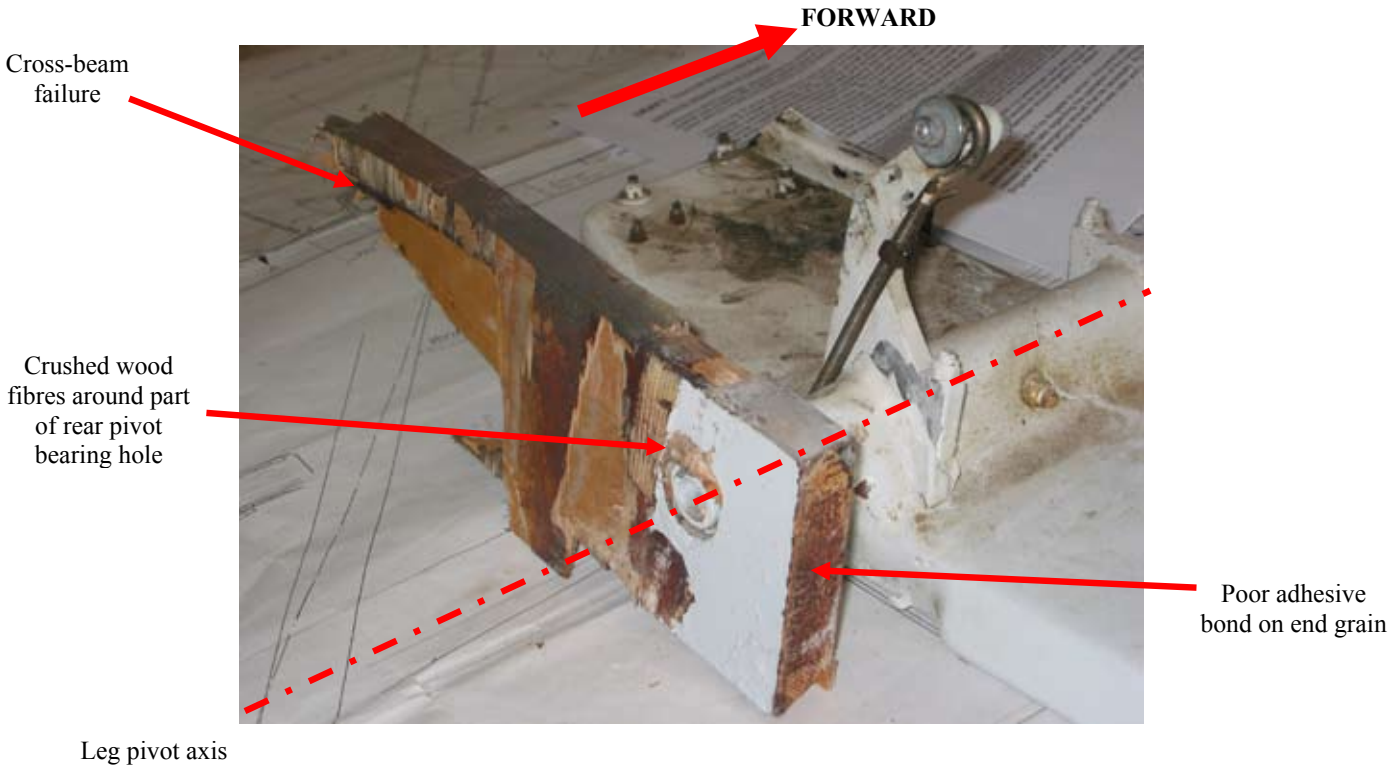

Figure 2

Partial reconstruction of failed fuselage crossbeam and right main leg

Figure 2 also shows the undamaged end of the beam which had been bonded to structure within the wing root. The fact that the adhesive can be seen without any wood fibres attached is indicative of a poor bond. Furthermore, bonds on 'end grain' surfaces such as this are generally avoided in wooden structures. However, the plans for the aircraft did not show any carry-through structure that linked the beam with the wing root, suggesting that the beam end was intended to be stabilised by its bond with the cockpit floor, together with a filleted joint to a plywood panel on the cockpit sidewall. A photograph of the intact left side of the beam is shown in Figure 3. On the right side, the plywood panel had failed due to the aft movement of the crossbeam.

Discussion

Whilst the crash-landing undoubtedly caused additional damage to that which occurred during the takeoff, evidence was present that suggested the initial failure was centred on the rear pivot of the right landing gear leg. It is possible that fore and aft movement of the leg under normal landing load, caused a progressive weakening of the bond between the bottom of the beam and the cockpit floor, together with the observed damage around the circumference of the rear pivot bearing locating hole. On the day of the accident it is possible that the combined effect of the increased aircraft weight with two occupants on-board, and the loads generated from undulations on the grass runway, precipitated the failure of the crossbeam, resulting in the audible "crack/bang", and the loss of the leg's location at its aft end.

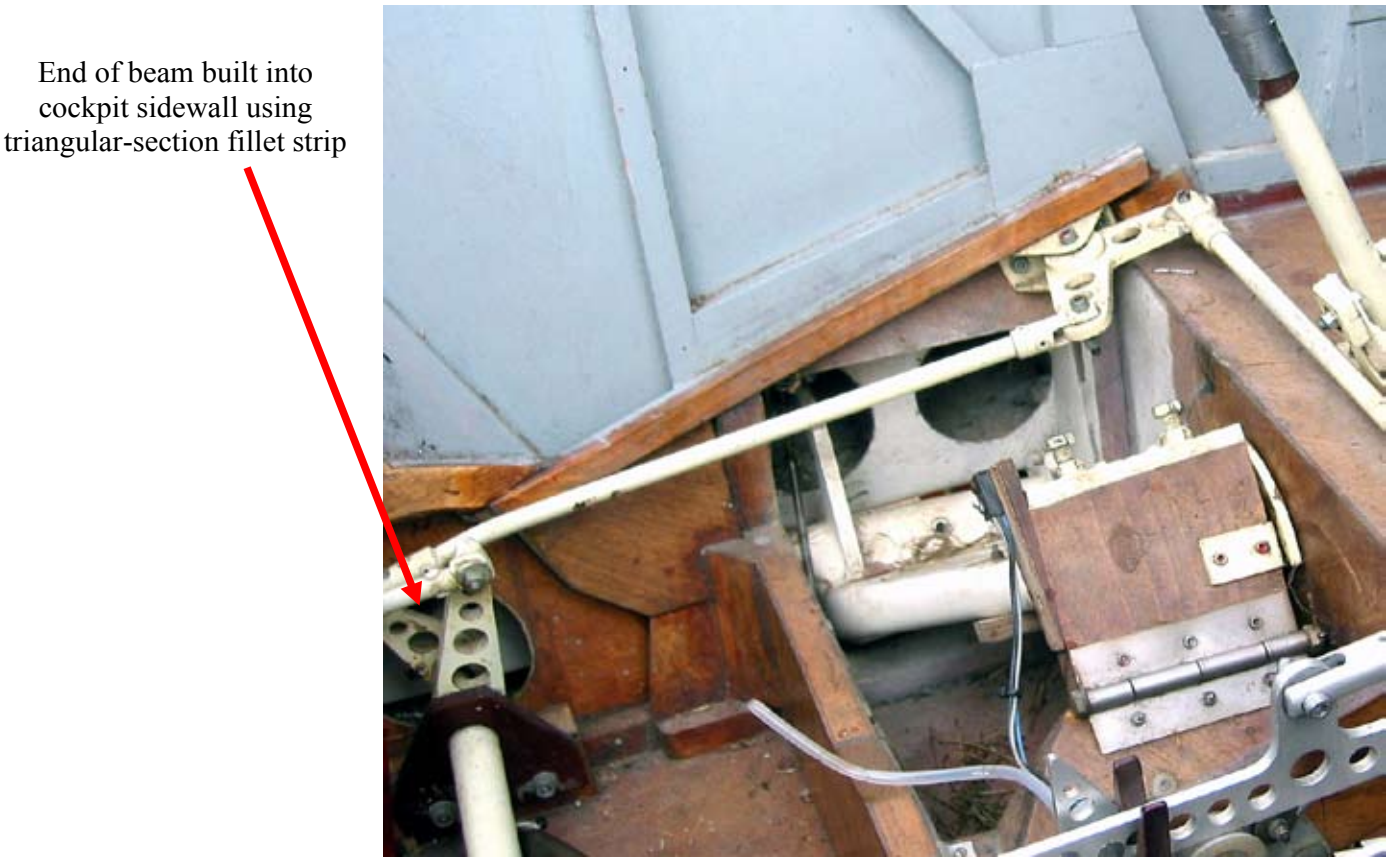

Figure 3

View of left side of cockpit, showing how the intact end of the cross-beam is built into the sidewall

In the absence of any structure linking the end of the crossbeam to the wing root, it is possible that the aircraft builder took the opportunity to apply adhesive to the ends of the crossbeam simply because they abutted some available structure within the wing root. However, the resulting poor bond would have contributed little to the overall strength and stability of the landing gear installation.

The generally lightweight nature of the structure around the ends of the crossbeam, although clearly necessary in this type of aircraft, gave rise to concerns as to whether it was sufficiently robust to withstand operations from unpaved surfaces. Similar concerns were raised by the pilot over the welded fitting that attached the wheel to the main landing gear leg.

ACCIDENT

Aircraft Type and Registration:	Cessna 152, G-BRNK
No & Type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1977
Date & Time (UTC):	7 August 2008 at 1845 hrs
Location:	Netherthorpe Airfield, Yorkshire
Type of Flight:	Training
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Impact damage to propeller, spinner and right wing leading edge
Commander's Licence:	Commercial Pilot's Licence with Flying Instructor Rating
Commander's Age:	55 years
Commander's Flying Experience:	798 hours (of which 420 were on type) Last 90 days - 55 hours Last 28 days - 19 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The aircraft was on an instructional flight from Netherthorpe Airfield. It was the sixth flight of the day for the commander, his third in G-BRNK. Operations were on Runway 06, which has a grass surface and a declared Landing Distance Available of 407 metres, with a 1.9% downslope. The grass had been mown during the afternoon, prior to the accident. The commander described the runway surface as firm.

A rain squall crossed the airfield while the commander was away from the circuit on his flight prior to the accident flight but he had landed normally on the short wet grass of Runway 06, using an estimated 80% of the runway length to stop. He then took off for a one-hour flight with a student, without refuelling. When they returned to the airfield, a further rain shower was passing through and the commander loitered to the west for 10 minutes to allow the rain to pass and for visibility to improve. He then made a short-field approach, using full flap and reducing airspeed to 55 kt at the airfield boundary, anticipating that the short wet grass would provide reduced braking action. The wind was estimated at 5-10 kt from 100°(M) and the ambient temperature was 20°C. The aircraft's fuel tanks were below half-full.

The approach and landing were reportedly normal, with the aircraft touching down at the start of the runway. It decelerated during the first half of the ground roll but the deceleration then became minimal and the aircraft

ran off the end of the runway at around 10-15 mph, before striking a wire boundary fence. The commander suggested that the major loss of braking effectiveness was attributable to the wet grass clippings remaining on the runway surface.

ACCIDENT

Aircraft Type and Registration:	Cessna 172S Skyhawk, G-UFCE
No & Type of Engines:	1 Lycoming IO-360-L2A piston engine
Year of Manufacture:	2003
Date & Time (UTC):	26 October 2008 at 1430 hrs
Location:	Newtownards, Northern Ireland
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - 2
Injuries:	Crew - None Passengers - None
Nature of Damage:	Propeller strike, damage to the engine firewall and forward fuselage
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	61 years
Commander's Flying Experience:	2,000 hours (of which 213 were on type) Last 90 days - 46 hours Last 28 days - 18 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

Immediately after landing in gusty conditions, the aircraft became airborne again. The second touchdown resulted in a heavy landing, causing the nose landing gear tyre to burst and the propeller to strike the ground. The pilot and passengers were uninjured. On examination damage was also observed to the lower forward fuselage and the engine firewall.

ACCIDENT

Aircraft Type and Registration:	Gardan GY80-180 Horizon, G-BYME
No & Type of Engines:	1 Lycoming O-360-A1A piston engine
Year of Manufacture:	1967
Date & Time (UTC):	23 August 2008 at 1750 hrs
Location:	Easingwold, Yorkshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 3
Injuries:	Crew - None Passengers - None
Nature of Damage:	Collapsed nose leg, bent propeller and both wings badly damaged
Commander's Licence:	Private Pilot's Licence
Commander's Age:	46 years
Commander's Flying Experience:	141 hours (of which 20 were on type) Last 90 days - 9 hours Last 28 days - 3 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft had insufficient fuel in its main tanks for its planned flight. At 2,000 ft, approaching the intended destination, the fuel in the main tanks ran out and the engine stopped. The aircraft's auxiliary tank contained approximately 20 minutes worth of fuel, but the pilot did not select the auxiliary tank. He carried out a forced landing, but undershot his intended field and collided with a hedge. The aircraft then turned over onto its roof. The pilot and passengers were uninjured and vacated the aircraft normally.

History of the flight

The pilot planned to fly with his family from Bagby, Yorkshire, to Panshanger, Hertfordshire, and return. The weather was suitable for the flight and he refuelled the aircraft prior to takeoff. He calculated that it was a 3 hour flight for which he required about 120 litres, which equated to the main tanks being about ¾ full. Prior to refuelling, the fuel gauges indicated that the main tanks were about ¼ full and the pilot refuelled the aircraft visually to ¾ full, adding 85 litres of fuel. The aircraft also had an auxiliary fuel tank containing about 15 litres of fuel, which the pilot considered to be his emergency reserve. He had decided not to take full fuel, as he wanted to make an allowance for some baggage and had also considered the performance consequences of wet field conditions after recent heavy rain. With

the passengers and fuel, the aircraft was within its certified weight and centre of gravity limitations.

The flight to Panshanger was uneventful and, after a short time on the ground the aircraft departed for the return flight to Bagby. During the return flight the pilot noticed the main fuel gauge readings were lower than he had expected them to be. He put this down to 'the notorious fuel gauge inaccuracies' and, since the flight time was as planned, he was not unduly concerned.

When the aircraft was approximately 6 miles from Bagby, at 2,000 ft, the engine faltered then stopped. The pilot selected a field for a forced landing and trimmed the aircraft to the glide speed. As he approached his chosen field the pilot selected the landing gear down, an action which automatically lowered the flaps. The pilot had not anticipated the effect that extended landing gear and flaps would have on the aircraft's glide angle and it descended into a hedge short of the intended field. The aircraft turned over and came to rest inverted. The pilot turned off the master switch and he and his passengers, who were all uninjured, vacated the aircraft by the pilot's door.

The pilot considered that the accident was caused by him not putting enough fuel into the main tanks when he refuelled. He added that 'he still had fuel in the auxiliary fuel tank and, had he remained calm, he could have selected that tank.'

Additional information

The Air Navigation Order requires a pilot of a flying machine to carry sufficient fuel for the intended flight together with a safe margin for contingencies.

The pilot used the fuel consumption curves from the Operating Manual (Figure 1) to calculate the fuel required for his flight, which he planned to fly using 75% power at 2,200 rpm; he also allowed for an additional margin of approximately 20%. This complies with the advice given in the CAA publication, LASORS, where it states:

> *'Don't assume that you can achieve handbook fuel consumption. As a rule of thumb, due to service and wear, expect to use 20% more than the 'book' figures.'*

The resultant planned fuel consumption was 38 litres per hour.

However, the fuel consumption curves in the Operating Manual contained an error, where the data 'fuel consumption in litres per hour' was incorrectly aligned with the graph. It can be seen that, for example, 10 US gallons is incorrectly aligned with 30 litres, whereas it should be aligned with 37.8 litres. The net effect of this is that whereas the pilot had calculated his consumption, including the 20% margin, to be approximately 38 litres per hour, the figure should have been approximately 46 litres per hour.

LASORS also state:

> *'Always plan to land by the time the tanks are down to the greater of ¼ tank or 45 minutes cruise flight, but do not rely solely on the gauges which may be unreliable.'*

As the fuel tanks were at ¼ tank prior to refuelling a pilot following the CAA's advice would have added the 3 hours trip fuel to the tanks, or planned to pick up fuel from Panshangar.

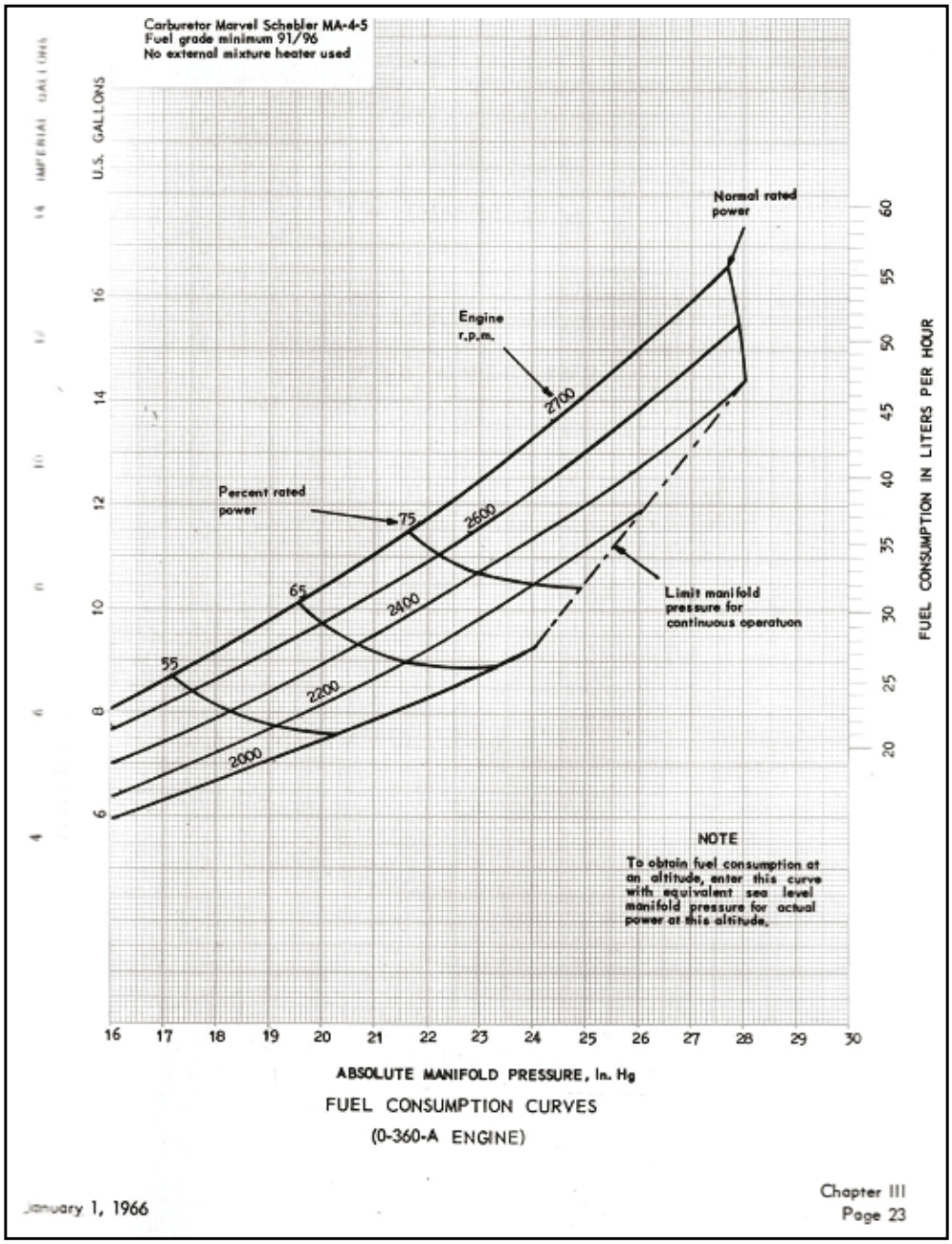

Figure 1

Comment

In an honest report the pilot acknowledged that his poor fuel planning caused the accident, although he was not helped by the incorrect conversion data that were published in the Operating Manual. In addition, had he selected the auxiliary tank when the engine started to falter, it is likely that the accident could have been averted.

Safety Action

The European Aviation Safety Agency (EASA) was advised of the error in the fuel consumption curves through the UK Civil Aviation Authority. EASA have subsequently issued an Airworthiness Directive, effective 17 November 2008, which forbids the use of the existing conversion curves and provides correct conversion data which is to be inserted into the Operating Manual.

ACCIDENT

Aircraft Type and Registration:	Pierre Robin R3000/140, G-BZOL
No & Type of Engines:	1 Lycoming IO-320-D2A piston engine
Year of Manufacture:	1986
Date & Time (UTC):	19 September 2008 at 1200 hrs
Location:	Compton Abbas, Dorset
Type of Flight:	Unknown
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nose landing gear collapse, damage to propeller and engine mounts
Commander's Licence:	Private Pilot's Licence
Commander's Age:	60 years
Commander's Flying Experience:	266 hours (of which 154 were on type) Last 90 days - 13 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and witness statements

Synopsis

Immediately after touchdown, the aircraft became airborne again. The pilot attempted to correct the bounce but the aircraft landed on its nose landing gear, which then collapsed. The pilot stated that his approach speeds and heights had been normal, but witnesses reported that the aircraft's approach to the field appeared to be higher and faster than they were accustomed to seeing, with a steep final approach, which resulted in the aircraft landing fast and deep into the runway.

ACCIDENT

Aircraft Type and Registration:	Pioneer 300, G-ZZZG
No & Type of Engines:	1 Rotax 912 ULS piston engine
Year of Manufacture:	2008
Date & Time (UTC):	12 September 2008 at 1400 hrs
Location:	Abergavenny (Hardwick) Airfield, Monmouthshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Substantial damage
Commander's Licence:	Private Pilot's Licence
Commander's Age:	54 years
Commander's Flying Experience:	158 hours (of which 19 were on type) Last 90 days - 10 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synposis

The airfield at Abergavenny has a grass runway with a length of 660 m which slopes down slightly from either end in such a way that a shallow hollow is formed approximately 80 m into the runway. The pilot joined the circuit on left base for Runway 33 and the approach and landing were normal. However, about 30 m after touchdown the aircraft veered to the left. The pilot attempted to regain the centreline by applying corrective rudder and nosewheel steering, but without effect. He realised that if he continued with the landing, the aircraft would impact the airfield fence and the trees beyond, so he applied full power and further corrective control inputs. Although the aircraft turned slightly, the pilot considered that there was still a risk of hitting the trees while airborne and he opted to allow the aircraft to strike the fence. The aircraft spun through 270°, resulting in substantial damage.

The pilot was later informed that the rainfall prior to his arrival had been very heavy and the ground was still waterlogged. He considered that the amount of water on the runway draining towards the hollow had been sufficient to flood the ground and cause it to become very soft. He subsequently noted that the left wing and landing gear were heavily contaminated with mud.

ACCIDENT

Aircraft Type and Registration:	Piper PA-15 Vagabond, G-BTOT
No & Type of Engines:	1 Continental Motors Corp O-200-A piston engine
Year of Manufacture:	1955
Date & Time (UTC):	17 July 2008 at 0745 hrs
Location:	Near Sedgefield, Co. Durham
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Minor damage to landing gear and airframe
Commander's Licence:	Private Pilot's Licence
Commander's Age:	54 years
Commander's Flying Experience:	1,410 hours (of which 205 were on type) Last 90 days - 7 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

After take off, on passing through about 1,000 feet, the engine stopped due to suspected carburettor icing. The aircraft sustained minor damage in the ensuing forced landing.

History of the flight

The pilot had taken off from Fishburn Airfield, where the aircraft was based, on a general handling flight in the local area and landed off the first circuit without incident. He backtracked the aircraft and took off again but on climbing through about 1,000 feet the engine started to run roughly. The pilot applied carburettor heat and attempted to land at a nearby farm strip but on the approach the engine cut out, forcing him to land short of the strip, in a grass field. The aircraft touched down heavily, sustaining minor damage to the undercarriage and airframe.

The pilot commented that the weather conditions at the time were conducive to carburettor icing and he considered that this was the cause of the engine stoppage.

ACCIDENT

Aircraft Type and Registration:	Piper PA-24-260 Comanche, G-ATIA
No & Type of Engines:	1 Lycoming IO-540-D4A5 piston engine
Year of Manufacture:	1964
Date & Time (UTC):	8 August 2007 at 1057 hrs
Location:	Approximately half a mile east of Leicester Airport
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Serious) Passengers - N/A
Nature of Damage:	Aircraft damaged beyond economic repair
Commander's Licence:	Private Pilot's Licence
Commander's Age:	74 years
Commander's Flying Experience:	1,222 hours (of which 200 were on type) Last 90 days - 37 hours Last 28 days - 4 hours
Information Source:	AAIB Field Investigation

Synopsis

On departing from Leicester, the pilot observed a low voltage indication and returned to make a precautionary landing. Whilst on short final for Runway 33, he became aware of vehicles near the runway threshold and accordingly, landed long. The aircraft bounced after touchdown and he decided to go around. During the climb out the engine began to lose power and he attempted to land downwind on another runway, but the aircraft was too high and too fast. After crossing the aerodrome eastern boundary, the aircraft stalled from a low height and impacted the ground heavily, following which a fire broke out. The pilot suffered back and facial injuries.

History of the flight

Three days before the accident, whilst preparing the aircraft for flight, the pilot found that the battery was discharged and requested for it to be changed by an engineer. On the day of the accident, he was able to start the aircraft on the first attempt and noted that the ammeter indicated that the battery was charging. The pre-flight and power checks were completed satisfactorily and the aircraft departed from Runway 33 at Leicester with full fuel tanks. As it climbed, the pilot noticed that the low voltage warning light had illuminated and he decided to carry out a circuit to land back on Runway 33. On the approach, he noticed a tractor and trailer combination that appeared to be moving towards the runway threshold, so he reduced the rate of descent to ensure that he cleared the vehicles

safely and landed further along the runway than he would usually. On touchdown, the aircraft bounced twice, prompting the pilot to execute a go-around. Whilst climbing back into the circuit he heard an "odd pop on the engine" and made a PAN call on the aerodrome air/ground radio frequency, stating that the engine was running roughly. The engine then began to run "very, very roughly" and the pilot radioed to say that he would land in the middle of the aerodrome. He was aware that the landing would be downwind and so began to descend early. An instructor in a helicopter operating nearby estimated that the aircraft completed a left turn from its north-westerly takeoff track onto an easterly heading at a height of approximately 100 ft.

An instructor in another aircraft had seen G-ATIA going around and judged that it had commenced the left turn onto an easterly heading at approximately 200 ft above the ground. It appeared to be approaching to land with its landing gear up, so the instructor called on the radio to advise the pilot, who immediately lowered the landing gear. The engine continued to run intermittently and make noises, which another witness on the ground described as "like shotgun fire". This witness saw the aircraft flying in an easterly direction at a speed and height that he considered too great for a landing on Runway 10. At a point south of the Runway 28 threshold, with the aircraft descending to within 50 ft of the ground, the pilot attempted to position the aircraft onto a right hand base leg for Runway 33. The aircraft was seen to climb very slowly then adopt a nose-down attitude and roll to the right. The pilot reported that at this point the engine had ceased to produce power. He responded by applying nose-up elevator control, which resulted in a nose-up attitude but no decrease in the rate of descent. This was followed almost immediately by the aircraft impacting the ground. Figure 1 depicts the aircraft's track following the go-around.

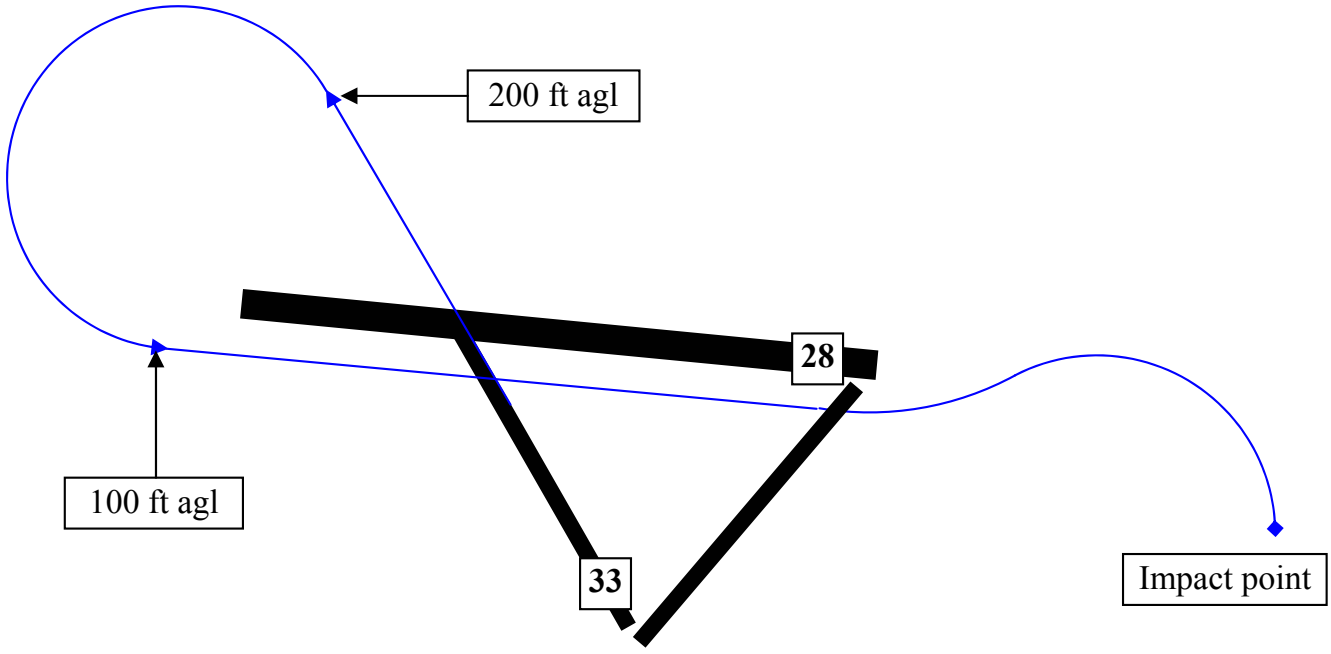

Figure 1

Leicester Aerodrome layout showing aircraft's track after go-around

The pilot suffered facial injuries when his head struck the control yoke during the impact and he was also aware of back pain. Shortly afterwards the helicopter landed nearby and its occupants went to assist the pilot. One of them used a fire extinguisher from the helicopter to attack a fire in the engine bay. The pilot, having considerable relevant medical experience, was concerned about the possibility of complicating any spinal injury and resisted their attempts to remove him from the aircraft wreckage. He vacated it without assistance, and recalled that he did not turn off the fuel supply or electrical power. He then walked over to the helicopter and used it to support himself in a standing position. The aerodrome fire and rescue service (AFRS) promptly attended the scene and put out the fire using one dry powder and two foam extinguishers. The pilot was later taken to hospital by the AFRS.

Aircraft information

The aircraft was a PA-24-260 Comanche powered by a 260 hp Lycoming IO-540-D4A5 engine, driving a 3-bladed constant-speed Hartzell propeller. It was of conventional design with mechanical flying controls and retractable tricycle landing gear (Figure 2). At the time of its last annual inspection on 4 May 2007, the airframe had accumulated 5,492 hours, the engine 81 hours, and the propeller 240 hours. The engine had been overhauled and rebuilt in the UK on 15 April 2006.

During the aircraft's last annual inspection, completed three months before the accident, oil pipes on the engine and the fuel hose between the injector and fuel flow manifold were replaced.

Accident site and wreckage examination

The accident site was located in a wheat field approximately 600 metres south-east of the end of Runway 10. The ground impact marks were consistent with the aircraft having struck the ground nose first, in a slight left bank. The aircraft had bounced after initial impact and travelled for 30 metres before coming to rest upright and orientated in the direction of 187°(M). The track of the aircraft at initial impact was approximately 245°(M). There was significant fire damage around the engine bay and to the engine, which had been forced to the right and was lying on

Figure 2

The aircraft, G-ATIA, before the accident

its left side. There was a 10 metre long narrow scorch mark in the wheat originating near the initial impact mark and leading up to a point about 20 metres short of the wreckage. There was an additional smaller and localised patch of burnt wheat at the edge of the initial impact mark.

All three landing gear legs were extended and had separated from the aircraft during impact. The flaps were in the retracted position. The majority of the damage to the aircraft was to the nose structure forward of the firewall. The wing skins and under-fuselage skin also exhibited crushing and wrinkling damage.

All three propeller blades exhibited significant leading edge gouges and chordwise scratches consistent with propeller rotation at impact. The blade tips were intact; one blade was bent forward at mid-span and the other two blades were bent aft.

The fuel tank selector was set to the right main tank. The electric fuel pump switch was in the ON position. The fuel recovered from the aircraft's left auxiliary tank, left main tank, right main tank and right auxiliary tank were 13, 23, 25 and 8 US gallons respectively, giving a total quantity recovered of 69 US gallons[1]. Fuel samples from all four tanks were tested and were found to be consistent with the properties of 100LL AVGAS. Small quantities of soil debris were found in the fuel samples, but they were otherwise free of contamination. A small amount of fuel was recovered from the fuel line to the engine firewall, but no fuel was found forward of the firewall due to the effects of the fire.

Footnote

[1] The aircraft total fuel capacity was 90 US gallons; 30 gallons in each of the main tanks and 15 gallons in each of the auxiliary tanks.

Recorded information

Track log data[2] covering the accident flight was downloaded from a GPS unit recovered from the aircraft. The frequency with which data was logged by the unit was set at once every 30 seconds, however, the track logs showed evidence that the satellite signals to the GPS antenna had occasionally been obscured, with missing sections of data or loss of altitude information.

The data for the accident flight showed the takeoff from Runway 33, a circuit of the airfield followed by an approach and aborted landing on Runway 33. The final two recorded data points showed the aircraft to be in a left turn. Following the aborted landing, a data point was recorded just beyond the end of Runway 33, at which point the recorded aircraft height was about 70 ft agl and the groundspeed 47 kt. The next point placed the aircraft about 200 metres to the south-west of the Runway 10 threshold, with a recorded track of 136° and ground speed of 75 kt. The final data point placed the aircraft about 200 metres beyond the end of Runway 10, within a few metres of the extended centreline, with a recorded ground speed of 72 kt. Neither of the final two data points included altitude information.

Powerplant examination

The engine was taken to an approved overhaul facility for strip examination. The engine internals were found to be in good condition with no evidence of heat distress. All mechanical components moved freely and were sufficiently lubricated. The cam lobes were in satisfactory condition. The oil filter and oil inlet screen

Footnote

[2] A track log contains a sequence of data points, with each point containing time, aircraft position, instantaneous groundspeed, track and altitude.

were free from any significant debris. The oil scavenge pump was free to rotate. All the spark plugs were in good condition. The plugs from cylinders 1, 3 and 5 were clean, whereas some of the plugs from cylinders 2, 4, and 6 were coated in oil. Oil was also found inside cylinders 2, 4 and 6. These cylinders are on the left side of the engine (as viewed from aft looking forward) and the aircraft had been lying on its left side at the accident site. The ignition lead to plug 5 was slightly loose, but all other connectors were tight.

The throttle and mixture control linkages had separated from the fuel injector, which was consistent with the impact damage in that area. The propeller speed control linkage was still connected to the governor. The propeller governor rotated freely, contained sufficient oil and its filter screen was clear.

The magnetos were found securely attached to the accessory gearbox and there was no evidence that these had rotated out of position. When tested, the left magneto operated normally down to 130 rpm whereas the right magneto fired irregularly below 230 rpm. This was above the specification of 150 rpm for a new or overhauled magneto, but was still well below normal engine idle rpm[3].

The electric fuel boost pump operated normally when tested.

The fuel manifold, flow dividers and nozzle injectors were rig tested. The manifold and flow dividers (without nozzles attached) produced a steady 161-162 pounds per hour flow at 4.5 psi, which was within specification. The low pressure test revealed that at 6 pounds per hour the flow rate increased suddenly, indicative of a sticking manifold valve. However, this would not have been apparent at high power settings and the sticking valve could be a result of heat from the post-impact fire. The injector nozzles were tested separately and all had flow rates within specification apart from nozzle No 4, which had a slightly low flow rate. After cleaning some oil from this nozzle its flow rate was within specification. The nozzle could have been contaminated by oil while the engine was lying on its side after impact.

The fuel hose between the engine-driven fuel pump and the fuel injector had separated from the fuel injector (Figure 3). This was not one of the hoses that was replaced during the previous annual inspection. The fuel injector had also separated from the oil sump. The injector fitting (circled) is part of the injector body and connects to a threaded hole (also circled). Four threads from this hole had been stripped and one of the stripped threads was wrapped around the separated injector fitting (Figure 4).

The injector fitting was confirmed to be of the correct type, with the correct number of threads. The silicone seal was missing, but could have been consumed by the post-impact fire. The fitting and injector body were examined by a metallurgist. Microscopic examination did not identify any material deficiencies. It was not possible to establish whether the fitting had been cross-threaded, nor was it possible to establish if the fitting had been tight when the separation occurred. The AAIB investigated a more recent accident to a Piper aircraft with a similar injector and injector fitting. In this accident, which did not involve suspicion of an engine problem, the injector fitting had pulled out and stripped the threads in a similar manner, probably due to impact forces.

Footnote

[3] Magneto rpm is equal to 1.5 x engine rpm for this engine.

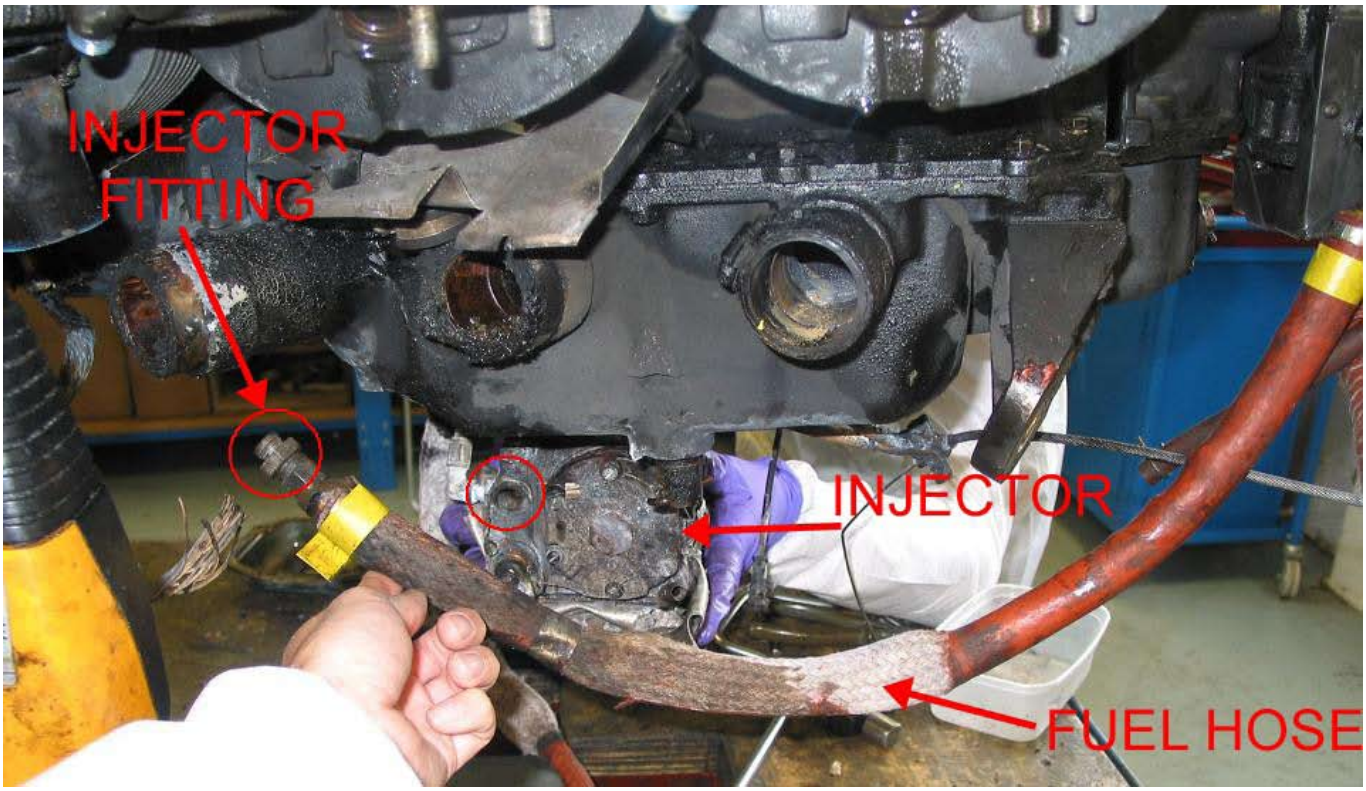

Figure 3

Fuel hose between the engine-driven fuel pump and the fuel injector.
It had separated from the injector at the injector fitting

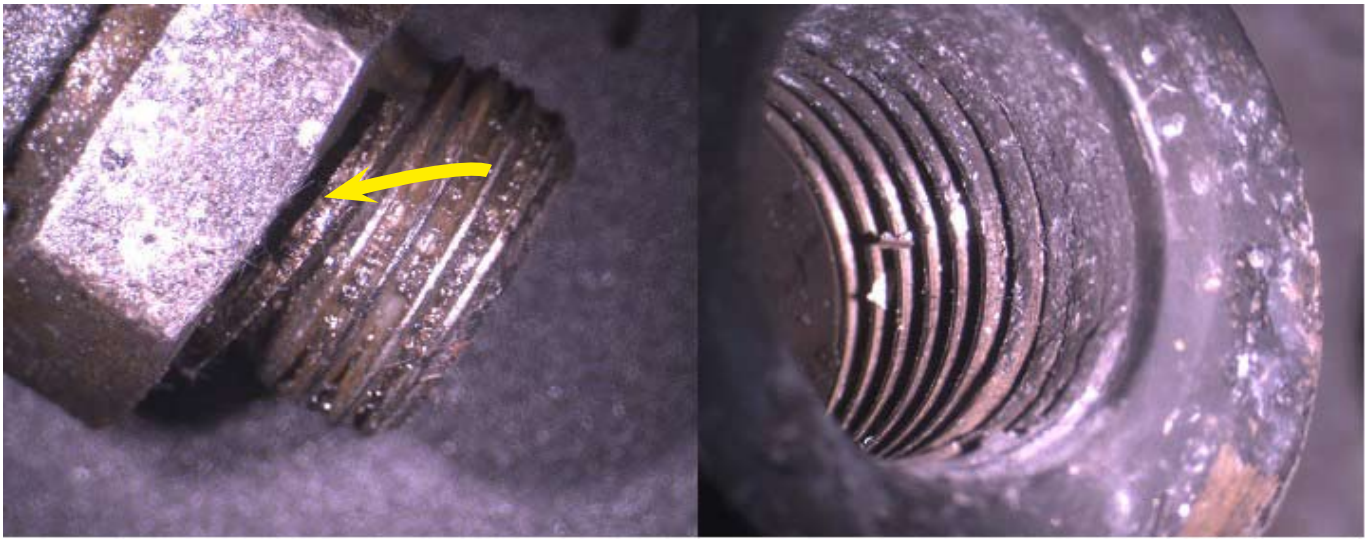

Figure 4

Left: close-up of injector fitting with separated thread (arrowed).
Right: close-up of threaded hole on the injector body showing the stripped threads

The fuel hoses were examined for leaks. The fuel hose between the engine-driven fuel pump and injector had a leak in the area where the hose had suffered fire damage. The inner lining exhibited clear evidence of heat damage. The fuel hose between the injector and fuel flow manifold did not leak at its rated pressure. The fuel hose from the firewall to the engine-driven fuel pump had a leak, again in a region where the inner lining had suffered heat damage from the fire.

The fuel injector was strip examined. No anomalies were discovered although heat damage to the membrane and seals precluded a full and conclusive examination. The engine-driven fuel pump had not suffered any mechanical damage.

Alternator test

Although the alternator had suffered fire damage, when tested it produced 80 amps at 17 volts which was within specification. The wires were securely attached but the fire had caused insulation damage.

Other information provided by the pilot

The pilot considered that when the aircraft was positioned south of the Runway 28 threshold, he should have attempted to turn left for a landing on that runway. He commented that it was not an ordinary engine failure in that it progressed from "a couple of pops" to a series of explosions associated with severe vibration. He recalled that the aircraft had been in a level attitude when the engine failed completely and judged that the aircraft had not stalled because it pitched up in response to nose-up elevator control. However, the subsequent change to a nose-down attitude was very rapid. He stated that the fuel boost pump had probably remained on throughout the flight. He recalled that when he checked prior to departure, the engine oil contents had been just below the 'Full' marking on the dipstick.

Techniques for handling engine failure after takeoff

Evidence from previous accidents and theoretical analysis both suggest that an attempt to return to the departure runway in the event of engine failure in a single engine aircraft is unlikely to be successful if the failure occurs shortly after takeoff. In this instance, after going around with what appeared to the pilot to be a partial engine failure, the aircraft turned through approximately 230º to approach Runway 10.

Transport Canada civil aviation document TP 13748E, *'An Evaluation of Stall/Spin Accidents in Canada 1999'*, which considered the altitude required before an "engine-out turn" was initiated, states in part:

> *'If an engine failure after takeoff results in an accident, the pilot is at least eight times more likely to be killed or seriously injured turning back than landing straight ahead.'*

Safety Sense Leaflet 1a – *'Good Airmanship'*, published by the CAA, includes the following advice:

> *'In the event of engine failure after take-off, if the runway remaining is long enough, re-land and if not, never attempt to turn back. Use areas ahead of you and go for the best site. It is a question of knowing your aircraft, your level of experience and practice and working out beforehand your best option at the aerodrome in use. (One day, at a safe height, and well away from the circuit, try a 180° turn at idle rpm and see how much height you lose!).'*

The 1994 paper *'The Possible "Impossible" Turn'*[4]

Footnote

[4] David F Rogers, United States Navy Academy, originally published in the AIAA Journal of Aircraft, Vol. 32 pp. 392-397, 1995

used a simplified analytical model to examine the ideal flight path of a single-engine aircraft turning back after engine failure during the takeoff phase of flight. It indicated that the optimum procedure involved a turn through approximately 190-220° using a 45° bank angle, flown at 5% above the stall speed.

The General Aviation Safety Information Leaflet (GASIL) 1 of 2006 stated:

> *'It is possible that in certain circumstances turning back to the aerodrome might be the option which minimises the risk of injury to the aircraft occupants, provided the pilot maintains a safe airspeed and sufficient height exists taking into account the extra drag from a windmilling propeller. However, in general, landing ahead is nearly always going to be the safest option in the event of an engine failure.'*

This issue has been explored in several previous AAIB reports. The report into the accident to G-BOIU[5] also considered the influence of a partial engine failure on a pilot's decision to return to the airfield:

> *'Although the principle of not turning back is well established in training, it is possible that some pilots are not sufficiently aware that a loss of power/performance can be insidious in nature and not always as easy to detect as the type of engine failure after takeoff generally practised at training organisations.'*

Analysis

The aircraft damage and the ground impact marks were consistent with a low speed, nose low impact with a slight left bank angle. The damage to the propeller blade leading edges indicated that the propeller had significant rotational energy at impact, consistent with either low power, or no power with a high windmilling speed. However, the low impact speed suggests that a high windmilling speed was unlikely; therefore, low power was more probable. The scorched wheat at the initial impact point and the narrow trail of scorched wheat emanating from it indicate that the fire ignited at or before initial impact. This fire spread after impact causing significant fire and heat damage forward of the engine firewall. The fire was probably fuelled by fuel being pumped into the engine bay by the electric fuel pump, as its switch was found in the ON position. This fuel would have flowed to the fuel hose which had separated from the injector, resulting in pooling below the injector – an area which was inside the area of most intense heat. It was the prompt arrival of the AFRS and the application of three fire extinguishers which prevented the fire from spreading beyond the engine bay.

The cause of the engine problems experienced by the pilot could not be established. There was sufficient fuel on-board and no evidence of fuel contamination was found. As the engine was fuel injected, carburettor icing can be ruled out as a cause. Satisfactory operation of the magnetos was verified and the spark plugs were in good condition. There were no mechanical defects with the engine and no evidence of an engine accessory defect. One possibility considered was a fuel leak from the fuel inlet fitting of the fuel injector. Insufficient fuel delivery could have caused rough running at a high power setting. Furthermore, if fuel had already been leaking from this fitting before impact, a fire would have more readily ignited at initial impact causing a narrow trail of scorched wheat. However, there were no records of this fitting having recently been disturbed;

Footnote

[5] AAIB Bulletin 12/2005, reference EW/C2004/08/05.

the fuel hose that was replaced during the annual check was a different hose. Furthermore, an examination of the stripped threads could not establish if the fitting had been loose or not before the fitting was pulled out. Evidence from another accident showed that impact forces can cause the fitting to be pulled out. Therefore, no definitive cause of the engine power loss could be established.

The cause of the low voltage warning after takeoff could not be explained. Low voltage is usually caused by an alternator failure, but the alternator operated normally when tested. Regardless of the cause of the low voltage light, it would not have had an impact on the engine operation, as the engine provides its own source of electrical generation via the magnetos and will continue to operate with a flat battery and a failed alternator.

Operational aspects

Engine failure shortly after takeoff requires the pilot of a single engine aircraft to decide very quickly where to land. Despite comprehensive advice to the contrary, the inclination to attempt to return to the departure airfield may be hard to resist, especially if the failure is partial and gives the impression of producing sufficient power to sustain flight. Although theoretically a return may be possible after the aircraft has climbed to several hundred feet, most single engine aircraft are unlikely to complete this manoeuvre successfully unless the failure occurs considerably higher. The aircraft would not have had sufficient height at the point it passed the threshold of Runway 28, to turn for landing on that runway.

Safety Sense Leaflet 1a suggests that '*at a safe height, and well away from the circuit'* pilots might '*try a 180° turn at idle rpm and see how much height'* is lost. This exercise would provide a gross estimate of the height lost during a turn to parallel the departure runway. However, in the absence of a crosswind the aircraft would need to turn through more than 180° to become realigned with the departure runway. Having sufficient height to complete the turn would not guarantee that the aircraft could land on the runway, because a tailwind during final approach might cause the aircraft to overshoot.

All the available evidence suggests that, following engine failure in a single engine aircraft, it is safest to land in open ground ahead. There is a risk of damage when landing on other than a prepared runway, but such damage is likely to be less severe if the pilot can accomplish a touchdown while still in control of the aircraft. In this case the aircraft stalled at a relatively low height above the ground. The ensuing high rate of descent, combined with a turn, resulted in touchdown at low forward speed. Had the aircraft stalled at a greater height, its speed on impact would have been higher, with possibly fatal consequences.

ACCIDENT

Aircraft Type and Registration:	Piper PA-28-140 Cherokee, G-BYCA
No & Type of Engines:	1 Lycoming O-320-E2A piston engine
Year of Manufacture:	1971
Date & Time (UTC):	15 August 2008 at 1105 hrs
Location:	Caernarfon Airport, Gwynedd
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Propeller and cowling damaged, nosewheel collapsed
Commander's Licence:	Student
Commander's Age:	46 years
Commander's Flying Experience:	114 hours (of which 60 were on type) Last 90 days - 5 hours Last 28 days - 5 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB

Synopsis

During the landing roll the student pilot lost control of the aircraft in a gusty crosswind and as a result the aircraft departed the runway. The nosewheel subsequently collapsed causing the propeller to strike the ground, shock-loading the engine. The aircraft was damaged beyond economic repair.

History of the flight

The student pilot stated that she was on a solo cross-country navigation exercise from and to Caernarfon Airfield, Gwynedd. On contact with Caernarfon radio they informed her they had just changed from Runway 20 to Runway 26 and the surface wind was 230º/13 kt.

During the final approach to asphalt Runway 26 the pilot was aware of a crosswind from the left. In the flare the aircraft began to drift to the right so she executed a go-around. During the subsequent approach there was no drift and the aircraft landed without any problems. On the landing roll the aircraft was subjected to a large gust of wind that caused it to yaw to the left. The pilot tried to counteract this with right rudder but was physically unable to keep the rudder applied and the aircraft yawed back to the left. As she attempted to maintain the right rudder, the aircraft heading oscillated with increasing frequency. The aircraft then abruptly yawed left through 90 degrees and departed the runway. As it left the paved surface, the nosewheel went over a shallow drainage

ditch and collapsed. The propeller struck the ground, shockloading the engine and the aircraft came to rest about 10-15 m off the runway. On vacating the aircraft uninjured, the pilot observed that the wind was gusting 90 degrees to the runway. The aircraft was damaged beyond economic repair.

The pilot added that although the aircraft had a 17 kt crosswind limit, she lacked the physical strength to hold the required amount of rudder in a strong crosswind landing.

Surface wind

An aftercast provided by the Met Office estimated that the surface wind was 190º-200º/15 kt gusting 20-25 kt. This gave a crosswind component of approximately 17 kt.

Discussion

The pilot encountered a gust of wind close to the aircraft limits during her landing roll. Her subsequent difficulty in physically controlling the aircraft led to the aircraft departing the runway.

ACCIDENT

Aircraft Type and Registration:	Piper PA-28-180 Cherokee, G-BODM
No & Type of Engines:	1 Lycoming O-360-A4A piston engine
Year of Manufacture:	1973
Date & Time (UTC):	8 September 2008 at 1300 hrs
Location:	Clutton Hill Farm, Bristol
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Sever damage to left wingtip
Commander's Licence:	Private Pilot's Licence
Commander's Age:	69 years
Commander's Flying Experience:	483 hours (of which 350 were on type) Last 90 days - 9 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

G-BODM made an approach to land on a wet grass runway with a wind forecast to be 5 kt from the left. Just after touching down, a gust of wind, considered by the pilot to be significantly in excess of the forecast, caused G-BODM to weathercock to the left. The aircraft drifted towards the left side of the runway despite the application of full right rudder and the left wingtip struck the end of a hedge. The pilot reported that he was unable to regain directional control following the initial weathercock because the grass was wet.

ACCIDENT

Aircraft Type and Registration:	Piper PA-32R-300, N101DW
No & Type of Engines:	1 Lycoming I0-540 piston engine
Year of Manufacture:	1976
Date & Time (UTC):	4 July 2008 at 1009 hrs
Location:	Runway 24, Southend Airport, Essex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 3
Injuries:	Crew - None Passengers - None
Nature of Damage:	Propeller and flap damage, scrape on the underside of the fuselage and engine shock-loaded. Right wing light lens damaged
Commander's Licence:	Private Pilot's Licence
Commander's Age:	59 years
Commander's Flying Experience:	595 hours (of which 226 were on type) Last 90 days - 34 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft suffered a failure of its electric power generation system when five miles offshore on a flight from Panshanger to Oostend. This resulted in the loss of all electrical services. The aircraft diverted to Southend Airport where it landed with the landing gear retracted.

History of the flight

The aircraft was on a flight from Panshanger, Hertfordshire, to Oostend, Belgium, with four people on board. The weather was CAVOK, with a light wind. The aircraft had climbed to 5,000 ft amsl for the sea crossing and, initially, all the indications for the aircraft's systems appeared normal. However, about five miles after crossing the English coast, the pilot tried to engage the autopilot without success and shortly after this, the primary GPS receiver failed. The radio reception then became garbled and the pilot became aware that all the aircraft electrical systems seemed to be failing. He turned back and, using his map to navigate, set course towards Panshanger. After making a radio call to Southend Airport ATC to advise them of his problem, the remaining aircraft electrical systems failed.

The passengers in the aircraft were becoming anxious, so the pilot decided to make an expeditious landing at

Southend. Using his hand-held radio, he made blind transmissions on the Southend frequency advising them of his intention to land there but he received no response. The pilot positioned the aircraft downwind for Runway 24 and, during his landing checks, selected the landing gear to DOWN. He observed emergency vehicles on the airfield and, as he could see that the runway was clear, he continued to land. During the touchdown it became apparent that the landing gear was not down. The aircraft initially slid along the runway centreline before turning towards its left edge, where it came to rest. There was no fire but, as a precaution, the airport fire service sprayed the aircraft with foam. The pilot and his passengers were uninjured and vacated the aircraft normally.

Southend ATC had, in fact, received the blind transmissions from the aircraft and had placed the emergency vehicles on a local standby and kept the runway clear. When they became visual with the aircraft on final approach for Runway 24, they could see the landing gear was retracted so made blind transmissions on the tower and approach frequencies to try to inform the pilot that the gear was not down.

Aircraft examination

Staff from a local maintenance organisation, who recovered the aircraft from the runway, found that after lifting the aircraft, when the manual override lever was selected, the landing gear deployed under gravity and locked down. The aircraft, supported normally by its landing gear, was later examined by the AAIB. From a general inspection it was apparent that damage had been caused to its underside, the flaps, engine cowlings and exhaust system and propeller.

Electrical system

At the time of the AAIB inspection, some of the interior trim had been removed by the maintenance organisation to inspect for damage, as they had been asked by the aircraft's insurer to quote for repairing the aircraft. The aircraft had an extensive avionics fit and it was noted that no specific low-voltage warning light was fitted. Prior to turning the master switch to ON, the aircraft's wiring in the fuselage was examined; no sign of damage or overheating was seen.

The battery had remained connected and, off-load, registered 11.6 volts when measured with a voltmeter. The avionics were all still selected to the ON position and, when the battery master switch was selected to ON, all electrical systems initially appeared to work normally. However, the battery voltage quickly dropped to 6.5 volts. It was apparent that the ALT caption, which illuminates whenever there is no output from the alternator, mounted between two other warning lights on the instrument panel, was very dim in comparison to these lights, Figure 1. Some of the ancillary instruments had a line drawn on the instrument glass, possibly indicating their normal operating position. It was apparent that, with no output from the alternator, the ammeter incorrectly indicated an output current of approximately 10 amps, Figure 2.

Examination of the alternator installation found it to be properly mounted with the drive belt correctly tensioned, but it was evident that several of the terminations of its associated wiring were of a poor standard. For example, the main power output cable had failed through most of its cross-sectional area where it attached to the lug connecting it to the alternator, Figure 3.

Figure 1

Alternator fail warning light

Figure 2

Ammeter zero error of approximately 10 amps

Maintenance history

The aircraft had completed its last Annual Inspection on 1 July 2008 and the work was certified in the aircraft and engine log books. The alternator had been replaced with a serviceable unit on 3 July 2008 and was certified as *'ground checked satis'*. No details of Part or Serial numbers were evident in the log book.

Discussion

The integrity of the charging system appeared to have been compromised by the condition of the electrical connections to the alternator and it is likely the alternator would not have been able to supply the total demand of the electrical system. As the flight began normally, it is likely that the battery was sufficiently charged when the engine was started. Any shortfall in the alternator output during the flight would have been made up for by the battery, which over the period of the flight, would have discharged, resulting in the failure of the electrical services. The 'zero error' on the ammeter, together with the dim ALT light, would probably have made it difficult for the pilot to appreciate that a problem existed with the electrical system, until the relatively rapid onset of failure of the electrically powered services.

Conclusions

The pilot considered the accident was caused by a failure of the aircraft's electrical system. Whilst this was certainly a contributory factor, the alternative system for lowering the landing gear was demonstrated to be serviceable during the recovery operation. It is likely, therefore, that the system would have successfully lowered the landing gear in-flight, had it been selected.

Figure 3

Main alternator feed cable and alternator connecting lug

ACCIDENT

Aircraft Type and Registration:	Reims Cessna F152, G-BKGW
No & Type of Engines:	1 Lycoming O-235-N2C piston engine
Year of Manufacture:	1981
Date & Time (UTC):	17 August 2008 at 1300 hrs
Location:	Leicester Airport
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to nose gear leg, propeller and engine
Commander's Licence:	Student pilot
Commander's Age:	37 years
Commander's Flying Experience:	20 hours (of which 20 were on type) Last 90 days - 20 hours Last 28 days - 8 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot had been checked out for his first solo flight earlier in the day and subsequently completed the solo flight and a solo navigation exercise without incident. After a break for lunch he undertook a further solo navigation exercise. On returning to the airfield, the aircraft landed heavily, damaging the nose gear leg, the propeller and the engine. The pilot believed that he may have flared too early; the landing was not seen by the instructor.

ACCIDENT

Aircraft Type and Registration:	Rockwell Commander 112TC, G-ERIC
No & Type of Engines:	1 Lycoming TO-360-C1A6D piston engine
Year of Manufacture:	1976
Date & Time (UTC):	16 August 2008 at 1215 hrs
Location:	Cranfield Airport, Bedfordshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Nose landing gear detached, propeller damaged and engine shockloaded
Commander's Licence:	Private Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	432 hours (of which 144 were on type) Last 90 days - 4 hours Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

After touching down from a reportedly stable approach, the aircraft swung to the left, which was coincident with the flaps being raised and the application of power during a touch-and-go. The aircraft departed the paved surface and passed over a drainage ditch, which removed the nose landing gear. Consequently, the propeller dug into the ground and the aircraft stopped.

History of the flight

The accident occurred during a series of touch-and-go landings carried out after completion of a flight in the local area. After touching down from a reportedly stable approach on the fourth touch-and-go, with a light crosswind from the left that was well within the limits of the aircraft and the pilot's experience, the aircraft swung to the left coincident with the flaps being raised and the application of power. The pilot immediately closed the throttle and applied right rudder, but he reported that the aircraft continued to veer left. It departed the runway and, after crossing a drainage ditch during which the nose gear was torn off, the propeller dug into the ground the aircraft came to rest. The pilot advised ATC that there were no injuries, shut down the aircraft's systems and vacated the aircraft without difficulty.

Aircraft history

The group-owned aircraft had recently been repaired after extensive damage caused by a wheels-up landing.

Whilst undergoing these repairs, the original 2-blade propeller was replaced with a 3-bladed unit. After the aircraft's return to service, the pilot reported that he and other members of the group had experienced an "instability on rolling out" but he attributed this to a lack of recency on the aircraft in question, although he had maintained his flying currency on other aircraft whilst G-ERIC was out of service. On two occasions, excursions from the runway occurred, neither causing any damage. On one occassion he was flying, and on the other the aircraft was being flown by another member of the group. He attributed the former to "a sudden failure of the nose oleo", but was unable to elaborate as to the precise nature of this failure[1], or how it might have led to a loss of directional control.

The maintenance organisation that both repaired the aircraft following the wheels-up landing and replaced the propeller, stated that flight tests were carried out on completion of the repairs. This included one flight with a member of the owner group on board and they assessed the aircraft exhibited normal flying and handling qualities throughout. Specifically, they stated that the installation of the 3-blade propeller had not resulted in any discernible change in these qualities.

The pilot acknowledged that a propeller rotating clockwise (from behind) will give rise to a swing to the left as power is applied, due to asymmetric propeller wash over the fin and rudder. Whilst not thinking it to be very likely, he considered that the 'propwash' effect from the new 3-blade propeller might have differed to some extent from that of the 2-bladed propeller fitted originally.

Footnote

[1] This was later determined by the maintenance organisation as a deflation of the oleo strut, brought about by the loss of a blanking plug.

ACCIDENT

Aircraft Type and Registration:	Cyclone AX3/503, G-MYFZ
No & Type of Engines:	1 Rotax 503-2V piston engine
Year of Manufacture:	1992
Date & Time (UTC):	17 October 2008 at 1600 hrs
Location:	Chilbolton Airfield, near Stockbridge, Hampshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 (Minor) Passengers - 1 (Minor)
Nature of Damage:	Nosewheel, main landing gear, nose pod, propeller, main beam
Commander's Licence:	Private Pilot's Licence
Commander's Age:	60 years
Commander's Flying Experience:	346 hours (of which 230 were on type) Last 90 days - 27 hours Last 28 days - 10 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot intended to conduct a simulated engine failure after takeoff. However, the climb-out was steep when the engine was 'failed', with the result that the airspeed reduced rapidly; the aircraft stalled at a height of approximately 100 ft. With insufficient height to recover fully, it landed heavily on the runway, nosewheel first, which resulted in substantial damage and minor injuries to the occupants.

ACCIDENT

Aircraft Type and Registration:	Devenport MB Escapade 912(1), G-CDEV
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	2004
Date & Time (UTC):	10 June 2008 at 1415 hrs
Location:	Wing Farm, near Warminster, Wiltshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to lower fuselage structure
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	66 years
Commander's Flying Experience:	204 hours (of which 141 were on type) Last 90 days - 9 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot made an approach to land on Runway 27 at Wing Farm with a light north-westerly wind. There is a row of tall poplar trees, perpendicular to and near the right side of the threshold of this runway. As the aircraft passed below the height of the tops of these trees, its rate of descent increased rapidly. It landed heavily on the runway and bounced, following which the pilot applied full power and performed a go-around.

The second landing resulted in a gentle three-point touchdown further down the runway, but the aircraft then slewed rapidly to the right and departed the runway, coming to rest in recently cut stubble. The occupants were wearing full harnesses and exited the aircraft using their respective doors. It was evident that the landing gear support structure in the fuselage had deformed, probably as a result of the previous landing, and that this had caused the aircraft to veer off the runway after the second touchdown.

The pilot attributed the high rate of descent to the influence of the trees on the local wind; it is likely that the headwind component would have been reduced in the lee of the trees. He also thought that his first approach had been too slow, given the potential for wind effects behind the trees.

ACCIDENT

Aircraft Type and Registration:	Eurostar EV-97, G-CERE
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	2007
Date & Time (UTC):	8 September 2008 at 1600 hrs
Location:	Newton Peveril, West of Bournemouth
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to left wing
Commander's Licence:	Private Pilot's Licence
Commander's Age:	66 years
Commander's Flying Experience:	284 hours (of which 34 were on type) Last 90 days - 20 hours Last 28 days - 11 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot completed the pre-takeoff and power checks to his satisfaction before lining up at the eastern threshold of the 461 metre long grass strip. The grass was short and dry, the runway was relatively flat and there was a light westerly wind. He commenced the takeoff run into wind with full power and the first stage of flap selected. The aircraft reportedly accelerated more slowly than usual and after a ground run of approximately 100 metres and at 10 to 15 mph below the normal takeoff speed, the pilot pulled back gently on the control stick. The aircraft rose approximately two metres into the air before descending again. It bounced once, during which the left wing struck the ground and was damaged.

The engine performed normally when tested after the accident. The pilot could not account for the poor acceleration, but thought it was possible that either he or his passenger might have inadvertently rested their feet on the brakes during the takeoff run.

ACCIDENT

Aircraft Type and Registration:	Jabiru UL-450, G-JABS
No & Type of Engines:	1 Jabiru Aircraft Pty 2200A piston engine
Year of Manufacture:	2003
Date & Time (UTC):	27 September 2008 at 1655 hrs
Location:	Chilbolton Airfield, Hampshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to starboard wing, propeller, nosewheel and linkage
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	64 years
Commander's Flying Experience:	129 hours (of which 63 were on type) Last 90 days - 9 hours Last 28 days - 6 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

After landing the aircraft veered to the left, leaving the runway. The pilot considered it possible that after touchdown, the combination of braking and rudder inputs caused the aircraft to skid.

History of the flight

The pilot stated that after a normal approach and touchdown on grass Runway 06, he began to brake. After a few seconds the aircraft veered, or skidded, to the left. The pilot was unable to correct this, despite applying full right rudder. The aircraft left the runway and the nosewheel dropped onto an adjacent cultivated area causing the propeller to strike the ground. The aircraft continued for a further 10-15 m before stopping, at which point the right wing dropped sufficiently to hit the ground.

Steering on the type is achieved through the rudder pedals and the brakes are operated by a single lever on the console. The weather at the time was good with no wind, although the pilot commented that the grass was becoming damp with dew.

Comment

A subsequent engineering inspection failed to identify any technical defects that might have contributed to accident. The pilot considered it possible that after touchdown the combination of braking and rudder inputs caused the aircraft to skid. He cannot recall if he released the brakes whilst trying to recover the aircraft.

ACCIDENT

Aircraft Type and Registration:	Mainair Rapier, G-MZGL
No & Type of Engines:	1 Rotax 503-2V piston engine
Year of Manufacture:	1997
Date & Time (UTC):	10 May 2008 at 1300 hrs
Location:	Clotton, Cheshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - Minor Passengers - N/A
Nature of Damage:	Major damage to trike and damage to wing
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	46 years
Commander's Flying Experience:	54 hours (of which 15 were on type) Last 90 days - 0 hours Last 28 days - 0 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

This was the aircraft's first flight following several months of storage. The pilot completed the pre-flight and power checks to his satisfaction and proceeded to take off from Runway 10 at Clotton. Weather conditions at the time were good, with a light, variable wind. Shortly after takeoff the rate of climb decreased and increased pressure on the throttle lever had little effect. The aircraft reached a height of between 30 to 50 ft before starting to descend and it subsequently collided with trees 150 metres beyond the end of the runway. The pilot, who was wearing a lap strap and a helmet, sustained minor injuries.

Post-accident inspection of the engine revealed the presence of a greenish-grey deposit which was partially blocking one of the carburettor main jets. This appeared to be micro-bacterial in origin and had probably developed during the long period of storage.

ACCIDENT

Aircraft Type and Registration:	Pegasus Quik, G-CDOM
No & Type of Engines:	1 Rotax 912 ULS piston engine
Year of Manufacture:	2005
Date & Time (UTC):	12 May 2008 at 1520 hrs
Location:	Pilling Sands, Lancashire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Serious) Passengers - N/A
Nature of Damage:	Severe damage to trike and wing
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	59 years
Commander's Flying Experience:	Unkown
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

After completing six successful landings on the beach at Pilling Sands, the aircraft crashed on the seventh landing. The pilot broke both wrists and received facial injuries. Subsequently, he was unable to recall anything about the events leading up to the accident, and no witness information was available.

The wind at the time of the accident was reported to light and variable, and it was considered possible that this, coupled with a lack of visual cues from the wide expanse of exposed sand, may have contributed to the accident.

ACCIDENT

Aircraft Type and Registration:	Rans S6-ES Coyote, G-CCTX
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	2004
Date & Time (UTC):	20 September 2008 at 1515 hrs
Location:	York (Rufforth) Airfield, North Yorkshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to nose landing gear, underside of engine cowling, propeller and left wing tip
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	63 years
Commander's Flying Experience:	118 hours (of which 109 were on type) Last 90 days - 6 hours Last 28 days 6 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft was returning from Fenland Airstrip and was set up for an approach to Runway 24E at Rufforth. The pilot reported that the wind was from 210º at 7 kt. He planned to land fairly deep into the runway to avoid a new barrier which had been erected at the runway threshold to limit vehicle access. Just before touchdown, the pilot misjudged the crosswind and was unable to reduce the descent rate in time to prevent the aircraft landing heavily. It bounced into the air and touched down again, this time on the nose landing gear, which then detached. The aircraft came to rest 20 m further along the runway and both occupants, who were uninjured, exited the aircraft without difficulty.

ACCIDENT

Aircraft Type and Registration:	Thruster T600N 450, G-CDDI
No & Type of Engines:	1 Jabiru 2200A piston engine
Year of Manufacture:	2004
Date & Time (UTC):	13 September 2008 at 1140 hrs
Location:	Private airstrip at Usselby, near Market Rasen, Lincs
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Minor) Passengers - N/A
Nature of Damage:	Damage to aircraft structure, engine and wing; power cable broken
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	54 years
Commander's Flying Experience:	461 hours (of which 461 were on type) Last 90 days - 11 hours Last 28 days - 5 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The accident occurred on the approach to land at a private airstrip near Market Rasen. The pilot was aware of power cables on the western approach to the airstrip and he therefore made a low pass in order to identify them prior to landing. Having done so, he flew the approach so as to avoid the cables, clearing them by approximately 15 feet. As he commenced the flare, the aircraft jerked violently, turned through 180 degrees and descended nose-first to the ground. After vacating the aircraft, the pilot noticed that there was a cable wrapped around the top of the tail fin. On looking back to the power cables he now saw that there were two sets of cables mounted on different sets of poles. He had identified the outer cables on his flypast, but had not seen the innermost cables that were mounted on shorter poles positioned approximately 40 m closer to the runway threshold; it was one of these cables that his aircraft had struck.

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Published September 2007.

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during an approach to Khartoum Airport, Sudan
on 11 March 2005.

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6/2007 Airbus A320-211, JY-JAR
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on 18 May 2005.

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7/2007 Airbus A310-304, F-OJHI
on approach to Birmingham International Airport
on 23 February 2006.

Published December 2007.

2008

1/2008 Bombardier CL600-2B16 Challenger 604, VP-BJM
8 nm west of Midhurst VOR, West Sussex
on 11 November 2005.

Published January 2008.

2/2008 Airbus A319-131, G-EUOB
during the climb after departure from London Heathrow Airport
on 22 October 2005.

Published January 2008.

3/2008 British Aerospace Jetstream 3202, G-BUVC
at Wick Aerodrome, Caithness, Scotland
on 3 October 2006.

Published February 2008.

4/2008 Airbus A320-214, G-BXKD
at Runway 09, Bristol Airport
on 15 November 2006.

Published February 2008.

5/2008 Boeing 737-300, OO-TND
at Nottingham East Midlands Airport
on 15 June 2006.

Published April 2008.

6/2008 Hawker Siddeley HS 748 Series 2A, G-BVOV
at Guernsey Airport, Channel Islands
on 8 March 2006.

Published August 2008.

7/2008 Aerospatiale SA365N, G-BLUN
near the North Morecambe gas platform, Morecambe Bay
on 27 December 2006.

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