AAIB
Air Accidents Investigation Branch

# AAIB Bulletin 9/2014

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*(www.srlynnphotography.co.uk)*



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**(ALL TIMES IN THIS BULLETIN ARE UTC)**

# AAIB Field Investigation reports

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna F172M, D-EESE | |
| **No & Type of Engines:** | 1 Thielert TAE 125-01 | |
| **Year of Manufacture:** | 1975 (Serial no: F17201297) | |
| **Date & Time (UTC):** | 15 November 2013 at 1630 hrs | |
| **Location:** | Lower Lough Erne, Co Fermanagh, Northern Ireland | |
| **Type of Flight:** | Aerial Work | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Aircraft destroyed | |
| **Commander's Licence:** | Commercial Pilot's Licence | |
| **Commander's Age:** | 32 years | |
| **Commander's Flying Experience:** | 809 hours (of which 783 were on type)<br>Last 90 days - 205 hours<br>Last 28 days - 43 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB | |

## Synopsis

The aircraft had concluded a photographic task and was climbing back to cruise altitude with full power selected. The pilot noted that the 'engine load' gauge was registering 74-79% instead of the expected 100%, and shortly afterwards he noticed that the engine oil pressure was dropping and that altitude and airspeed were also decreasing. He decided that a ditching on Lough Erne was preferable to any terrestrial forced-landing options, and a successful ditching was carried out.

Subsequent examination found a broken seal and a loose bolt attaching the oil pump to the oil gallery in the block. This had probably led to oil starvation of the turbocharger which then caused the turbocharger main bearing to degrade to an extent that precluded the turbocharger from attaining its demanded rotational speed.

## History of the flight

The aircraft was engaged on a photographic sortie commencing in the Lough Shellin area of County Westmeath. The pre-flight checks had not revealed anything abnormal and, after normal engine power checks, the aircraft took off at 1030 hrs and climbed to its initial operating height of approximately 2,000 ft. At about 1625 hrs, on completion of his task in the Belturbet area of County Cavan, the pilot selected climb power (100% load and 2,300 rpm) to cruise-climb back to 2,000 ft.

However, he observed that the load display on the combined engine instrument display was reading only 74-79%, despite there being no other warnings or cautions and engine oil pressure was still indicating in the green. The pilot was concerned at this, so he discontinued the climb and levelled off at about 1,200 ft agl, reducing the engine load to 60% as he did so. After a few minutes, as he attempted to assess the situation further, he saw that the engine oil pressure had dropped from green into the amber sector; he transmitted a PAN call. This was soon followed by a MAYDAY call as the oil pressure dropped into the red and he saw that both airspeed and altitude were decreasing.

After conferring with his passenger, he decided that, in the absence of suitable fields, he would ditch the aircraft in Lower Lough Erne. Having selected an area of the lough, the occupants noticed blue smoke passing both doors but they could not recall whether the propeller was still turning. The ditching was carried out successfully and the aircraft remained upright. The pilot and passenger could not open the doors due to water pressure, so they evacuated via the left window. As they swam ashore, they were met by local passers-by who walked with them to a nearby house where the emergency services attended.


*Photograph via Airclaims*

**Figure 1**

Cessna 172, D-EESE after recovery from Lower Lough Erne

**Description of the engine**

D-EESE was originally delivered with a Lycoming O-320 petrol engine but had been retrofitted with a Thielert (now Technify Motors GmbH) diesel engine. The AAIB were unable to determine the date of the modification or the organisation that carried out the work. The engine had flown 694 hours since new and 91 hours since a 'last shop visit', the nature of which is also not known.

The TAE 125-01 engine, also known as the Centurion 1.7, is a 4-cylinder turbocharged diesel engine based on an automotive engine. It is liquid cooled and has a wet sump oil system. The constant speed propeller is driven by an integrated reduction gearbox and an electronic FADEC (Full Authority Digital Engine Control) system monitors and

controls engine and propeller operation. The turbocharger boosts engine power output by compressing ambient air, which is then cooled by an intercooler, before the compressed air passes into the cylinders. The turbocharger is driven by the engine's exhaust gases.

**Examination of the engine**

The FADEC was removed and its non-volatile memory downloaded. Several parameters, including engine load, rpm and fuel and oil pressures were recorded continuously and it was observed that the engine oil pressure started to reduce some 15 minutes before ditching. The pressure was almost zero at the point of ditching and the rate of reduction was roughly linear.

The remainder of the engine was shipped to the manufacturer for a tear-down inspection. They have reported that the turbocharger main bearing was found badly degraded. In addition they found that one of the bolts securing the oil pump in the engine sump to the integrated oil pressure gallery was found backed off to a noticeable degree whilst its adjacent bolt was found to have very little torque remaining. In addition, the 'o' ring seal associated with the loose bolt was found to be broken. Either or both of these defects could result in a loss of oil delivery and pressure to the turbocharger. The manufacturer is not certain whether the broken 'o' ring caused the bolt to lose torque or vice-versa.

# AAIB correspondence reports

These are reports on accidents and incidents which were not subject to a Field Investigation.

They are wholly, or largely, based on information provided by the aircraft commander in an Aircraft Accident Report Form (AARF) and in some cases additional information from other sources.

The accuracy of the information provided cannot be assured.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Airbus A320-214, HB-IJB |
| **No & Type of Engines:** | 2 CFM56-5B turbofan engines |
| **Year of Manufacture:** | 1995 (Serial no: 0545) |
| **Date & Time (UTC):** | 3 December 2013 at 1228 hrs |
| **Location:** | Runway 27R, London Heathrow Airport |
| **Type of Flight:** | Commercial Air Transport (Passenger) |
| **Persons on Board:** | Crew - 7 Passengers - 57 |
| **Injuries:** | Crew - None Passengers - None |
| **Nature of Damage:** | Damaged drain masts, lower pressure bulkhead, skin abrasion and a 190 mm crack on the lower fuselage |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 50 years |
| **Commander's Flying Experience:** | 10,341 hours (of which 6,749 were on type)<br>Last 90 days - 105 hours<br>Last 28 days - 28 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

During the landing, on a line training flight in benign weather, the tail of the aircraft struck the runway surface, causing airframe damage.

**History of the flight**

The aircraft was operating a routine passenger schedule from Zurich to London Heathrow. The weather was good with light and variable winds and no low cloud. The pilot flying, in the right seat, was completing line training, having recently converted to the A320 series. The commander, an experienced Type Rating Examiner, was the pilot monitoring.

The commander reported that the aircraft was on a stable approach, with full flap. The co-pilot smoothly commenced the flare at the correct height; however, at about 10 ft radio altitude he made an additional nose-up sidestick input. This resulted in an unusually high pitch attitude and, as the airspeed washed off, the aircraft started to sink. The co-pilot countered with an additional nose-up input as the main landing gear touched down. The ground spoilers automatically deployed and the pitch attitude continued to rise to a maximum of 12.3°, causing the tail to strike the runway.

As the ground spoilers deployed the commander attempted to counter the increasing pitch with a large forward sidestick input. However, he did not press the 'take over' button and

the flight control software summed the inputs of the two sidesticks. As the co-pilot reduced his sidestick pitch input, the aircraft pitched down to 0° in three seconds.

The aircraft taxied clear of the runway and the right engine was shut down to allow a safe path for inspection of the aircraft by the RFFS. They identified paint damage and scratching of the aft fuselage and the commander decided not to start the APU. The aircraft was then positioned to its normal gate for passenger disembarkation, before being withdrawn from service for minor repairs.

**Co-pilot experience**

The co-pilot had a total of 292 hrs of flying experience, with 138 hrs on type. He was towards the latter stages of the operator's training programme. A review of his training records, in relation to approaches and landings, showed normal progress and at least "acceptable" standards throughout. There were minor comments regarding the touchdown aiming point in October 2013. However, nothing in his records was considered unusual for a trainee of his experience.

**Aircraft damage**

A detailed survey of the rear fuselage damage was conducted by the operator. The lower fuselage skin, frames and butt splice between frames 67 and 72 were abraded by contact with the runway. At frame 70, deformation of the lower pressure bulkhead was noted 250 mm either side of the centreline and a 190 mm long crack was found on the lower ring frame assembly.

**Operator safety action**

The operator evaluated the pilot actions and provided additional simulator and supervised line flying for the co-pilot. Intervention and coaching strategies were reviewed after considering the commander's performance, and "take home" messages were disseminated to other training pilots. Additionally, information on the incident was provided to all of the operator's Airbus flight crew.

**Discussion**

The co-pilot had joined the operator with no previous commercial experience and was making acceptable progress towards the conclusion of the training programme. The use of experienced training captains provides a safety net to prevent or at least mitigate the consequences of errors. A relatively small error of skill, which the commander was unable to capture, resulted in a tail strike. The crew and airfield staff actions following the incident removed any residual risk to the aircraft and its occupants from undetected damage.

**SERIOUS INCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | AS355N Ecureuil II, G-OLCP | |
| **No & Type of Engines:** | 2 Turbomeca Arrius 1A turboshaft engines | |
| **Year of Manufacture:** | 1994 (Serial no: 5580) | |
| **Date & Time (UTC):** | 21 March 2014 at 1405 hrs | |
| **Location:** | Peterborough Conington Airport, Cambridgeshire | |
| **Type of Flight:** | Aerial Work | |
| **Persons on Board:** | Crew - 2 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A<br>Others - 1 (Minor) |
| **Nature of Damage:** | None | |
| **Commander's Licence:** | Commercial Pilot's Licence | |
| **Commander's Age:** | 50 years | |
| **Commander's Flying Experience:** | 5,750 hours (of which 385 were on type)<br>Last 90 days - 146 hours<br>Last 28 days - 58 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and verbal report from the Airfield Operator | |

## Synopsis

The helicopter was hover taxiing from its parking position towards the runway. As it did so, the tail of a Cessna 152 parked at a nearby refuelling point lifted and, under the influence of the rotor wash and a relatively strong surface wind, the aircraft came to rest inverted.

## Description of the occurrence

The accident occurred as the helicopter was departing for a local survey flight. The weather was fine but windy, with a surface wind of 26 kt from 230º. The helicopter was parked on a grass area adjacent to a hard apron, by which were situated the airfield's fuel installation (Figure 1). Before the helicopter departed, a Cessna 152 had taxied to the installation for refuelling before shutting down. Its crew, an instructor and his student, had vacated the aircraft and the instructor left the scene for a while, leaving his student at the aircraft.

The helicopter started, lifted into a hover and started to hover-taxi towards the runway, but as it did so, its pilot noticed the tail of the Cessna start to lift, so he landed again on the grass. The tail of the Cessna continued to lift and the aircraft came to rest inverted. The student pilot, whose upper body was inside the cabin of the aircraft as its tail started to lift, was able to move clear as it did so and suffered only a minor injury.

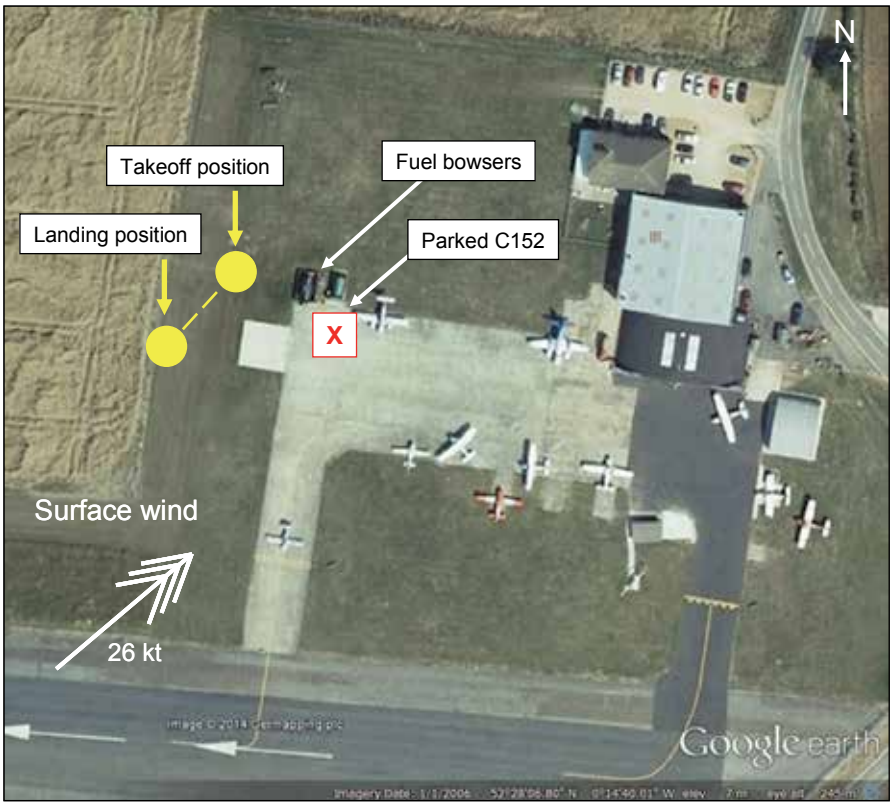


**Figure 1**

Apron area

The helicopter pilot commented that the Cessna 152 had been parked in a largely downwind position at the fuel installation to facilitate refuelling, and he considered this to be a contributory factor. The airfield operator reported that both aircraft were parked in normal locations before the accident. Although not a stipulation, it was common for helicopters departing from the same area to taxi further west initially, placing themselves over part of the airfield used for agricultural purposes before turning towards the runway, so achieving greater separation from the apron.

## Discussion

In its 'Safety Sense Leaflet 17', titled Helicopter Airmanship, the CAA states:

> *'Always be mindful of the effect your own rotor wash can have on others. It may cause problems for lighter aircraft in flight, or damage to parked aeroplanes and other surface objects. If hovering, your rotor turbulence can affect others out to a distance of three times your rotor diameter.'*

In this case, the helicopter (which had a rotor diameter of 10.69 m) was moving away from the Cessna, but as it did so it started to pass upwind of it. The guidance above applies to still air conditions, and may have to be modified when operating in relatively strong winds. In this case, a combination of the Cessna's aspect relative to the wind, the strength of the wind and the helicopter's rotor wash appear to have combined to cause the Cessna to overturn.

**INCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Boeing 747-443, G-VLIP | |
| **No & Type of Engines:** | 4 General Electric CF6-80C2B1F turbofan engines | |
| **Year of Manufacture:** | 2001 (Serial no: 32338) | |
| **Date & Time (UTC):** | 14 November 2013 at 0400 hrs | |
| **Location:** | North Atlantic Airspace, about 300 nm south of St John's, Newfoundland | |
| **Type of Flight:** | Commercial Air Transport (Passenger) | |
| **Persons on Board:** | Crew - 18 | Passengers - 400 |
| **Injuries:** | Crew - 1 (minor) | Passengers - 9 (minor) |
| **Nature of Damage:** | None | |
| **Commander's Licence:** | Airline Transport Pilot's Licence | |
| **Commander's Age:** | 43 years | |
| **Commander's Flying Experience:** | 11,072 hours (of which 7,853 were on type)<br>Last 90 days - 75 hours<br>Last 28 days - 27 hours | |
| **Information Source:** | Air Safety Report Form submitted by the flight crew, aircraft flight data provided by the operator and crew interviews | |

## Synopsis

The aircraft encountered a brief period of severe turbulence during the cruise portion of flight, resulting in injuries to nine passengers and one cabin crew member. The flight crew had left the intended track to avoid significant weather which they had detected on weather radar. However, at the time of the incident, there was no significant weather indicated on radar.

## Aircraft commander's report

The incident occurred during a scheduled passenger service from Montego Bay, Jamaica, to London (Gatwick) Airport. There were three flight crew, 15 cabin crew and 400 passengers on board. The flight progressed normally until approximately its mid point, when the aircraft was about 350 nm south of Newfoundland, flying at FL370. The flight crew had been monitoring light to moderate intensity weather radar returns, which appeared to indicate a line of weather across the aircraft's intended track. The commander's weather radar display was set to a tilt angle of 1º down, the co-pilot's to 2º down.

The flight crew requested a track deviation to the left (north) of track to avoid the weather. This was not approved but a deviation to the right of track was, and the crew altered course

accordingly. The wind at this stage was from astern, so the crew were not concerned that their new track would be downwind of the observed weather and thus possibly subject to turbulence. As the aircraft flew abeam the line of weather, returns on the radar reduced and disappeared altogether.

The commander reported that the aircraft was flying in smooth air, probably just above the cloud tops. The aircraft started to encounter turbulence and the flight crew switched the cabin seat belt signs on. The commander recalled seeing a flash outside, which he thought may have been lightning associated with a thunderstorm cell beneath the aircraft. Suddenly, the turbulence increased markedly and became severe for a while. The flight crew felt that the aircraft climbed suddenly, and there was a brief activation of the stick shaker, although attitude remained normal and the autopilot and autothrottle remained engaged (the latter requiring some manual inputs to avoid exaggerated throttle position changes). Engine ignition systems were turned on as a precaution.

The aircraft had earlier been instructed to descend to FL360 for Air Traffic Control purposes, but the descent had not been started. The commander therefore initiated a slow descent to the new level. Aircraft attitude remained within normal values, although the vertical speed showed significant momentary climbs and descents.

It was subsequently established that several passengers and one crew member had suffered injury in the cabin and crew rest areas, the most significant being a reported laceration injury to a passenger's knee.

Following an assessment of the situation by the commander, which included a consultation by radio with specialist medical advisers, the aircraft continued to London Gatwick. The cabin crew attended to the injured passengers and crew member, assisted by medically qualified volunteers from among the passengers. After landing, medical staff boarded the aircraft and treated the injured passengers. Two passengers and the cabin crew member were taken to hospital.

**Cabin crew reports**

Two senior cabin crew members were asked to provide an account of their experience in the passenger cabin. They recalled that the aircraft had initially been flying in smooth air, the evening meal service had just been completed, and most passengers were seated. There was a light rumble of turbulence and the passenger seat belt signs illuminated. One crew member in the relatively small forward cabin was able to complete a check of the passengers' seat belts before she sat down, although the turbulence increased as she did so and had become significant by the time she returned to her seat. The turbulence became more severe, such that she had some difficulty securing herself in her harness, by which time it became very severe for a while.

Another crew member had been attending to passengers in a cabin further aft. She also recalled that the seat belt signs illuminated at the first sign of light turbulence, and that she made a standard passenger address for the situation. She was aware that the turbulence was increasing in severity as she did so, so she included the instruction that other cabin

crew members take their seats[1]. As she took her own seat there was a significant jolt of turbulence.

The cabin crew reported that, because of the recent cabin service and the stage of flight, most passengers were already seated with their seat belts fastened. All the passengers who suffered injury were in the rear right side of the aircraft. The cabin crew member who suffered a head/neck injury was on a horizontal bunk in the crew rest area, which was also at the rear right.

**Meteorological information**

The flight crew received a briefing pack before flight which included meteorological reports and forecasts for their pre-planned route. It included two charts, issued by the Met Office's World Area Forecast Centre in London, depicting areas of forecast significant weather and turbulence. These charts, valid at times 0000 hrs and 0600 hrs on the day of the flight, showed that the incident area would have been just to the south of a jetstream of fast flowing upper air with speeds of about 120 kt at its core. Moderate turbulence, associated with the jetstream, was forecast in the area up to about FL420. At about the same point, the intended track crossed an extensive area of significant weather, with isolated, embedded cumulo-nimbus clouds extending between FL360 and FL410.

**Recorded flight data**

Data from the aircraft's Flight Data Recorder (FDR) showed that the aircraft had been cruising at FL370 in calm conditions until 0349 hrs when it started to encounter light turbulence. At 0358 hrs there was a marked increase in turbulence (indicated by increased normal acceleration values). The aircraft began a descent almost immediately but two minutes later, at 0400 hrs, experienced a short but severe period of turbulence. The peak acceleration value was minus 0.7 'g', with a highest positive value of plus 1.7 'g', both of which occurred as the aircraft descended. After about five minutes at FL360 in moderate turbulence, the aircraft climbed again to FL370. The turbulence was much reduced, although still observable on the data, for about a further 15 minutes.

**Footnote**

[1] If safe to do so, cabin crew would normally ensure that passengers in their cabin areas had their seat belts fastened and the areas were secured for turbulence before sitting down themselves.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | DHC-8-402 Dash 8, G-ECOH |
| **No & Type of Engines:** | 2 Pratt & Whitney Canada PW150A turboprop engines |
| **Year of Manufacture:** | 2008 (Serial no: 4221) |
| **Date & Time (UTC):** | 7 February 2014 at 0922 hrs |
| **Location:** | Overhead Isle of Man |
| **Type of Flight:** | Commercial Air Transport (Passenger) |
| **Persons on Board:** | Crew - 4 Passengers - 71 |
| **Injuries:** | Crew - 1 (Serious) Passengers - 1 (Minor) |
| **Nature of Damage:** | None |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 60 years |
| **Commander's Flying Experience:** | 12,200 hours (of which 3,900 were on type)<br>Last 90 days - 171 hours<br>Last 28 days - 56 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

## Synopsis

The aircraft experienced a sudden onset of severe turbulence when in cruise flight, in VMC, at FL220. A cabin crew member was seriously injured.

## History of the flight

The event occurred on a scheduled flight between Birmingham Airport and Belfast City Airport. The aircraft was in the vicinity of the Isle of Man in VMC and had been in cruise flight at FL 220 for 17 minutes when there was a sudden onset of severe turbulence. The flight conditions until then had been smooth and the seatbelt signs were OFF. The airspeed increased rapidly, the autopilot disconnected and the aircraft climbed, reaching a maximum level of FL225. The co-pilot, who was the pilot flying (PF), assumed manual control, closed the power levers and descended back to FL 220. After 25 seconds he re-engaged the autopilot. The severe turbulence moderated after a few seconds (see Figure 1) but remained at a moderate level and the flight crew initiated a descent.

In the passenger cabin, one of the cabin crew members was thrown off her feet and sustained serious injuries. She was given medical assistance by a doctor, who was travelling as a passenger, and transferred to hospital after landing at Belfast. One passenger suffered a minor injury.

The aircraft was inspected after the incident, in accordance with requirements in the Aircraft Maintenance Manual, and no damage was evident.

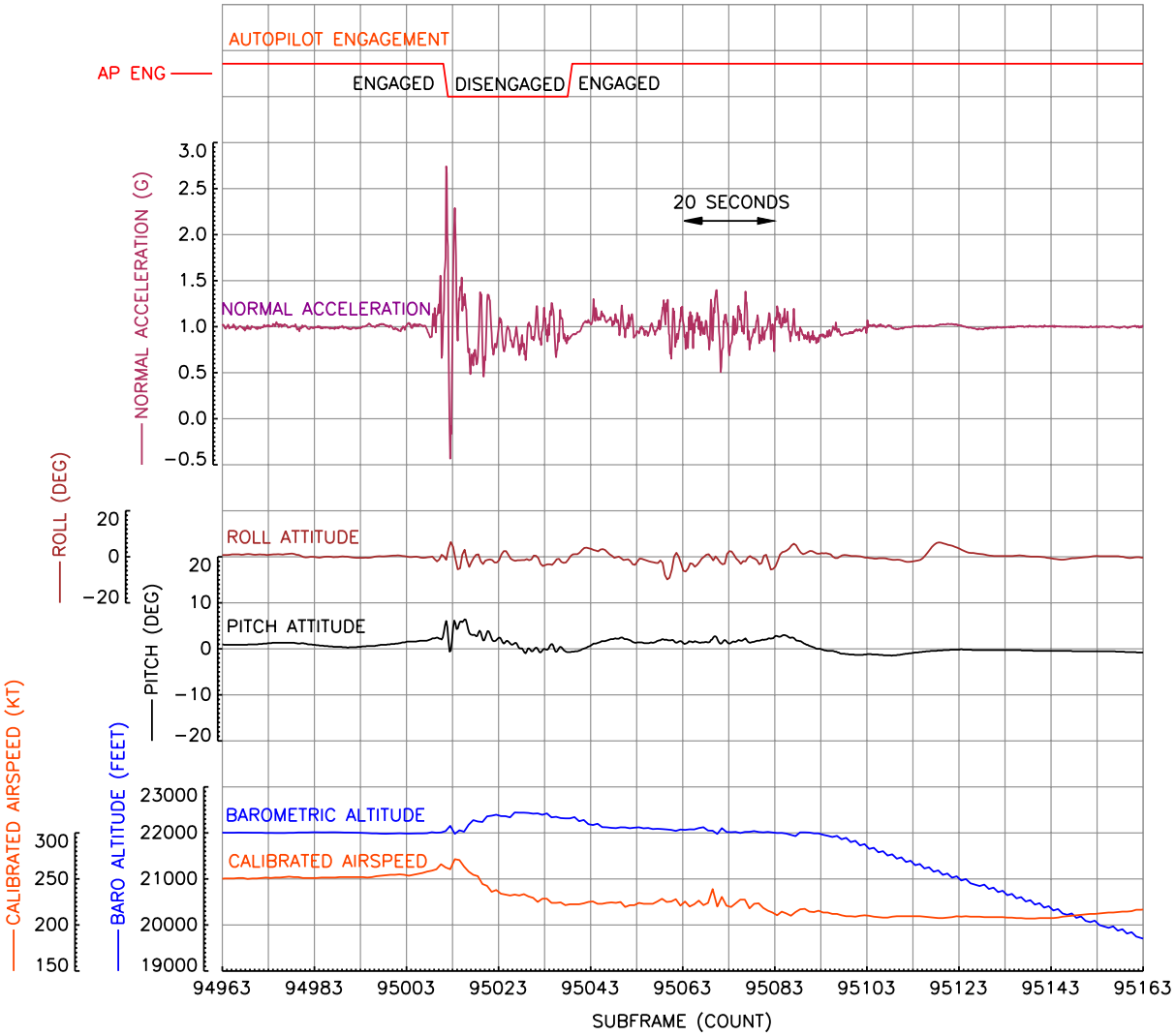


**Figure 1**

Recorded parameters derived from FDR data

## Recorded data

The FDR data indicated that the aircraft was in smooth flight conditions until the onset of the event at 0922 hrs. A maximum normal acceleration of +2.74g was recorded, followed by a minimum of - 0.43g.

Recorded radar data for the area was available and examined for evidence of a possible wake turbulence encounter. No evidence was found of any other aircraft that could have had a significant effect on G-ECOH.

**Other information**

In their on-board passenger announcements, the operator includes a recommendation that seatbelts are kept fastened, even when the seatbelt signs are OFF, as sudden turbulence is always a possibility.

**Meteorological information**

The Met Office provided an aftercast, in which the available recorded data was reviewed, modelled and analysed to provide an assessment of the possibility of Clear Air Turbulence[1] (CAT) in the area. The data showed that during the morning a deep area of low pressure over the Atlantic had moved rapidly to the east, building a transient ridge of high pressure over the United Kingdom (UK). There were two strong jetstreams (both over 100 kt) either side of the UK, which would have given rise to a large windshift. A wind data model at 400 hPa (FL240) showed that a large windshear would have been close to the Isle of Man at 0900 hrs and there were indications of a temperature gradient in the same area. Either or both of these factors can give rise to CAT. Analyses of the other available data suggested that cumulonimbus (CB) activity was not likely to have caused the turbulence and that this was a CAT event arising as a result of a large windshear in the vicinity of the Isle of Man.

The *Fixed Time Prognostic Chart(s) ICAO Area EURO SIGWX* [Significant Weather] *FL100 to FL 450*, issued at 0600 hrs and 1200 hrs on 6 February 2014 and valid, respectively, at 0600 hrs and 1200 hrs on 7 February 2014, were available to the flight crew (see Figures 2 and 3). The charts present a confusing picture but showed the proximity of the two jetstreams. The area over the Isle of Man was not shown as a likely CAT area. However, it should be noted that these charts are produced 24 hours prior to their period of validity.

**Discussion**

The aircraft probably encountered an area of CAT whilst in otherwise smooth air. CAT was not indicated on the forecast for the Isle of Man area, which was produced 24 hours in advance. The Met Office aftercast, using more up to date recorded meteorological data and data modelling, showed that some of the prevailing conditions, notably wind and temperature gradients, were conducive to the presence of CAT.

The operator's passenger announcements include advice regarding the fastening of seatbelts, in case of sudden turbulence.

**Footnote**

[1] Met Office definition within the Forecasters Reference Book is: *'Clear Air Turbulence (CAT) refers to any turbulence not associated with cloud. It is usually applied only to medium- and high-level disturbances*.'

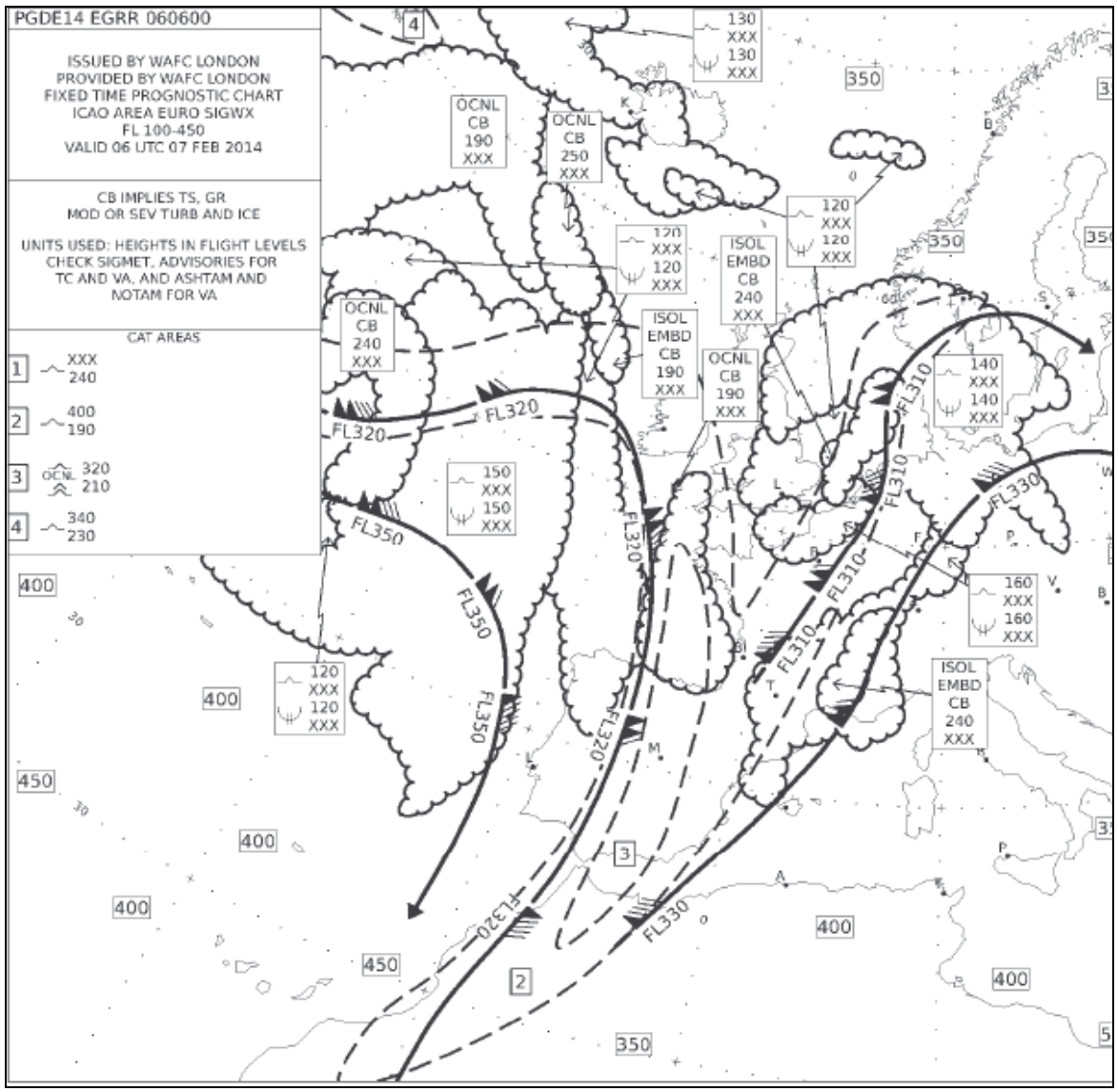


**Figure 2**

Significant weather chart valid 0600 hrs UTC 7 February 2014

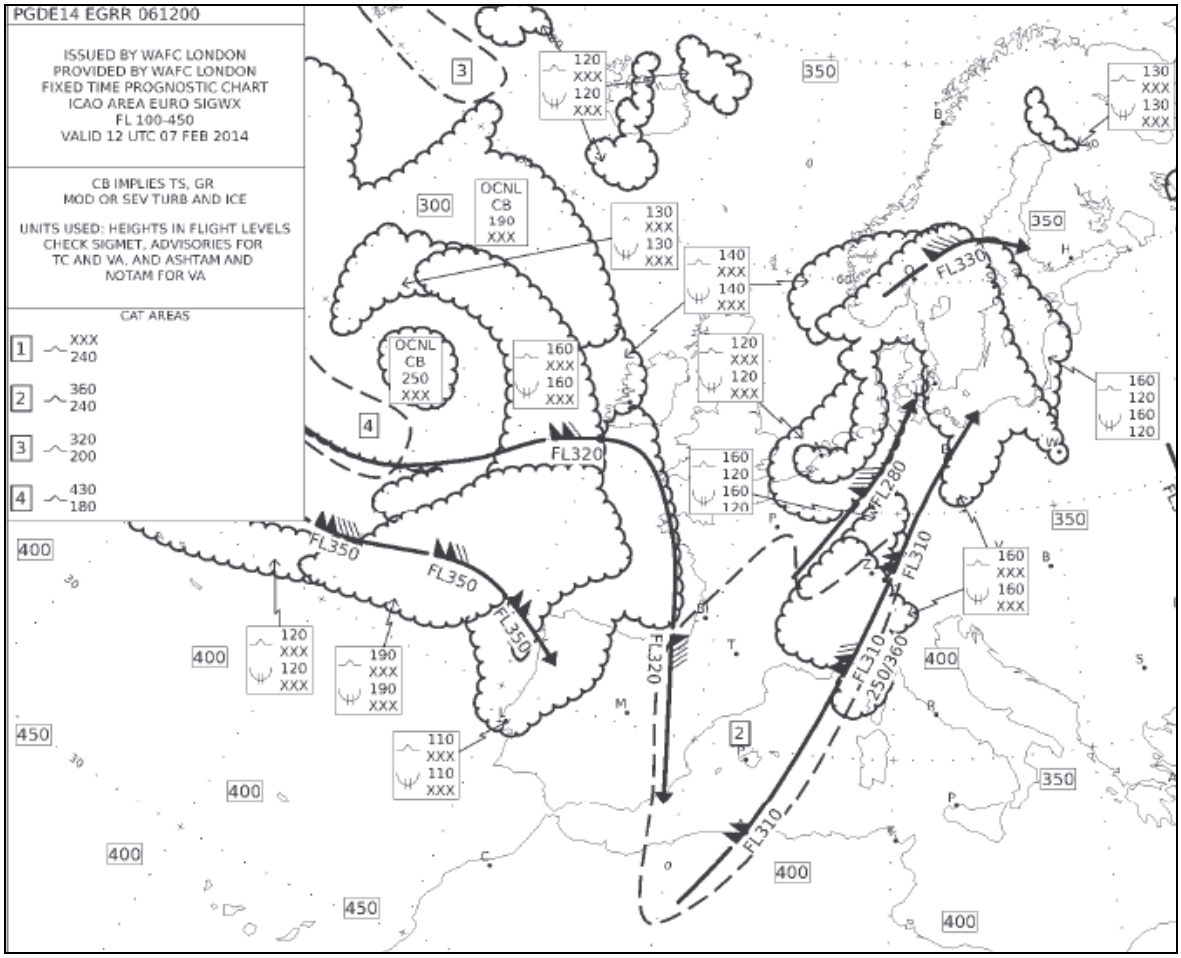


**Figure 3**

Significant weather chart valid 1200 hrs UTC 7 February 2014

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Aviat A-1B Husky Pup, G-OGGY | |
| **No & Type of Engines:** | 1 Lycoming O-320-D2A piston engine | |
| **Year of Manufacture:** | 2004 (Serial no: NF0005) | |
| **Date & Time (UTC):** | 21 May 2014 at 1100 hrs | |
| **Location:** | Sleap Airfield, Shropshire | |
| **Type of Flight:** | Training | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to right wingtip and aileron, and possibly to the main spar | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 68 years | |
| **Commander's Flying Experience:** | 212 hours (of which 8 were on type)<br>Last 90 days - 8 hours<br>Last 28 days - 4 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot was undergoing a tail wheel conversion training course. Runway 23 was in use at Sleap and the weather was fine, with a surface wind from 230º at 7 kt. The pilot successfully completed an exercise with his instructor, during which he flew four approaches and landings, described by the instructor as being to a high standard. The instructor then briefed the pilot to fly two solo circuits and vacated the aircraft.

The pilot described flying a normal approach and three-point touchdown but, during the ground roll, the aircraft ground looped. It yawed left through 360º before coming to a stop, during which time the right wing touched the ground and was damaged.

The pilot could not explain the ground loop, which followed a normal approach and landing. His instructor suggested to him that he may have opened the throttle after landing, although the pilot had no recollection of so doing.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna 152, G-BHYX | |
| **No & Type of Engines:** | 1 Lycoming O-235-L2C piston engine | |
| **Year of Manufacture:** | 1978 (Serial no: 152-81832) | |
| **Date & Time (UTC):** | 19 May 2014 at 1327 hrs | |
| **Location:** | Westfield Farm, 7 miles SSW of Cranfield Airport | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Damage to propeller, fuselage, engine mounting frame, engine cowlings, front and rear screens, rudder and tailplane | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 29 years | |
| **Commander's Flying Experience:** | 173 hours (of which 165 were on type)<br>Last 90 days - 43 hours<br>Last 28 days - 21 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

## Synopsis

Following a loss of engine power the pilot conducted a forced landing during which the aircraft struck a bush and entered a ditch, at low speed, at the boundary of the field.

## History of the flight

The pilot was approximately 45 minutes into the flight, and flying in the cruise at approximately 2,300 ft, when the engine started to run rough and the rpm slowly reduced. After confirming that the engine indications were normal, and the mixture control was in the rich position, the pilot reports having applied carburettor heat for 15 to 20 seconds. The engine rpm reduced when carburettor heat was selected ON and recovered when selected OFF.

After a further three to four minutes the engine rpm reduced again and the pilot was unable to maintain height. The throttle was moved to the fully forward position and the pilot confirmed that the magnetos were at the BOTH position and the fuel primer pump was closed and locked. A MAYDAY call was made to Cranfield Approach, who had been providing a Basic service, and the aircraft was positioned for a field landing. During the approach the pilot noticed telegraph poles in the selected field and therefore repositioned to land in a second field. While the aircraft touched down approximately one third of the way along the field, the pilot was unable to stop the aircraft before it ran into some bushes and a ditch at the field

boundary. The propeller, nose leg and engine mounting frame were damaged. The pilot and passenger were both uninjured.

The cause of the loss of engine power has not been established.

**Carburettor icing**

The pilot reported that the temperature and dew point were 24ºC and 12ºC and that 'FREDA' checks had been carried out frequently, during which the carburettor heat was applied by the passenger, who was also a qualified pilot, for 15 to 20 seconds. It is therefore unclear whether carburettor icing was the cause of the engine power loss.

CAA Safety Sense Leaflet 14 provides advice on carburettor icing and at the temperature and dew points reported at the time of the accident there would have been a moderate risk of icing during the cruise. Figure 1 shows the CAA Carburettor icing chart. The CAA advise that carburettor heat should be applied for at least 15 seconds in order to prevent and clear any carburettor icing.

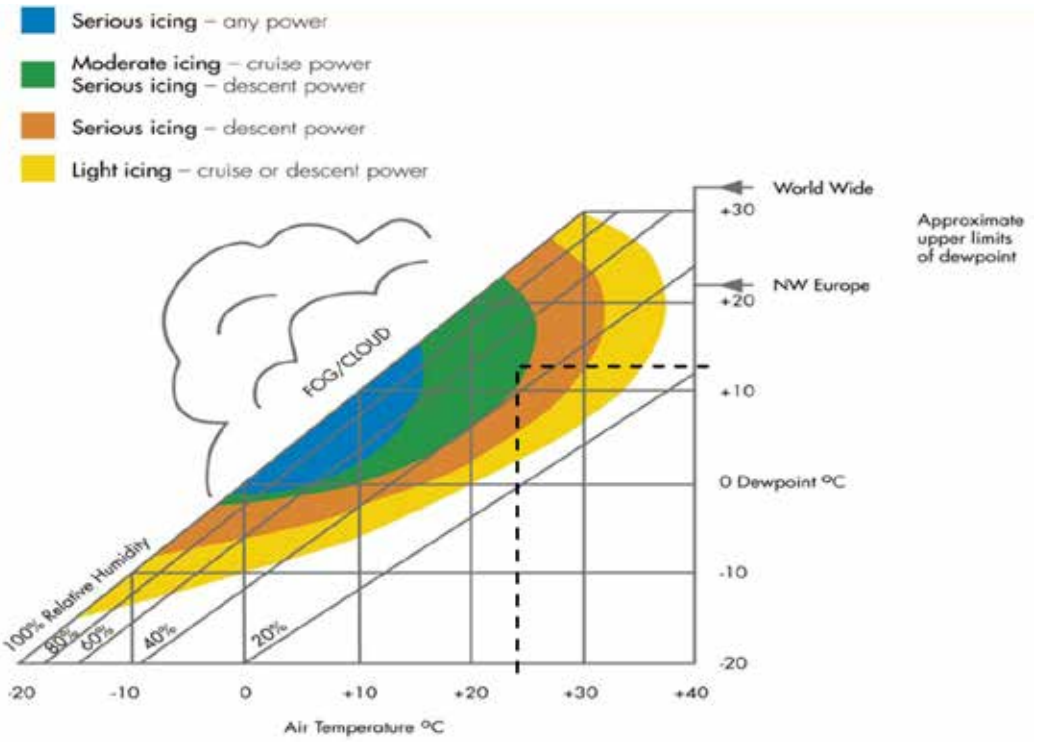


**Figure 1**

CAA Carburettor icing chart

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna 152, G-BNKS | |
| **No & Type of Engines:** | 1 Lycoming O-235-L2C piston engine | |
| **Year of Manufacture:** | 1979 (Serial no: 152-83186) | |
| **Date & Time (UTC):** | 11 July 2014 at 1250 hrs | |
| **Location:** | Sleap Airfield, Shropshire | |
| **Type of Flight:** | Training | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to engine, propeller and nose landing gear | |
| **Commander's Licence:** | Student Pilot | |
| **Commander's Age:** | 64 years | |
| **Commander's Flying Experience:** | 120 hours (of which all were on type)<br>Last 90 days - 11 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

**Synopsis**

Following a normal glide approach from the downwind leg, the student pilot flared the aircraft slightly late, resulting in an early touchdown and bounced landing. After the second bounce, the aircraft pitched nose down before striking the runway nosewheel first, causing damage to the propeller and nose landing gear.

**History of the flight**

On the day of the accident, the student pilot was practising for a forthcoming Licence Skill Test. The weather conditions were fine, with a light northerly wind, and Runway 36 was in use. Before the accident flight, the pilot had flown a 40 minute flight with his instructor, practising forced landings. He then took off on a solo exercise to practise glide approaches from the downwind leg.

The pilot flew a go-around from the first circuit, as another aircraft ahead was landing. The second glide approach was successfully flown to a touch-and-go. The third glide approach was normal until the late stages. As the pilot flared the aircraft, it touched down and bounced. There was a second, firmer bounce, after which the aircraft pitched nose down and struck the runway nosewheel first, causing the nose landing gear assembly to collapse. The pilot, who was uninjured, brought the aircraft to a stop on the runway.

The pilot thought that he should have flared a little earlier and allowed excess airspeed to wash off before touchdown. He also noted that a go-around may have been an option after the initial, bounced landing. His instructor observed the landing and reported that it was on all three wheels together at what appeared to be a slightly faster speed than normal, after which the aircraft may have been subject to a pilot-induced oscillation.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna 152, G-BONW | |
| **No & Type of Engines:** | 1 Lycoming O-235-L2C piston engine | |
| **Year of Manufacture:** | 1978 (Serial no: 152-80401) | |
| **Date & Time (UTC):** | 13 April 2014 at 1503 hrs | |
| **Location:** | Sturgate Aerodrome, Lincolnshire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to nosewheel and bearing | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 86 years | |
| **Commander's Flying Experience:** | 605 hours (of which 228 were on type)<br>Last 90 days - 4 hours<br>Last 28 days - 1 hour | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

Prior to the flight, the pilot was briefed by the aero club duty pilot that the wind at the airfield had been recorded gusting up to 20 kt, but appeared to have subsided. During the subsequent flight, the pilot experienced blustery and unstable flying conditions. In the later stages of his approach to land back at the airfield, the pilot reported experiencing significant turbulence and at approximately four feet above the runway, the aircraft "dropped to the ground without warning" resulting in a heavy landing. As the pilot taxied back to the parking area, the aircraft appeared to operate normally. However, closer inspection of the nosewheel after shutdown identified damage to the wheel and bearing.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna 152, G-BRNK | |
| **No & Type of Engines:** | 1 Lycoming O-235-L2C piston engine | |
| **Year of Manufacture:** | 1977 (Serial no: 152-80479) | |
| **Date & Time (UTC):** | 1 April 2014 at 1555 hrs | |
| **Location:** | Netherthorpe Airfield, South Yorkshire | |
| **Type of Flight:** | Training | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to nosewheel and propeller, engine shock-loaded | |
| **Commander's Licence:** | Student Pilot | |
| **Commander's Age:** | 33 years | |
| **Commander's Flying Experience:** | 28 hours (of which 28 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 1 hour | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

**Synopsis**

The student pilot attempted to use control inputs to hasten touchdown after a bounced landing. The aircraft landed heavily on its nose landing gear, which collapsed.

**History of the flight**

The student pilot flew a dual training exercise with his instructor, during which he practised visual circuits. After this, he flew a solo flight of about 30 minutes, again practising circuits. He then took a break before taking off on a further solo flight, also to practise circuits. The weather was fine, with a surface wind of 5 kt from 100º. Runway 06 was in use.

The pilot reported that he flew a stable approach, but that on landing the aircraft bounced twice before landing heavily on its nose landing gear. The nose leg collapsed and the aircraft was brought to a rest on the runway. The pilot made the aircraft switches safe and vacated through the left hand door. He described feeling a need to land the aircraft in the reducing runway length available, resulting in his moving the control column forward to try to expedite the landing. His instructor commented that, had the pilot selected and held a landing attitude or executed a go-around, then the accident may have been avoided.

**AAIB comment**

The urge to complete a landing following a bounce or misjudged flare can be strong,

particularly for inexperienced pilots and/or where the available runway is limited. This can result in an inappropriate control input, with a risk of damaging the nose landing gear. For a relatively small bounce where landing distance is not critical, it may be appropriate to hold the landing attitude and await the final touchdown. However, for large or divergent bounces, or where the landing distance available is limited, a go-around should represent the safest course of action. As this may not be the instinctive reaction (particularly for inexperienced pilots) the situation must be thought about beforehand and, if appropriate, thoroughly briefed.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cessna F172M Skyhawk, G-TRAX | |
| **No & Type of Engines:** | 1 Thielert TAE 125-02-99 piston engine | |
| **Year of Manufacture:** | 1974 (Serial no: 1081) | |
| **Date & Time (UTC):** | 5 June 2014 at 11:35 hrs | |
| **Location:** | Derby Airfield | |
| **Type of Flight:** | Aerial Work | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to both wings, nose structure, propeller and nose landing gear. Power lines damaged | |
| **Commander's Licence:** | Commercial Pilot's Licence | |
| **Commander's Age:** | 30 years | |
| **Commander's Flying Experience:** | 915 hours (of which 583 were on type)<br>Last 90 days - 108 hours<br>Last 28 days - 54 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

**Synopsis**

The aircraft struck power cables which ran across the approach path for Runway 28. The pilot reported a strong headwind and believed the aircraft had encountered wind shear which caused an uncontrollable descent into contact with the cables. The aircraft crashed on the runway, before the displaced threshold, still entangled with the wires.

**History of the flight**

The aircraft was landing at Derby after a flight from Glatton Airfield near Peterborough when the accident occurred. The pilot joined the visual circuit at Derby via the downwind position for Runway 28, while broadcasting his intentions on the Derby Air/Ground frequency. The pilot flew a normal, 60 kt full flap approach into a 15 to 20 kt headwind. He reported that he encountered wind shear on short finals, which caused the aircraft to sink rapidly. He was unable to counter the sink before the aircraft struck power lines that ran across the final approach path. The cables snapped but remained entangled in the propeller, causing the aircraft to yaw to the left before it struck the ground short of the runway threshold. The impact was in a nose-low, right-wing-low attitude, with the cables still entangled with the propeller and aircraft structure.

The pilot, who was uninjured, vacated the aircraft unaided through the right door as the airfield RFFS arrived on scene.

**Derby Airfield**

The airfield, which is 6 nm south-west of Derby, has three grass runways, of which 10/28 is the shortest. It is 453 m long overall, but with significantly displaced thresholds at each end. The Landing Distance Available for Runway 28 is 261 m, the threshold being displaced by 144 m. The threshold elevation for Runway 28 is 274 ft.

The UK Aeronautical Information Publication included the information that '*telegraph wire/ poles*' (elevation 200 ft) crossed the Runway 28 approach at a distance of 475 m from the beginning of Runway 10. This is equivalent to about 30 m from the beginning of Runway 28 and 195 m from the displaced Runway 28 threshold. One commercial flight guide issued the caution *'Power cables 30' aal on approach to Rwy 28'.*

**Weather information**

Before flight, the pilot obtained weather information for East Midlands Airport, about 10 nm to the east of Derby Airfield. The forecast was for a surface wind of 16 kt from 260°, with good visibility and scattered cloud. There was a 30% probability between 1200 hrs and 1600 hrs of winds temporarily increasing to 19 kt and gusting to 29 kt, after which the wind strengths were forecast to abate.

At 1120 hrs on the day of the accident, East Midlands reported a surface wind of 10 kt from 280°, and at 1150 hrs a wind of 11 kt from 290°. The flying school based at Derby reported that the wind, while noticeable, did not restrict normal flying training taking place on the day.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Cessna 175B Skylark, G-ARML |
| **No & Type of Engines:** | 1 Continental Motors Corp GO-300-D piston engine |
| **Year of Manufacture:** | 1961 (Serial no: 175-56995) |
| **Date & Time (UTC):** | 24 April 2014 at 1720 hrs |
| **Location:** | Private airstrip, Slinfold, West Sussex |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 1 Passengers - 2 |
| **Injuries:** | Crew - None Passengers - None |
| **Nature of Damage:** | Nose landing gear detached, damage to propeller, engine, firewall, fuselage skin and cowling |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 34 years |
| **Commander's Flying Experience:** | 6,000 hours (of which 200 were on type)<br>Last 90 days - 200 hours<br>Last 28 days - 55 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

The aircraft was taking off from a private grass strip when the pilot sensed it was no longer accelerating. He abandoned the takeoff but the aircraft left the runway at slow speed and ran into a ditch. The pilot is not aware of any conclusive reason for the lack of performance but suspects that carburettor icing may have played a part.

**History of the flight**

The pilot was intending to depart from Slinfold for a local flight; the light wind, from 220º at 05 kt, favoured grass Runway 22, which has a total length of 650 metres. He carried out the normal start-up and power checks before taxiing the aircraft to the start of the runway with flaps set at 20º for a short field takeoff. The takeoff roll was normal until, approaching 45 kt, acceleration appeared to cease and the speed remained steady. A nose-up attitude was progressively adopted but the aircraft would neither accelerate nor lift off and the stall warning sounded.

The pilot realised that he was approaching the point on the runway where he had lifted off on a flight earlier that day and decided that the aircraft's performance was degraded. He decided to abandon the takeoff, closed the throttle and applied full braking but realised that the aircraft would probably fail to stop before the end of the runway. He shut down the

engine using the mixture control before the aircraft left the runway and rolled into a ditch at a speed of about 5 kt, detaching the nose landing gear backwards and striking the propeller on the ground. It came to rest with the mainwheels in the ditch and, after the pilot had switched the electrics and fuel off, all the occupants evacuated using the normal doors.

The pilot could not offer a conclusive explanation for the lack of performance but stated that his personal view was that carburettor icing may have been responsible. He had applied carburettor heat for about 10 seconds as part of the pre-takeoff power checks, but a period of about 5 minutes had elapsed between then and the departure attempt.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cirrus SR22, N222SW | |
| **No & Type of Engines:** | 1 Continental Motors IO-550-N piston engine | |
| **Year of Manufacture:** | 2004 (Serial no: 0977) | |
| **Date & Time (UTC):** | 12 April 2014 at 1500 hrs | |
| **Location:** | Bembridge Airport, Isle of Wight | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to propeller, nosewheel leg and spat. Possible engine damage to be assessed | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 48 years | |
| **Commander's Flying Experience:** | 94 hours (of which 12 were on type)<br>Last 90 days - 12 hours<br>Last 28 days - 6 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot was flying to Bembridge from Fairoaks, Surrey. Upon landing on Runway 30, the touchdown on the mainwheels resulted in a bounce followed by a second bounce on the nosewheel. He applied power to go around and climbed away but became aware that, although the engine appeared to be running smoothly, the aircraft was not achieving its normal performance. He decided to return to Fairoaks, during which he noted that it was only reaching about 80% of its normal cruise speed. After landing, it could be seen that the propeller had struck the ground and there was also damage to the nose landing gear and spat.

The pilot believes he may have had excessive airspeed on touchdown and that he may have relaxed back pressure on the control column after the first bounce instead of going around as he had been instructed.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | DHC-1 Chipmunk 22, G-BCOO |
| **No & Type of Engines:** | 1 De Havilland Gipsy Major 10 MK.2 piston engine |
| **Year of Manufacture:** | 1950 (Serial no: C1/0209) |
| **Date & Time (UTC):** | 31 May 2014 at 1335 hrs |
| **Location:** | Hawarden Airfield, Flintshire |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 2 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | One propeller blade, puncture to left wing lower surface, left trailing edge flap, left elevator |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 50 years |
| **Commander's Flying Experience:** | 25,716 hours (of which 45 were on type)<br>Last 90 days - 125 hours<br>Last 28 days - 23 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

During a touch-and-go the aircraft developed an unstable oscillation after touchdown, causing it to deviate either side of the runway centreline. The Pilot in Command (PIC) took control from the handling pilot, but was unable to prevent the aircraft departing the paved runway onto the adjacent grass and striking a taxiway marker board. There were no injuries and both pilots vacated the aircraft without assistance.

**History of the flight**

The aircraft was being flown from Sleap Airfield to Hawarden Airfield, with the intention of carrying out some circuits on arrival. On-board were two pilots; both co-owners of the aircraft. Pilot A, who had considerable tailwheel experience and was PIC for the flight, occupied the rear seat. Pilot B, occupying the front seat, held a Commercial Pilot's Licence but had no tailwheel experience and had not yet completed differences training for the DHC-1 Chipmunk.

On arrival at Hawarden, Runway 22 was in use and the surface wind was 10 kt from 330º(variable between 290º and 350º), giving tailwind and crosswind components. Pilot A later recalled being concerned that the wind may not have been entirely suitable for the aircraft. However, he reasoned that the crosswind was within the aircraft's 10 kt crosswind limit and, while there was no published tailwind limit for the aircraft, he considered the

runway sufficiently long to accommodate the tailwind component. It was agreed that Pilot B would carry out a touch-and-go, with Pilot A following through on the controls.

Following a successful approach and touch-and-go requiring no intervention by Pilot A, the aircraft departed into a left-hand circuit and Pilot B commenced an approach for a second touch-and-go. ATC reported the wind as 9 kt from 340º. After touchdown, a progressively unstable oscillation in lateral control developed, causing the aircraft to deviate either side of the runway centreline. Pilot A took control and applied full left rudder and brakes, but the aircraft did not respond. He therefore advanced the throttle to approximately 1,500 rpm with the intention of straightening the nose and commencing a go-around. He reported that the aircraft again failed to respond, and considering that no further corrective action could be completed within the remaining runway paved area, he closed the throttle and allowed the aircraft to depart the runway onto the adjacent grass. The aircraft remained upright and came to rest approximately 30 m from the runway. No injuries were sustained, but it subsequently became apparent that the aircraft had hit a taxiway marker board after departing the runway, causing damage to the left trailing edge flap, left elevator, lower left wing surface and one propeller blade. The Airport Fire Service attended, although the aircraft was taxied off the grass to the ramp under its own power and both pilots vacated the aircraft without assistance.

**Discussion**

Pilot A was aware of the Hawarden Airfield Aeronautical Information Publication (AIP) entry which contains a warning of turbulence from factory buildings with wind speeds in excess of 15 kt. He considers it possible that the localised wind strength in the area where the oscillation developed may have been stronger than that reported by ATC.

Further, Pilot A reported that he had considered requesting a runway change upon arriving at Hawarden and reviewing the surface wind, but he elected not to, as he believed this would incur a lengthy delay. In retrospect, he considers that requesting a change of runway may have been prudent. He also considers that allowing Pilot B to handle the aircraft near its crosswind limit may have been ill-advised. However, he had been very impressed by Pilot B's handling of the aircraft during the first approach, touchdown and rollout.

Pilot A's previous experience on the DHC-1 Chipmunk had predominantly been on another aircraft with more powerful brakes, and being used to a faster and more pronounced response, he considered it possible that he may have applied insufficient braking.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | 1) DHC-1 Chipmunk 22, G-ULAS<br>2) EV-97 Eurostar SI Microlight, G-CIDZ |
| **No & Type of Engines:** | 1) 1 De Havilland Gipsy Major 10 Mk 2 piston engine<br>2) 1 Rotax 912UL piston engine |
| **Year of Manufacture:** | 1) 1952 (Serial no: C1/0554)<br>2) 2013 (Serial no: 2013-4107) |
| **Date & Time (UTC):** | 17 July 2014 at 10:01 hrs |
| **Location:** | Wycombe Air Park, Buckinghamshire |
| **Type of Flight:** | 1) Private<br>2) Training |
| **Persons on Board:** | 1) Crew - 1 Passengers - 1<br>2) Crew - 2 Passengers - None |
| **Injuries:** | 1) Crew - None Passengers - None<br>2) Crew - None Passengers - N/A |
| **Nature of Damage:** | 1) Small hole in left wing/body fairing, dents to underside of fuselage, scratch marks on propeller<br>2) Part of right elevator and tailplane detached |
| **Commander's Licence:** | 1) Private Pilot's Licence<br>2) Private Pilot's Licence |
| **Commander's Age:** | 1) 79 years<br>2) 58 years |
| **Commander's Flying Experience:** | 1) 17,600 hours (of which 500 were on type)<br>Last 90 days - 10 hours<br>Last 28 days - 2 hours<br>2) 1,612 hours (of which 961 were on type)<br>Last 90 days - 60 hours<br>Last 28 days - 29 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilots |

**Synopsis**

The two aircraft were preparing for takeoff from hard Runway 06. The Eurostar aircraft, G-CIDZ, was stationary at the holding point when the instructor became aware of the Chipmunk aircraft, G-ULAS, in close proximity. Believing a collision was imminent, the instructor taxied his aircraft forward, at which time the aircraft's right horizontal tailplane and elevator passed through the Chipmunk's propeller disc.

**Description of the event**

The two aircraft collided at the holding point for the hard Runway 06 at Wycombe Air Park. The weather was fine, with good visibility and a 5 kt surface wind. The Eurostar aircraft,

G-CIDZ, with an instructor and his student on board, was initially stationary while pre-takeoff checks were carried out. The Chipmunk aircraft, G-ULAS was taxiing towards the holding point prior to take off.

The instructor in the Eurostar, who was occupying the right seat, reported that he became aware of an aircraft close by and to his right. He turned his head to see the Chipmunk taxiing directly towards him, its propeller only feet away behind his right shoulder. He applied power and, as his aircraft moved forward, the Chipmunk's propeller cut through the right horizontal tailplane and elevator, removing the outer portions of each. The instructor brought his aircraft to a stop and shut down, before he and his student vacated. The instructor believed that the Chipmunk pilot had not used the correct taxi technique appropriate to a tail wheel type and had therefore been unable to maintain an adequate lookout. He also believed that his action in moving his aircraft forward prevented a more serious occurrence.

The pilot of the Chipmunk was occupying the front seat, with a passenger in the rear seat. The pilot received instructions from ATC to taxi via the grass taxiway adjacent to Runway 06, the taxiway being marked by blue stakes. The pilot observed that the marked taxi route was quite narrow, and it was essential to weave from side to side while taxiing in order to see the area ahead. He also kept his speed low on the grass surface. The pilot noticed that the blue markers had ended, but was unable to see the Runway 06 Hold marker board[1]. There was then a noise as his aircraft collided with the marker board, destroying it and causing light damage to the aircraft. The rear seat occupant saw the Eurostar about 3 m ahead and 2 m to the right, and called "STOP" to the pilot.

The pilot stopped the aircraft immediately, at about a 45° angle to the Eurostar. The Chipmunk's nose was between the Eurostar's right wing and tailplane. It was evident to the Chipmunk pilot that neither aircraft could move from this position, so he intended to shut down and push his aircraft back. However, the Eurostar then moved forward, which took its right tailplane through the Chipmunk's propeller disc.

The Chipmunk pilot considered that he should have stopped the aircraft once he lost sight of the last blue marker. Although he had been weaving during taxiing in order to see ahead, he thought this had not been sufficient to be effective.

**Footnote**

[1] A red rectangular board with numbers '06' in white.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | DH82A Tiger Moth, G-AHVU | |
| **No & Type of Engines:** | 1 De Havilland Gipsy Major 1C piston engine | |
| **Year of Manufacture:** | 1941 (Serial no: 84728) | |
| **Date & Time (UTC):** | 3 May 2014 at 1100 hrs | |
| **Location:** | Rendcomb Airfield, Gloucestershire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Damage to propeller, cowls, wings, fuel tank, rear fuselage and empennage | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 59 years | |
| **Commander's Flying Experience:** | 1,748 hours (of which 49 were on type)<br>Last 90 days - 6 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

Whilst landing, the aircraft bounced and flipped inverted, causing extensive damage. The pilot acknowledges that he had failed to set up the aircraft's attitude correctly on landing.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Ercoupe 415D, G-ERCO | |
| **No & Type of Engines:** | 1 Continental Motors Corp C85-12F piston engine | |
| **Year of Manufacture:** | 1946 (Serial no: 3210) | |
| **Date & Time (UTC):** | 14 May 2014 at 1245 hrs | |
| **Location:** | Pent Farm airstrip, Kent | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 2 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to nosewheel, propeller, underside of fuselage and engine shock-loaded | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 81 years | |
| **Commander's Flying Experience:** | 353 hours (of which 185 were on type)<br>Last 90 days - 1 hour<br>Last 28 days - 1 hour | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The owner-pilot was positioning the aircraft from its customary home airfield at Manston, Kent, to new hangarage at Pent Farm. Although his pilot's licence and medical were in-date, his certificate of experience was not, so he was accompanied by a Qualified Flying Instructor.

The pilot reported that he had positioned the aircraft downwind for a left-hand approach to Runway 07 (a grass strip of 840 metres) and, in his opinion, turned a little too early onto base leg and then had difficulty seeing the strip. As a result he passed through the runway centreline as he turned finals; he regained the centreline and the approach seemed normal, if, in retrospect, "it was a little too fast". He believes he then flared for touchdown somewhat late and the aircraft bounced as it hit a bump and then bounced again as it hit another. On the third bounce the nose landing gear collapsed.

The pilot believes that his lack of recency had probably led to a number of misjudgements during the approach to a field with which he was not familiar. Having bounced once, he believes he should have handed control to his instructor.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Escapade, G-DIZI | |
| **No & Type of Engines:** | 1 Rotax 912-UL piston engine | |
| **Year of Manufacture:** | 2004 (Serial no: BMAA/HB/355) | |
| **Date & Time (UTC):** | 21 June 2014 at 1615 hrs | |
| **Location:** | Private airstrip, Mendelsham, Suffolk | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to propeller, right wing, tail surfaces and engine cowling | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 47 years | |
| **Commander's Flying Experience:** | 329 hours (of which 50 were on type)<br>Last 90 days - 13 hours<br>Last 28 days - 8 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

## Synopsis

The aircraft became airborne unexpectedly early while taking off from a grass airstrip in a crosswind and with crops to each side. The main wheels touched down again and the aircraft deviated to the left, causing the left main wheel to run onto cultivated land. The aircraft yawed left into the crop, where it pitched forward and inverted.

## History of the flight

The pilot planned for a local flight from a grass airstrip. The 650 m strip was orientated east-west, about 17 m wide, and with crops of wheat to the north side and oilseed rape to the south. The surface wind was between 4 and 10 kt, varying in direction between 330° and 010°.

The pilot commenced his takeoff roll in a westerly direction. He held the control column forward, to lift the tail when sufficient speed was gained, expecting to lift the main wheels off at about 40 kt. At about 30 kt, the main wheels and the tail wheel left the ground together, unexpectedly. The pilot centralised the control column, hoping to accelerate while in ground effect, but the main wheels touched down again, the left wheel touching first. The aircraft deviated to the left and the left wheel ran into furrowed ground at the edge of the strip, causing the aircraft to yaw further left and into the crop. The aircraft decelerated rapidly and pitched nose down until fully inverted, about 100 m from the start

of the takeoff run. There was only minor damage to the cockpit area and the pilot escaped from the aircraft uninjured.

The pilot noted that the normal tailwheel takeoff technique that he employed, and which was described in the aircraft operating manual, was sometimes difficult to execute in the aircraft when at relatively light weight, and that there was sometimes a degree of 'porpoising' with one or two small main wheel bounces before lifting off cleanly. He considered that his relative lack of experience on type, the narrowness of the strip and the crosswind component had been contributory factors in the accident.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Europa, G-OURO | |
| **No & Type of Engines:** | 1 Rotax 912ULS, piston engine | |
| **Year of Manufacture:** | 1995 (Serial no: PFA 247-12522) | |
| **Date & Time (UTC):** | 12 June 2014 at 1515 hrs | |
| **Location:** | Six miles west of Sywell Airfield, Northamptonshire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - Minor |
| **Nature of Damage:** | Nosewheel detached and damage to front of the aircraft | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 68 years | |
| **Commander's Flying Experience:** | 262 hours (of which 40 were on type)<br>Last 90 days - 9 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot reported that while flying in the cruise at a height of 2,200 ft he heard a single loud bang. At the same time the aircraft juddered and the engine lost power and stopped. The pilot changed to the reserve fuel tank and unsuccessfully tried to restart the engine. He selected a suitable landing site in a field of wheat, set the transponder to 7700 and made a MAYDAY call to Turweston Radio. The aircraft touched down on both mainwheels, but despite holding the control column aft to keep the weight off the nose gear, it collapsed during the ground roll and the nosewheel detached. The passenger sustained minor bruising from the shoulder harness. Paramedics, police and the fire service all attended the scene of the accident. The reason why the engine stopped has not been established.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Piper PA-28-151 (Modified) Cherokee Warrior, G-BXLY | |
| **No & Type of Engines:** | 1 Lycoming O-320-D3G piston engine | |
| **Year of Manufacture:** | 1977 (Serial no: 28-7715220) | |
| **Date & Time (UTC):** | 1 June 2014 at 1539 hrs | |
| **Location:** | Leeds Bradford Airport | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Engine damage only | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 20 years | |
| **Commander's Flying Experience:** | 104 hours (of which 95 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 2 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and reports received from the aircraft operator and Air Traffic Control | |

**Synopsis**

The pilot made three unsuccessful attempts to start the engine before smoke and then flames were seen coming from the cowling. The Airport RFFS responded and quickly dealt with the fire, which was thought to have been due to over-priming during the start attempts.

**Description of events**

The aircraft was parked on the West Apron at Leeds Bradford Airport. With external and pre-start checks complete, the pilot primed the engine and operated the starter, but the engine would not start. The pilot made two further unsuccessful start attempts, after which he saw smoke coming from the engine cowling. The pilot switched off the equipment in use, before he and his passenger evacuated the aircraft and moved away from it.

ATC received an internal telephone call from a security guard, alerting them to the situation. They initiated their local emergency response procedures and the RFFS arrived on scene one minute after being alerted. By this time, the smoke had turned to flames but the fire was quickly extinguished.

**Local investigation**

The aircraft operator conducted an investigation into the incident, aided by CCTV footage which showed the multiple start attempts that culminated in the engine fire. A technical

investigation found no evidence of engine or component malfunction and it was suspected that the fire was the result of over-priming. The investigation recommended that the pilot receive refresher training, to cover all aspects of the private pilot's syllabus, but specifically emergency procedures and pilot actions in the event of an engine fire. On completion of the training, the pilot would be required to complete a check flight before being approved to hire the organisation's aircraft once more.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Piper PA-32-300 Cherokee Six, G-CDUX | |
| **No & Type of Engines:** | 1 Lycoming IO-540-K1A5 piston engine | |
| **Year of Manufacture:** | 1973 (Serial no: 32-7340074) | |
| **Date & Time (UTC):** | 6 June 2014 at 1630 hrs | |
| **Location:** | Newtownards Airport, County Down | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 5 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Extensive damage to left wing, fuselage, tailplane and propeller | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 69 years | |
| **Commander's Flying Experience:** | 2,036 hours (of which 379 were on type)<br>Last 90 days - 17 hours<br>Last 28 days - 17 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

As the aircraft approached Runway 04 at Newtownards the surface wind was 15 kt from 130° resulting in a 15 kt crosswind from the right. Agricultural machinery was operating in the field directly to the left of the runway. The pilot reported that he used the 'crab' technique to compensate for the crosswind and that he encountered some turbulence during the last 200 ft of the approach. During the flare, as he aligned the aircraft with the runway and lowered the into-wind wing, the wingtip struck the runway and the resulting loss of directional control caused the aircraft to depart the runway, collide with a fence and suffer substantial damage. The pilot and the passengers vacated the aircraft without injury. The pilot attributed the cause of the accident to the distraction of the turbulence and the nearby agricultural activity causing him to over-compensate for the effects of the crosswind.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Piper PA-34-200T Seneca II, G-CLUE |
| **No & Type of Engines:** | 2 Continental Motors Corp TSIO-360-EB piston engines |
| **Year of Manufacture:** | 1979 (Serial no: 34-7970502) |
| **Date & Time (UTC):** | 28 July 2013 at 1140 hrs |
| **Location:** | Durham Tees Valley Airport |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 2 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Damage to left engine, propeller, main landing gear, flap and aileron |
| **Commander's Licence:** | Private Pilot's Licence |
| **Commander's Age:** | 53 years |
| **Commander's Flying Experience:** | 2,500 hours (of which 200 were on type)<br>Last 90 days - 45 hours<br>Last 28 days - 5 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

## Synopsis

The aircraft was intending to land at a private airstrip but the pilot was unable to obtain a green down-and-locked cockpit indication for the left Main Landing Gear (MLG). He returned to Durham Tees Valley Airport where, despite several attempts, he was still unable to receive confirmation that the gear was locked down. The emergency extension system was used but, during the subsequent landing roll, the left MLG collapsed.

It was found that a combination of factors, including corrosion and a lack of lubrication, had led to stiffness in the downlock mechanism such that it would not lock the gear down fully after free-falling under gravity following emergency extension. The electric pump which supplies hydraulic power under normal gear extension/retraction had burnt out.

## History of the flight

Whilst attempting to land at a private airfield some 20 nm from Durham Tees Valley Airport, the pilot found that only the green down-and-locked indicator lights for the right MLG and the nose landing gear illuminated. This indicated that the left MLG had not extended. The pilot recycled the gear selection, but the same indications remained, so he climbed to 2,000 ft to assess the situation. He checked the fuses and swapped the indicator bulbs but the left MLG green down-and-locked light did not illuminate, so he decided to return to Durham.

Upon arrival, he requested a fly-by of the control tower so that they could check the status of the landing gears. He selected gear down again but this time received no green down-and-locked lights at all and could not see the nose gear in the mirror on the left nacelle; this was confirmed visually by the tower who reported that all the gears appeared to be retracted. A further reselection still did not result in any green down-and-locked lights. The pilot then advised the tower that he would deploy the emergency extension on the next approach and asked whether he should land on the grass or the ashphalt runway; he was told to use the runway.

Having performed the emergency extension checklist procedures, the landing gears extended under free-fall and the tower confirmed that all three appeared to be down. However the pilot states that he still had no green down-and-locked lights, but continued the approach, touching down as gently as possible on all three gears at stall speed. As soon as the wheels touched down, he isolated the fuel and electrics but, as he applied gentle braking, he felt the left side of the aircraft slowly sink towards the runway and saw the left propeller make contact with the ground before the aircraft came to a halt.

The two pilots evacuated the aircraft using the normal entry door which had been left ajar as a precaution. The emergency services attended but there was no fire.

**Description of MLG extension/retraction system**

The PA-34 Seneca uses hydraulic power supplied by a single reversible electric pump/reservoir to raise and lower the landing gear. Normal gear selections are made using a switch on the instrument panel labelled UP and DOWN.

When UP is selected, fluid pressure on the retract side of the pistons acts in that sense and the down line returns fluid to the reservoir. When fully retracted, the gears remain in that position due to hydraulic pressure in the actuator jacks; there are no uplocks.

When a DOWN selection is made, the pump operates in the opposite sense and the up line becomes the return line.

If hydraulic pressure is lost, all three gears should drop under their own weight. In addition to a loss of hydraulic pressure, the gears are designed to free-fall if the emergency extension valve is pulled.

The main gear downlock mechanism comprises a conventional over-centre sidestay, kept in lock by a pair of hooks engaging on a pin (Figure 1). Engagement of the hooks also actuates a microswitch to illuminate the associated down-and-locked green light in the cockpit. Under a normal, powered extension, the final movement of the actuator engages the hooks, but in a free-fall extension, a spring is used to engage the downlock hooks. If any one of the three gears fails to downlock, a gear-unsafe red warning light illuminates.

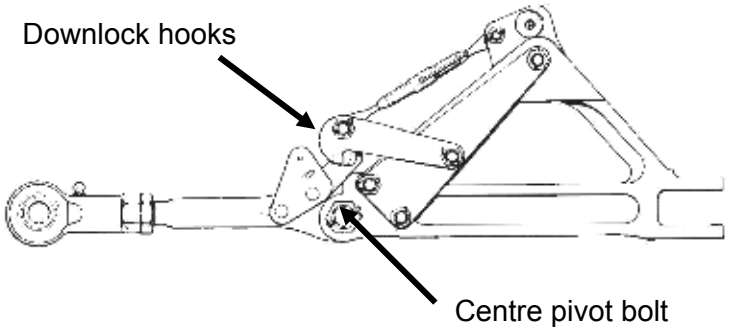


**Figure 1**

MLG downlock with hooks shown correctly engaged on pin

**Examination of the aircraft**

Following the accident, during recovery of the aircraft to a hangar, it was observed that the downlock hooks (Figure 1) would not engage and an improvised strut was used to secure the downlock to allow for towing to a hangar. Here the gear was retracted using a hand pump, since the aircraft electro-hydraulic pump also appeared to be inoperative, followed by a free-fall emergency extension. It was found that the nose and right main gears fell under gravity and locked normally but the left gear remained partially 'up' and had to be pulled down manually. The centre pivot bolt (Figure 1) was slightly slackened off and lubrication was applied to the downlock mechanism. Further free-fall extensions were successful inasmuch as the gear dropped fully down under gravity but the downlock hook still did not engage; levering the hook into engagement with a screwdriver was necessary to overcome stiffness caused by corrosion and lack of lubrication.

The inoperative hydraulic pump was also examined; after checking that all solenoids were working, the electric motor was opened for internal inspection. It was found that the brushes had completely burned out and the commutator was excessively worn.

**Maintenance requirements**

The CAA Light Aircraft Maintenance Programme (LAMP), to which G-CLUE was operated, required a detailed visual inspection of the landing gear components plus a check of the normal and emergency retraction/extension operating system every 150 flying hours. Both the examination and function checks are to be carried out with the aircraft on jacks.

**Maintenance history**

The aircraft had been at a maintenance organisation for maintenance work and an annual inspection starting in August 2012 at 4,619.5 airframe hours. The work was completed in November 2012. Following some additional rectification, the Airworthiness Review Certificate was signed on 1 March 2013 and it was intended that the aircraft would return to service on that date.

However, upon takeoff, after the maintenance, it was found that the landing gear would not retract, so the aircraft was flown to Blackpool with the gear extended. On arrival the

pilot carried out a touch-and-go, after which the gear retracted. Whilst carrying out some circuits the landing gear appeared to operate normally. The aircraft was then left at a maintenance organisation at Blackpool for additional maintenance, which included an action to address a problem with the '*Undercarriage light on*'. The rectification action recorded by the maintenance organisation was '*Microswitch adjusted, retraction test carried out*'.

The aircraft departed Blackpool on 21 March 2012 and flew for approximately 8 hours 30 minutes until the day of the accident.

**Discussion**

It is considered that the inability of the left MLG to lock down was the result of two separate factors: the first was the failure of the electro hydraulic pump that prevented normal extension of the landing gear, the second was the inability of the left MLG to fully lock-down under gravity because of overtightness of the pivot bolt in addition to corrosion and lack of lubrication. In the experience of the engineer who examined the aircraft post-accident, intermittent operation of the landing gear is often a symptom of excess wear of the brushes and commutator in the electro-hydraulic pump.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Piper PA-38-112 Tomahawk, G-BODS |
| **No & Type of Engines:** | 1 Lycoming O-235-L2C piston engine |
| **Year of Manufacture:** | 1979 (Serial no: 38-79A0410) |
| **Date & Time (UTC):** | 5 June 2014 at 1205 hrs |
| **Location:** | Hinton-in-the-Hedges Airfield, Northamptonshire |
| **Type of Flight:** | Training |
| **Persons on Board:** | Crew - 2 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Propeller, engine mounting frame, nose leg and wing leading edge damaged. |
| **Commander's Licence:** | Private Pilot's Licence |
| **Commander's Age:** | 50 years |
| **Commander's Flying Experience:** | 383 hours (of which 9 were on type)<br>Last 90 days - 1 hour<br>Last 28 days - 1 hour |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

Following a heavy landing the instructor instigated a go-around. However the aircraft drifted to the left of the runway and struck a hedge situated along the boundary of the airfield.

**History of the flight**

The instructor had recently received his instructor rating and on the morning of the accident attended an interview and undertook a check flight in a PA-38 for a position as a flying instructor with the flying school. The instructor was offered, and accepted, the position and was asked to fly with a student in the afternoon.

The instructor reported that there was a crosswind of 10 kt from approximately 10º to 15º to the right of the runway heading. The first circuit was uneventful, but during the second circuit the student had difficulty in maintaining the approach speed of 65 kt. As the aircraft passed over the numbers identifying Runway 24, the engine power was reduced to idle and the flare was carried out slightly high. The airspeed decayed very rapidly and the aircraft made a hard touchdown before bouncing into the air and drifting to the left of the runway. The instructor took control, applied full power and attempted a go-around while trying to correct the drift to the left. The instructor stated that, despite checking that the carburettor heat control was fully in and applying right aileron and rudder, he could not correct the drift or gain sufficient airspeed to enable the aircraft to climb out of ground effect. The aircraft

eventually stuck a hedge on the airfield boundary that ran along the side of the runway. Both the instructor and student were uninjured.

The nose landing gear leg was forced backwards during the impact, damaging the engine mounting frame. The propeller and leading edge of the wing were also damaged.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Pulsar, G-LWNG |
| **No & Type of Engines:** | 1 Rotax 582 piston engine |
| **Year of Manufacture:** | 1992 (Serial no: PFA 202-11866) |
| **Date & Time (UTC):** | 6 May 2013 at 1830 hrs |
| **Location:** | Wing Farm, North Warwickshire |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 1 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Damage to the leading edge on both wings and propeller blades |
| **Commander's Licence:** | Private Pilot's Licence |
| **Commander's Age:** | 74 years |
| **Commander's Flying Experience:** | 1,000 hours (of which 30 were on type)<br>Last 90 days - 0 hours (30 hours on motor glider)<br>Last 28 days - 0 hours (10 hours on motor glider) |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

On the approach to an airstrip, and while flying into the sun, the aircraft flew through the top of a tree.

**History of the flight**

The pilot reported that he flew from the airstrip at Wing Farm to Bicester on the morning of the accident in order to carry out a cross-country flight in a motor glider. The flight in the motor glider lasted for approximately 4.5 hours and, after cleaning and putting the glider away, he departed in his aircraft at approximately 1730 hrs. The wind was from 200º and on arriving at Wing Farm the pilot positioned for a landing on Runway 29, which required a curved left-hand approach in order to remain clear of a number of trees. The sun was low on the horizon and would be in the pilot's field of vision during the approach.

The first approach was flown slightly fast and the pilot decided to go around. On the second approach he selected full flap which, with the recommended approach speed, resulted in a slightly nose-high attitude. The combination of the high nose attitude and the left bank required to fly the approach meant that the pilot did not realise that the crosswind had caused him to drift toward a tree located on the right side of the approach to the runway. The aircraft flew through the top of the tree causing some damage to

the wings and propellers. The pilot landed straight ahead in the field adjacent to the runway.

The pilot stated that he believed the accident occurred as a result of tiredness and his decision to land into the sun.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Reims Cessna FRA150M Aerobat, G-BDRD | |
| **No & Type of Engines:** | 1 Continental Motors Corp O-240-A piston engine | |
| **Year of Manufacture:** | 1975 (Serial no: 289) | |
| **Date & Time (UTC):** | 19 June 2014 at 0945 hrs | |
| **Location:** | 10 nm north-east of Humberside Airport | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Collapsed nose landing gear and damage to underside of fuselage, engine frame and propeller. Minor damage to crops | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 18 years | |
| **Commander's Flying Experience:** | 68 hours (of which 62 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and historical meteorlogical information | |

## Synopsis

The pilot encountered worsening weather conditions in flight, leading to an inadvertent IMC encounter. He elected to carry out a precautionary landing in a field of crops, during which the nose landing gear collapsed and the aircraft sustained damage.

## History of the flight

The pilot prepared for a local flight from Beverley Airfield in East Yorkshire. He obtained a weather forecast for Humberside Airport, 19.5 nm to the south, which showed generally fine weather but with a 40% probability of visibility dropping temporarily to 6,000 m in light drizzle. The pilot's intended route was to fly south-east, via Hull, to Spurn Point at the mouth of the Humber (10 nm east of Humberside Airport) before turning north, for a while, and then routing back to Beverley.

Conditions at Beverley were good at takeoff, with a cloud base in excess of 2,000 ft. The pilot, who was in radio contact with Humberside ATC, flew to Spurn Point in VFR conditions but, when he then turned north, encountered a rapidly lowering cloud base. The pilot inadvertently entered IMC and flew a 180º turn in order to find better weather again, without success. The pilot was offered a diversion to Humberside Airport but declined, judging that the cloud base was too low for him to transit the Humber estuary safely. The pilot elected,

instead, to make a precautionary landing in a field of crops, 10 nm north-east of Humberside Airport. During the landing, the nose landing gear dug into the ground and collapsed, pitching the aircraft forward onto its nose. The pilot and his passenger were uninjured.

**Meteorological reports**

At the time of the accident, Humberside Airport reported a light north-easterly wind and good visibility, with scattered cloud at 800 ft and broken cloud at 1,400 ft. Over the next hour, reports showed visibility varying between 4,000 m and 7,000 m, with scattered cloud down to 500 ft.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Replica Sopwith Triplane, G-BOCK |
| **No & Type of Engines:** | 1 Clerget Rotary 9B piston engine |
| **Year of Manufacture:** | 1980 (Serial no: NAW-1) |
| **Date & Time (UTC):** | 29 June 2014 at 1319 hrs |
| **Location:** | Old Warden Aerodrome, Bedfordshire |
| **Type of Flight:** | Aerial work |
| **Persons on Board:** | Crew - 1 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Landing gear, wings, forward fuselage and propeller |
| **Commander's Licence:** | Airline Transport Pilot's Licence |
| **Commander's Age:** | 62 years |
| **Commander's Flying Experience:** | 12,800 hours (of which 11 were on type)<br>Last 90 days - 17 hours<br>Last 28 days - 3 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

## Synopsis

During approach the left main wheel struck a metal gate in the airfield boundary fence and the aircraft pitched forward onto its nose. The pilot, who was uninjured, made the aircraft safe and vacated it with assistance. The aircraft suffered extensive damage to its undercarriage, wings, forward fuselage and propeller.

## History of the flight

The Sopwith Triplane, a replica World War One aircraft, was participating in an air display.

The pilot, a qualified test pilot, provided the following handling notes. The Sopwith Triplane, in common with aircraft of the era, cannot tolerate any crosswind component on landing and must be landed exactly into wind. The approach is normally flown steeper than what would be considered normal in a more modern aircraft, with sideslip[1] used to reduce excess height. This is to ensure that in the event of engine stoppage the aircraft is still able to reach the intended landing point. The nose of the aircraft obstructs the pilots' view forward and down. Handling of the Clerget rotary engine during the approach, landing and go around is very different from that of a more modern engine, and requires considerable manipulation of the air, fuel and ignition controls throughout.

**Footnote**

[1] Sideslipping is a technique where the pilot cross-controls rudder and aileron to loose height.

The pilot took off from Runway 03 but during his display the wind backed and increased, so he elected to land into wind across the centre of the airfield. He reported that he established the aircraft on final approach and, before the airfield boundary fence disappeared from his view, he assessed that his projected flight path looked correct for a touchdown well clear of the fence. Video footage of the accident showed the aircraft rate of descent increase momentarily several times during the approach. The pilot advised that during this stage of the flight he was performing engine management tasks, and did not notice the loss of height. No longer able to see the fence, the pilot continued towards his initial aiming point but the flatter approach angle resulted in the aircraft's left main wheel striking the top rail of a tubular steel gate in the boundary fence. The pilot estimated the impact occurred at about 50 mph and the aircraft immediately pitched down onto the ground, stopping in a vertical position, resting on the engine and the leading edge of the top wing. The pilot made the aircraft safe and was quickly assisted from it. There was no obvious fuel leak and no fire.

The pilot considered that he escaped injury because he was wearing a properly adjusted four-point harness.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Robin CEA DR400/120 Petit Prince, G-BKDJ |
| **No & Type of Engines:** | 1 Lycoming O-235-L2A piston engine |
| **Year of Manufacture:** | 1982 (Serial no: 1584) |
| **Date & Time (UTC):** | 15 April 2014 at 1555 hrs |
| **Location:** | Ross-on-Wye, approx 12 nm NW of Gloucestershire Airport |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 1 Passengers - 2 |
| **Injuries:** | Crew - None Passengers - None |
| **Nature of Damage:** | Damage to nose leg, front bulkhead, cowling and propeller |
| **Commander's Licence:** | Commercial Pilot's Licence |
| **Commander's Age:** | 60 years |
| **Commander's Flying Experience:** | 1,724 hours (of which 600 were on type)<br>Last 90 days - 28 hours<br>Last 28 days - 18 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

The aircraft had been airborne for about 10 minutes when the engine stopped and could not be restarted. A forced landing in a ploughed field was carried out but the aircraft was damaged when the nose landing gear collapsed. Upon examination, it was found that very little fuel remained in the tank and that the fuel quantity indication sender was defective. In addition, the metal strip used to dip the tank had the potential to give a false indication.

**History of the flight**

The pilot and two passengers were intending to fly from Gloucestershire Airport to Ross-on-Wye and return, a journey the pilot had calculated would involve 35 minutes airborne time or 45 minutes brakes-off to brakes-on. He dipped the fuel tank and found that it was between ⅓ and ½ full, equating to 40 litres or an endurance of 1 hour 20 minutes. After engine start, he noted that the cockpit fuel gauge was also reflecting the dipped figure.

After completing the pre-takeoff checks with no abnormal indications, the aircraft took off at 1541 hrs, turning west direct to Ross and levelling at 2,300 ft QNH. Upon reaching his destination at 1550, the pilot performed a left orbit around the periphery of the town. As he levelled out on an easterly heading to return to Gloucestershire Airport, "the engine note dropped". He applied carburettor heat and scanned the gauges and warning lights for indications of a problem. He saw that the low fuel contents warning light was not illuminated

but the low fuel pressure light was on. The pilot therefore focussed his attention on fuel management, including checking that the electric fuel pump was on; he pumped the throttle but to no avail.

Establishing a glide at 75 kt, he turned the aircraft downwind for a forced landing whilst trying to diagnose the problem. A further restart attempt was unsuccessful and the pilot declared a MAYDAY whilst noting that smoke from a bonfire indicated that the wind was from the northeast, enabling him to select a suitable into-wind field. However, having briefed his passengers and secured the aircraft, he noted that his intended field had been ploughed at right angles to the aircraft's heading, so he adjusted the glide to land in the next field further on. Although the furrows in this field were oriented more advantageously, they were quite deep and the ground was soft. The aircraft touched down on its left main landing gear first, slewing it to the left and collapsing the nose landing gear as it came to a halt rapidly. The pilot and passengers evacuated the aircraft normally through the sliding canopy.

**Additional information**

The owner of the aircraft reported that, upon inspection after the accident, he found about 5 litres of fuel remaining in the fuel tank which is close to, or below, the unusable fuel quantity. In addition, he stated that there was a defect in the fuel gauging system sender, causing it to over-read and he further believed that the flexible metal strip used to dip the tanks might have given a false indication.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Robinson R22 Beta, G-PACL |
| **No & Type of Engines:** | 1 Lycoming O-320-B2C piston engine |
| **Year of Manufacture:** | 1991 (Serial no: 1893) |
| **Date & Time (UTC):** | 16 July 2014 at 1700 hrs |
| **Location:** | Liverpool Airport |
| **Type of Flight:** | Training |
| **Persons on Board:** | Crew - 2 Passengers - None |
| **Injuries:** | Crew - 1 Passengers - N/A |
| **Nature of Damage:** | Damage to both main rotor blades and windscreen |
| **Commander's Licence:** | Commercial Pilot's Licence |
| **Commander's Age:** | 32 years |
| **Commander's Flying Experience:** | 322 hours (of which 275 were on type)<br>Last 90 days - 23 hours<br>Last 28 days - 7 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

**Synopsis**

While practising a simulated engine failure in the hover, the helicopter rolled about its left skid and came to rest on its side.

**History of the flight**

After approximately 35 minutes of hover practice with a student, the instructor positioned the helicopter over a grassed area near the taxiway to conduct Exercise 11c of the training syllabus. Exercise 11c covers hover and taxi emergencies, and, as in this flight, a simulated engine failure in the hover. The instructor landed the helicopter to check that the surface was suitable and briefed the student on how he would conduct the exercise. The intention was that the student would operate the cyclic, collective and yaw controls and that the instructor would operate the throttle. The instructor also informed the student that he would maintain his hands and feet on the controls in case he had to quickly resume control.

Initially the instructor carried out three demonstrations with the student following through on the controls. The student then took control, as briefed, and the instructor initiated the exercise by saying "*practise engine failure go"* before smoothly closing the throttle. The instructor reported that the student controlled the yaw well, but he felt him apply a left input into the cyclic control and as the helicopter descended the left skid touched the ground first. The instructor immediately applied a right cyclic input in an attempt to level the helicopter,

which coincided with the student raising the collective to cushion the landing. However, the helicopter rolled about the left skid and gently came to rest on its left side. The instructor shut the engine down and turned off the fuel. The instructor and student then vacated the helicopter through the aperture where the windscreen had been. The instructor sustained a superficial cut to his knee during the accident. Both rotor blades and the windscreen were damaged.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Schweizer 300, G-BWAV | |
| **No & Type of Engines:** | 1 Lycoming HIO-360-D1A piston engine | |
| **Year of Manufacture:** | 1985 (Serial no: S 1204) | |
| **Date & Time (UTC):** | 12 June 2014 at 1640 hrs | |
| **Location:** | Dunsfold Aerodrome, Surrey | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Helicopter destroyed | |
| **Commander's Licence:** | Airline Transport Pilot's Licence | |
| **Commander's Age:** | 65 years | |
| **Commander's Flying Experience:** | 13,000 hours (of which 250 were on type)<br>Last 90 days - 30 hours<br>Last 28 days - 12 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

**Synopsis**

The pilot was attempting a practice autorotation when the accident occurred. He did not realise that he had failed to achieve a split between engine and rotor rpm, with the result that the rotor rpm reduced to below the normal operating range. The pilot was unable to prevent the helicopter striking the ground hard. It was destroyed in the accident, although the pilot escaped injury.

**History of the flight**

The pilot was at Dunsfold Aerodrome to practice a display sequence in preparation for a forthcoming air show at Biggin Hill. The weather was fine, with a light westerly wind. The pilot completed his practice manoeuvres successfully and decided to finish with a simulated engine failure and autorotation, to culminate in a powered recovery. The pilot entered this manoeuvre at 400 ft aal, simulating an engine failure at maximum display height.

The pilot began the exercise as he normally would, by lowering the collective lever and then reducing engine rpm, before increasing engine rpm again in preparation for the powered recovery. He expected this would produce a 'split' between engine and rotor rpm, whereby the engine would be at a relatively low rpm but the rotor rpm would be maintained by relative airflow through the rotor disc as the helicopter descended in an autorotative state.

During the descent the pilot became aware that an unusually small amount of right pedal was required and, on checking his instruments, realised that the engine and rotor rpm needles were not split (ie the engine was still linked to the rotor through the clutch system) and that rotor speed had decayed to 300 rpm. With the helicopter descending quickly, the pilot attempted to open the throttle further to increase engine rpm, though he was later unsure how much it may have increased by. As the rotor rpm were low, he did not raise the collective, as this would have aggravated the situation. Instead, he flared hard, but the helicopter struck the ground with force, severing the tail rotor and gearbox. The helicopter continued to tumble until it came to rest on its right side, pointing in the direction it had come from. The pilot's inertia reel shoulder harness straps had failed in the accident, although he escaped without injury.

The pilot attributed the accident to his failure to ensure that a needle split had been achieved before committing to the practice autorotation, with the result that the lower engine rpm had caused the rotor rpm to reduce. He thought that his relatively low height, and attendant concentration outside the cockpit, had contributed to his error. He noted that he had successfully completed the manoeuvre when he first arrived at Dunsfold about 20 minutes earlier, on that occasion starting from about 800 ft aal.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Vans RV-6, G-GDRV | |
| **No & Type of Engines:** | 1 Lycoming O-320-E2D piston engine | |
| **Year of Manufacture:** | 1993 (Serial no: 21367) | |
| **Date & Time (UTC):** | 21 April 2014 at 1433 hrs | |
| **Location:** | Gloucestershire Airport | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Damage to mainwheel spats and left landing gear leg | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 57 years | |
| **Commander's Flying Experience:** | 508 hours (of which 8 were on type)<br>Last 90 days - 6 hours<br>Last 28 days - 4 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The aircraft had landed on Runway 04 at Gloucestershire Airport after a normal approach. During the rollout, Air Traffic Control (ATC) instructed the pilot to take the next exit on the right, but as he was about to respond, the aircraft swung to the right and left the paved surface. It completed a 360º groundloop before coming to a halt back on the runway. The pilot taxied the aircraft back to the hangar where he shut down the aircraft normally. It was found that part of the left mainwheel spat had detached and the left landing gear leg was bent.

He believes that a lack of experience on type coupled with being momentarily distracted by ATC allowed the swing to develop out of control.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Vans RV-7A, G-IIRV | |
| **No & Type of Engines:** | 1 Lycoming YIO-360-M1B piston engine | |
| **Year of Manufacture:** | 2012 (Serial no: LAA 323-15074) | |
| **Date & Time (UTC):** | 31 May 2014 at 1454 hrs | |
| **Location:** | Goodwood Aerodome (Chichester), West Sussex | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Nose landing gear and propeller damaged | |
| **Commander's Licence:** | Light Aircraft Pilot's Licence | |
| **Commander's Age:** | 72 years | |
| **Commander's Flying Experience:** | 750 hours (of which 43 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot reported that he made a normal landing on both mainwheels but, towards the end of the ground roll, the nose leg collapsed and the aircraft skidded to a halt. The pilot described the condition of the grass runway as 'soft' and believes that it is possible that the nosewheel struck a divot.

The Airfield Manager informed the AAIB that aerodrome staff carry out a detailed assessment of the grass runways every day and, if the surface is considered to be in a poor condition, will either close that area of the airfield or not permit it to be used for touch-and-go landings. On the day of the accident the condition of Runway 32, on which the pilot landed, was assessed as:

> *'Surface firm to soft with a few puddles. Land left or right of centreline 14/32 due surface condition.'*

Touch-and-go landings were permitted.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Wittman W10 Tailwind, G-BOIB | |
| **No & Type of Engines:** | 1 Continental Motors Corp O-300-D piston engine | |
| **Year of Manufacture:** | 1999 (Serial no: PFA 031-10551) | |
| **Date & Time (UTC):** | 21 April 2014 at 1630 hrs | |
| **Location:** | Private airstrip near Winchester | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - 1 (Minor) |
| **Nature of Damage:** | Damage to right wing, landing gear, fuselage, tailplane and propeller | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 66 years | |
| **Commander's Flying Experience:** | 899 hours (of which 700 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

## Synopsis

The aircraft failed to get airborne in the distance available and overran into a hedge. The pilot thought that carburettor icing was a probable factor in the accident, together with long wet grass that the aircraft encountered during takeoff and a possible adverse effect on performance of a recently fitted propeller.

## History of the flight

The aircraft was taking off from a grass airstrip which was orientated 06/24 and was about 450 m long. At the south-west end of the strip was a further clear area, extending approximately 350 m in length, angled about 25° to the left of the Runway 24 takeoff direction. The pilot described the surface wind as a light easterly. Otherwise, the weather was overcast and dry, although it had rained earlier and the grass was wet.

The pilot prepared for a takeoff in the 24 direction and, initially, the ensuing takeoff run appeared normal. The aircraft became airborne approaching the point, described as the midpoint of the strip by the pilot, where the clear area continued at an angle to the left. However, the ground ahead of the aircraft rose considerably and the aircraft touched down into very long, wet grass, which slowed it down. The pilot continued with the takeoff but the aircraft did not gain flying speed and ran on into a hedge.

The pilot described the airstrip as challenging, but had flown from it on many occasions. He had recently fitted a new, coarser pitch propeller, which he described as reducing takeoff performance. He thought that the new propeller may have adversely affected the aircraft's performance, which was further affected by the long wet grass it encountered. He also believed that carburettor icing was a probability.

Of note, the aircraft was taking off downwind, which also increases the takeoff distance required.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Zenair CH 601ULA Zodiac, G-CBAP | |
| **No & Type of Engines:** | 1 Rotax 912 ULS piston engine | |
| **Year of Manufacture:** | 2001 (Serial no: PFA 162A-13656) | |
| **Date & Time (UTC):** | 1 July 2014 at 1910 hrs | |
| **Location:** | Easter Airfield, Ross-shire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Canopy shattered | |
| **Commander's Licence:** | Private Pilot's Licence | |
| **Commander's Age:** | 50 years | |
| **Commander's Flying Experience:** | 104 hours (of which 30 were on type)<br>Last 90 days - 30 hours<br>Last 28 days - 12 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

## Synopsis

Shortly after takeoff from Easter Airfield, Ross-shire, for a local flight with two persons on board, the aircraft canopy blew open and shattered. The passenger was able to hold down the remains of the canopy to stop it flapping and the aircraft landed back at the airfield without further incident. There were no injuries and, other than the canopy, the aircraft was undamaged. The canopy latch locking pin had not been properly engaged and allowed the latch to vibrate loose in flight.

## History of the flight

Shortly after takeoff for a local flight the aircraft canopy unexpectedly opened in the slipstream with significant force and then shattered. The canopy was side-opening so the passenger was able to hold down the broken canopy to stop it flapping. The pilot then landed the aircraft back at the airfield without further incident. There were no injuries and no additional damage was caused to the aircraft. The canopy opened because the canopy securing latch had worked loose as a result of vibration and wind pressure; the locking pin for the latch had not been correctly located.

## Pilot's observations

The pilot considered that the incorrect pin location was an oversight on his part and was not as a result of a design issue. During the incident he observed that as the canopy blew open it caused the aircraft to pitch up due to increased drag. Then, after one or two seconds, the

canopy shattered and the aircraft returned to level flight, with normal handling. On reflection he noted that his pre-flight 'touch' checks did not reveal the incorrect pin location and he would now carry out a more rigorous physical check for correct locking pin engagement.

**SERIOUS INCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cameron Z-375 balloon, G-VBFR | |
| **No & Type of Engines:** | None | |
| **Year of Manufacture:** | 2009 (Serial no: 11217) | |
| **Date & Time (UTC):** | 11 April 2014 at 1700 hrs | |
| **Location:** | Corby Glen, Lincolnshire | |
| **Type of Flight:** | Commercial Air Transport (Passenger) | |
| **Persons on Board:** | Crew - 1 | Passengers - 16 |
| **Injuries:** | Crew - None | Passengers - 1(Minor) |
| **Nature of Damage:** | Damage to burner | |
| **Commander's Licence:** | Commercial Pilot's Licence | |
| **Commander's Age:** | 47 years | |
| **Commander's Flying Experience:** | 1,899 hours (of which all were on type)<br>Last 90 days - 6 hours<br>Last 28 days - 6 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

After a normal flight and landing, 13 of the 16 passengers were disembarked. The pilot's intention was to manoeuvre the balloon to a wider part of the field for deflation. As the balloon was being moved, the wind, which had been about 3 or 4 kt, increased to 7 or 8 kt and the disembarked passengers were unable to hold the basket. The pilot instructed them to let go, at the same time as applying a short burst from the burner.

Once airborne, the pilot immediately initiated a descent into the next field, beyond barbed wire and a stream. On landing, the basket rotated slightly and a corner caught the ground, causing it to tip over. One passenger, who was unable to maintain her landing position, fell about 1.5 m from her compartment onto the underside of the burner, which was switched off. She suffered bruising of her right leg.

The pilot attributed the incident to the need to carry out an emergency launch and landing, at less than the minimum landing mass. He observed that, for the basket in question, a total of six passengers would have had to remain on board to meet the minimum mass requirement.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Cameron Z-375 balloon, G-VBFS | |
| **No & Type of Engines:** | None | |
| **Year of Manufacture:** | 2009 (Serial no: 11216) | |
| **Date & Time (UTC):** | 4 April 2014 at 1820 hrs | |
| **Location:** | Near Kendal, Cumbria | |
| **Type of Flight:** | Commercial Air Transport (Passenger) | |
| **Persons on Board:** | Crew - 1 | Passengers - 16 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Several damaged flying wires and damage to the 'scoop'. Severed electrical power lines | |
| **Commander's Licence:** | Commercial Pilot's Licence (Balloon) | |
| **Commander's Age:** | 52 years | |
| **Commander's Flying Experience:** | 2,799 hours (of which 250 were on type)<br>Last 90 days - 3 hours<br>Last 28 days - 4 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The flight had been conducted in fine conditions, with good visibility. The pilot began to search for a landing area and identified what appeared to be a suitable field about 2 nm away, near the town of Levens. As the balloon approached the field, its speed was about 7 kt and reducing. The pilot observed electrical power lines on two sides of the field, before the intended landing site. With the passengers in their landing positions, the pilot descended over the near corner of his chosen field, beyond the power lines he had seen.

With the balloon about 3 m above the ground, the pilot saw more power lines immediately ahead, running diagonally across the balloon's path at the height of the balloon's 'scoop'. He operated a control line to rapidly deflate the envelope but the power lines struck the balloon about 1 m below the top of the 'scoop', breaking in the process. The balloon's flying wires and scoop were damaged but there were no injuries.

The pilot had checked the field for power lines during the approach but had not seen any. He observed that the cables were very thin and the supporting poles had been obscured.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Cosmik Aviation EV-97 Eurostar, G-CDNG |
| **No & Type of Engines:** | 1 Rotax 912-UL piston engine |
| **Year of Manufacture:** | 2005 (Serial no: 2319) |
| **Date & Time (UTC):** | 5 July 2014 at 1630 hrs |
| **Location:** | Private airstrip near Gloucester |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 1 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Damage to propeller, right wing, nosewheel, engine firewall and floor pan |
| **Commander's Licence:** | National Private Pilot's Licence |
| **Commander's Age:** | 69 years |
| **Commander's Flying Experience:** | 235 hours (of which 68 were on type)<br>Last 90 days - 3 hours<br>Last 28 days - 2 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

The weather was fine, with a light and variable wind. The pilot commenced the takeoff in a northerly direction on the 400 m grass airstrip. The aircraft deviated to the left and ran off the prepared surface into a wheat field, where it came to rest pitched forward onto its nose. The pilot, who was uninjured, vacated the aircraft without assistance. He thought that his aircraft had been subject to a gust of wind at the same time as it encountered a bump on the runway, causing him to lose directional control.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Ikarus C42 FB100, G-DASS | |
| **No & Type of Engines:** | 1 Rotax 912ULS piston engine | |
| **Year of Manufacture:** | 2005 (Serial no: 0509-6758) | |
| **Date & Time (UTC):** | 11 April 2014 at 1330 hrs | |
| **Location:** | Leicester Airport | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Damage to left main landing gear, nosewheel and propeller | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 60 years | |
| **Commander's Flying Experience:** | 181 hours (of which 91 were on type)<br>Last 90 days - 8 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and additional enquiries by the AAIB | |

**Synopsis**

After takeoff, the pilot found that he could not reduce power from the takeoff setting. He climbed overhead the airfield before intentionally stopping the engine and carrying out a glide approach. An area of 'sink' caused the aircraft to land heavily short of the runway.

It was found that the throttle linkage had fouled a hole in the centre console side panel, causing it to jam. This was a problem known to the agent/distributor for Ikarus, who had issued a recommended Service Bulletin (SB) 28 in 2010 containing details of an inspection and modification to overcome it. G-DASS did not have the modification embodied.

**History of the flight**

The pilot intended to return to Wickenby following a flight to Leicester. He conducted his pre-flight checks and takeoff without noticing any abnormalities. However, after takeoff, he found he could not reduce the throttle from the full power setting, as it appeared to be jammed. After a number of unsuccessful attempts to reduce power, he climbed overhead the airfield to 2,400 ft agl and switched off the engine, intending to do a glide approach. However, the pilot encountered an area of sink and landed heavily in crops about 100 m short of the runway. He is of the opinion that aiming for a touchdown point further along the runway would have given him a better margin for this eventuality.

The company tasked to repair the aircraft noted that the circumstances of the accident bore similarities to an account of an incident described in Pioneer Aviation UK Ltd Service Bulletin C42 SB 28 Issue 1 dated 25 May 2010. The SB described how a student pilot was unable to move the throttle lever towards the closed position but after the instructor intervened and successfully forced the lever towards closed, the engine rpm would still not reduce. The cause was found to be that the head of a clevis pin in the throttle linkage had caught on a hole in the centre console right side panel at the full throttle position. Furthermore, the action of forcing the throttle closed had bent the arm from the throttle cross tube such that the arm no longer had sufficient range of movement to close the throttle.

On G-DASS, a witness mark showed interference between the clevis pin and the hole in the centre console side panel, and a bent throttle arm, as depicted in SB 28. The SB was classified as "*Recommended……preferably before the next flight or if not as soon as practical*" to conduct an inspection for contact between the clevis pin and the side panel. Even if no evidence of contact was found, it was still recommended that an associated modification be embodied, which involved the replacement of a fixed spacer between the side panel and the aircraft structure with a longer spacer to guarantee adequate clearance with the throttle linkage. G-DASS had not had the modification embodied.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Ikarus C42 FB100, G-ZAVI | |
| **No & Type of Engines:** | 1 Rotax 912ULS piston engine | |
| **Year of Manufacture:** | 2006 (Serial no: 0601-6777) | |
| **Date & Time (UTC):** | 20 June 2014 at 1110 hrs | |
| **Location:** | Lundy Island Airfield, Devon | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Nose leg collapsed, damaged brake line, fairing and wheel spats | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 78 years | |
| **Commander's Flying Experience:** | 317 hours (of which 313 were on type)<br>Last 90 days - 14 hours<br>Last 28 days - 4 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot reported that this was his fourth flight to Lundy Island. On obtaining 'PPR', he was advised that sheep might be grazing on the runway. On arriving there, he saw a number of sheep on the runway and made two approaches and low passes before they were clear. On the third approach he noticed a ewe and its lamb close to the threshold and decided to land long. Just as the sheep disappeared from his view, he was aware of the ewe running to the right and the lamb to the left.

The pilot recorded that the landing was normal, but when he applied the brakes the aircraft did not slow down and headed towards a wall beyond the end of the runway. He steered the aircraft to the right across some uneven ground, where the nose leg collapsed and the propeller blades struck the ground. The right wheel spat and hydraulic brake pipes were found to be damaged.

Following the accident, a dead lamb was found close to the threshold. The pilot suspects that during the landing the right main wheel had struck the lamb, breaking the spat and damaging the hydraulic brake pipes.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Mainair Blade, G-MZAZ | |
| **No & Type of Engines:** | 1 Rotax 462 piston engine | |
| **Year of Manufacture:** | 1995 (Serial no: 1040-0595-7-W838) | |
| **Date & Time (UTC):** | 17 May 2014 at 1030 hrs | |
| **Location:** | Headon Airfield, Nottinghamshire | |
| **Type of Flight:** | Training | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Extensive damage to trike | |
| **Commander's Licence:** | Student pilot | |
| **Commander's Age:** | 65 years | |
| **Commander's Flying Experience:** | 63 hours (of which all were on type)<br>Last 90 days - 2 hours<br>Last 28 days - 1 hour | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot and comments by his flying instructor | |

The student pilot was flying a short solo refresher flight under the supervision of his flying instructor. The weather was fine, with a surface wind from 250° at 6 kt. On returning to the airfield, the student pilot flew an overhead join and made an approach to grass Runway 23. He reported that he crossed the threshold after a normal approach but then flared too vigorously. The microlight lost airspeed rapidly and landed very heavily on all three wheels, causing extensive damage. The student pilot was uninjured.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Quik GTR, G-COWN | |
| **No & Type of Engines:** | 1 Rotax 912 ULS piston engine | |
| **Year of Manufacture:** | 2012 (Serial no: 8619) | |
| **Date & Time (UTC):** | 24 June 2014 at 1123 hrs | |
| **Location:** | Near Mallaig, Highlands of Scotland | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Accident damage to propeller, wing structure and fabric. Water damage to whole structure | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 46 years | |
| **Commander's Flying Experience:** | 262 hours (of which 52 were on type)<br>Last 90 days - 48 hours<br>Last 28 days - 18 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

**Synopsis**

The microlight suffered a bird strike which damaged the propeller and flying controls. With limited control available, the pilot shut down the engine and carried out a forced landing into a loch, whereupon the microlight sank. The pilot, who was uninjured, escaped the wreckage without difficulty.

**History of the flight**

The microlight was flying between airfields at Plockton and Glenforsa on the west coast of Scotland when the accident occurred. The weather was fine, with calm surface winds and good visibility. While at a height of about 1,000 ft, there was a loud bang and the aircraft rolled rapidly to the right. The pilot was able to regain controlled flight, but had limited control and could not prevent a residual turning tendency. There was also a high level of vibration, so he shut the engine down.

The pilot attempted to land in a nearby flat grassed area, but was unable to slow the microlight sufficiently. As the aircraft got lower, he found the terrain to be covered by numerous tributaries feeding the nearby loch, as well as rocks and boulders. The pilot became committed to a touchdown in the loch itself and he ditched about 20 ft from the bank. The microlight came to a sudden stop before the fuselage section sunk backwards below the water.

The uninjured pilot unfastened his harness without difficulty before swimming to the shore. He was wearing a dry suit and lifejacket, which he did not need to inflate. He reported that a large bird (probably a seagull) had struck the propeller, causing two blades to separate. These then passed through the wing structure, one of them breaking the washout rod universal joint on the right wing. The pilot attributed his control problems to this, together with the damage to the wing fabric.

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Rans S6-ESD Coyote II, G-MYBI | |
| **No & Type of Engines:** | 1 Rotax 503 piston engine | |
| **Year of Manufacture:** | 1992 (Serial no: PFA 204-12186) | |
| **Date & Time (UTC):** | 11 June 2014 at 0900 hrs | |
| **Location:** | Ashcroft Airfield, Cheshire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - None | Passengers - None |
| **Nature of Damage:** | Damage to propeller, cowling, landing gear and fuselage | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 57 years | |
| **Commander's Flying Experience:** | 156 hours (of which 64 were on type)<br>Last 90 days - 9 hours<br>Last 28 days - 2 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The pilot prepared for a local flight in fine weather conditions. The surface wind was from 270º at 7 kt, with Runway 27 in use; the runway was grass, 520 m long and 11 m wide. The takeoff run was normal and the aircraft became airborne at the expected point. After lift off, the pilot held the aircraft at a low height in order to gain airspeed. As he did so, the left wing was suddenly lifted by what the pilot thought was a gust of wind and the aircraft turned to the right. The pilot corrected the roll but was unable to stop the aircraft passing over an area of long grass beside the runway, at low height and speed.

The aircraft started to sink and the pilot elected to abandon the takeoff attempt and land ahead. As he flared the aircraft, the landing gear contacted the grass, causing the aircraft to pitch nose down and come to an abrupt stop. The pilot likened the touchdown to no more than a heavy landing; neither he nor his passenger was injured.

**ACCIDENT**

| | |
|---|---|
| **Aircraft Type and Registration:** | Tri Kis, G-BZDR |
| **No & Type of Engines:** | 1 Continental Motors Corp IO-240-A piston engine |
| **Year of Manufacture:** | 2000 (Serial no: 9403) |
| **Date & Time (UTC):** | 24 May 2014 at 0950 hrs |
| **Location:** | Perth Airport, Scotland |
| **Type of Flight:** | Private |
| **Persons on Board:** | Crew - 1 Passengers - None |
| **Injuries:** | Crew - None Passengers - N/A |
| **Nature of Damage:** | Nose landing leg failed, damage to nose leg assembly and propellers. Engine shock-loaded |
| **Commander's Licence:** | Private Pilot's Licence |
| **Commander's Age:** | 54 years |
| **Commander's Flying Experience:** | 2,628 hours (of which 127 were on type)<br>Last 90 days - 15 hours<br>Last 28 days - 5 hours |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot |

Following an uneventful flight, the pilot carried out a normal approach and landing on Runway 23 at Perth Airport; the wind was described as light. During the ground roll the pilot reported hearing a loud *'dink'* and a metallic noise followed by severe nosewheel shimmy. Believing that he had a puncture, the pilot held the control column in the aft position to unload the nosewheel. However he then heard a loud scrapping noise from the area of the nosewheel and so shut the engine down. The aircraft came to a halt on the runway resting on two of the three propeller blades. The pilot transmitted an emergency call before vacating the aircraft. The airfield emergency vehicle attended.

The event occurred as a result of the failure of one side of the fork on the nose landing gear leg. See Figure 1. The owner and the maintenance organisation that examined the landing gear leg reported visual evidence of a fatigue failure. Neither the AAIB nor the Light Aircraft Association had the opportunity to inspect the leg before it was repaired.


**Figure 1**

Failure of the nose landing gear

**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Zenair CH 701 STOL, G-FAMH | |
| **No & Type of Engines:** | 1 Jabiru 2200A piston engine | |
| **Year of Manufacture:** | 1999 (Serial no: PFA 187-13301) | |
| **Date & Time (UTC):** | 22 June 2014 at 1325 hrs | |
| **Location:** | London Colney Airfield, Hertfordshire | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - None |
| **Injuries:** | Crew - None | Passengers - N/A |
| **Nature of Damage:** | Nosewheel and wing attachment | |
| **Commander's Licence:** | National Private Pilot's Licence | |
| **Commander's Age:** | 52 years | |
| **Commander's Flying Experience:** | 783 hours (of which 480 were on type)<br>Last 90 days - 22 hours<br>Last 28 days - 18 hours | |
| **Information Source:** | Aircraft Accident Report Form submitted by the pilot | |

The aircraft landed heavily after what the pilot felt was a normal approach. During the ground roll the nosewheel collapsed and the aircraft stopped abruptly. The pilot, who was uninjured, made the aircraft safe and vacated it normally. He then discovered that the left wing rear attachment had failed. He thought this failure was probably caused by the rapid deceleration of the aircraft after its nosewheel had collapsed.

The pilot considered the heavy landing was as a result of him misjudging the height of the flare in unusually light wind conditions.

# Miscellaneous

This section contains Addenda, Corrections and a list of the ten most recent Aircraft Accident ('Formal') Reports published by the AAIB.

The complete reports can be downloaded from the AAIB website (www.aaib.gov.uk).

**BULLETIN CORRECTION**

| | |
|---|---|
| **Aircraft Type and Registration:** | Eurocopter EC155B1, OY-HJJ |
| **Date & Time (UTC):** | 6 November 2013 at 2023 hrs |
| **Location:** | Clipper Gas platform, North Sea |
| **Information Source:** | AAIB Field Investigation |

**AAIB Bulletin No 7/2014, page 38 refers**

The report incorrectly stated the location as **Clipper South Gas Field, North Sea.** The correct location is **Clipper Gas platform, North Sea**.

The online version of the report was corrected on 8 August 2014.

**BULLETIN CORRECTION**

| | |
|---|---|
| **Aircraft Type and Registration:** | Europa XS, G-GBXS |
| **Date & Time (UTC):** | 21 August 2013 at 1317 hrs |
| **Location:** | Airstrip at Common Farm, Narrow Lane, Wymeswold, Leicestershire |
| **Information Source:** | AAIB Field Investigation |

**AAIB Bulletin No 8/2014, page 44 refers**

In the section entitled **Aircraft information** the date that the Permit to Fly was issued is incorrect. The correct date is **13 August 2013**, and not 12 August 2012.

The online version of the report was corrected prior to publication, on 14 August 2014.

**BULLETIN CORRECTION**

| | |
|---|---|
| **Aircraft Type and Registration:** | Luscombe 8E Silvaire Deluxe, G-BTCH |
| **Date & Time (UTC):** | 22 December 2013 at 1315 hrs |
| **Location:** | Popham Airfield, Hampshire |
| **Information Source:** | Aircraft Accident Report Form |

**AAIB Bulletin No 7/2014, page 75 refers**

In the **History of the flight** it was stated that the pilot had flown to Popham Airfield. This is incorrect; he had in fact **driven** there.

The online version of the report was corrected on 22 July 2014.

**BULLETIN CORRECTION**

| | |
|---|---|
| **Aircraft Type and Registration:** | Rotorsport Cavalon gyroplane, G-RDNY |
| **Date & Time (UTC):** | 5 March 2014 at 1512 hrs |
| **Location:** | Lydd Airport, Kent |
| **Information Source:** | Aircraft Accident Report Form |

**AAIB Bulletin No 7/2014, page 86 refers**

The tabled information at the beginning of the report incorrectly stated that the injuries to the pilot were minor whereas, as correctly described in the synopsis, no injuries were sustained.

The online version of this report was corrected on 24 July 2014.

# TEN MOST RECENTLY PUBLISHED FORMAL REPORTS ISSUED BY THE AIR ACCIDENTS INVESTIGATION BRANCH

3/2010 Cessna Citation 500, VP-BGE
2 nm NNE of Biggin Hill Airport
on 30 March 2008.

Published May 2010.

4/2010 Boeing 777-236, G-VIIR
at Robert L Bradshaw Int Airport
St Kitts, West Indies
on 26 September 2009.

Published September 2010.

5/2010 Grob G115E (Tutor), G-BYXR
and Standard Cirrus Glider, G-CKHT
Drayton, Oxfordshire
on 14 June 2009.

Published September 2010.

6/2010 Grob G115E Tutor, G-BYUT
and Grob G115E Tutor, G-BYVN
near Porthcawl, South Wales
on 11 February 2009.

Published November 2010.

7/2010 Aerospatiale (Eurocopter) AS 332L
Super Puma, G-PUMI
at Aberdeen Airport, Scotland
on 13 October 2006.

Published November 2010.

8/2010 Cessna 402C, G-EYES and
Rand KR-2, G-BOLZ
near Coventry Airport
on 17 August 2008.

Published December 2010.

1/2011 Eurocopter EC225 LP Super
Puma, G-REDU
near the Eastern Trough Area
Project Central Production Facility
Platform in the North Sea
on 18 February 2009.

Published September 2011.

2/2011 Aerospatiale (Eurocopter) AS332 L2
Super Puma, G-REDL
11 nm NE of Peterhead, Scotland
on 1 April 2009.

Published November 2011.

1/2014 Airbus A330-343, G-VSXY
at London Gatwick Airport
on 16 April 2012.

Published February 2014.

2/2014 Eurocopter EC225 LP Super Puma
G-REDW, 34 nm east of Aberdeen,
Scotland on 10 May 2012
and
G-CHCN, 32 nm southwest of
Sumburgh, Shetland Islands
on 22 October 2012

Published June 2014.

Unabridged versions of all AAIB Formal Reports, published back to and including 1971, are available in full on the AAIB Website

http://www.aaib.gov.uk

# GLOSSARY OF ABBREVIATIONS

| | |
|---|---|
| aal | above airfield level |
| ACAS | Airborne Collision Avoidance System |
| ACARS | Automatic Communications And Reporting System |
| ADF | Automatic Direction Finding equipment |
| AFIS(O) | Aerodrome Flight Information Service (Officer) |
| agl | above ground level |
| AIC | Aeronautical Information Circular |
| amsl | above mean sea level |
| AOM | Aerodrome Operating Minima |
| APU | Auxiliary Power Unit |
| ASI | airspeed indicator |
| ATC(C)(O) | Air Traffic Control (Centre)( Officer) |
| ATIS | Automatic Terminal Information System |
| ATPL | Airline Transport Pilot's Licence |
| BMAA | British Microlight Aircraft Association |
| BGA | British Gliding Association |
| BBAC | British Balloon and Airship Club |
| BHPA | British Hang Gliding & Paragliding Association |
| CAA | Civil Aviation Authority |
| CAVOK | Ceiling And Visibility OK (for VFR flight) |
| CAS | calibrated airspeed |
| cc | cubic centimetres |
| CG | Centre of Gravity |
| cm | centimetre(s) |
| CPL | Commercial Pilot's Licence |
| °C,F,M,T | Celsius, Fahrenheit, magnetic, true |
| CVR | Cockpit Voice Recorder |
| DFDR | Digital Flight Data Recorder |
| DME | Distance Measuring Equipment |
| EAS | equivalent airspeed |
| EASA | European Aviation Safety Agency |
| ECAM | Electronic Centralised Aircraft Monitoring |
| EGPWS | Enhanced GPWS |
| EGT | Exhaust Gas Temperature |
| EICAS | Engine Indication and Crew Alerting System |
| EPR | Engine Pressure Ratio |
| ETA | Estimated Time of Arrival |
| ETD | Estimated Time of Departure |
| FAA | Federal Aviation Administration (USA) |
| FIR | Flight Information Region |
| FL | Flight Level |
| ft | feet |
| ft/min | feet per minute |
| g | acceleration due to Earth's gravity |
| GPS | Global Positioning System |
| GPWS | Ground Proximity Warning System |
| hrs | hours (clock time as in 1200 hrs) |
| HP | high pressure |
| hPa | hectopascal (equivalent unit to mb) |
| IAS | indicated airspeed |
| IFR | Instrument Flight Rules |
| ILS | Instrument Landing System |
| IMC | Instrument Meteorological Conditions |
| IP | Intermediate Pressure |
| IR | Instrument Rating |
| ISA | International Standard Atmosphere |
| kg | kilogram(s) |
| KCAS | knots calibrated airspeed |
| KIAS | knots indicated airspeed |
| KTAS | knots true airspeed |
| km | kilometre(s) |
| kt | knot(s) |
| lb | pound(s) |
| LP | low pressure |
| LAA | Light Aircraft Association |
| LDA | Landing Distance Available |
| LPC | Licence Proficiency Check |
| m | metre(s) |
| mb | millibar(s) |
| MDA | Minimum Descent Altitude |
| METAR | a timed aerodrome meteorological report |
| min | minutes |
| mm | millimetre(s) |
| mph | miles per hour |
| MTWA | Maximum Total Weight Authorised |
| N | Newtons |
| $N_R$ | Main rotor rotation speed (rotorcraft) |
| $N_g$ | Gas generator rotation speed (rotorcraft) |
| $N_1$ | engine fan or LP compressor speed |
| NDB | Non-Directional radio Beacon |
| nm | nautical mile(s) |
| NOTAM | Notice to Airmen |
| OAT | Outside Air Temperature |
| OPC | Operator Proficiency Check |
| PAPI | Precision Approach Path Indicator |
| PF | Pilot Flying |
| PIC | Pilot in Command |
| PNF | Pilot Not Flying |
| POH | Pilot's Operating Handbook |
| PPL | Private Pilot's Licence |
| psi | pounds per square inch |
| QFE | altimeter pressure setting to indicate height above aerodrome |
| QNH | altimeter pressure setting to indicate elevation amsl |
| RA | Resolution Advisory |
| RFFS | Rescue and Fire Fighting Service |
| rpm | revolutions per minute |
| RTF | radiotelephony |
| RVR | Runway Visual Range |
| SAR | Search and Rescue |
| SB | Service Bulletin |
| SSR | Secondary Surveillance Radar |
| TA | Traffic Advisory |
| TAF | Terminal Aerodrome Forecast |
| TAS | true airspeed |
| TAWS | Terrain Awareness and Warning System |
| TCAS | Traffic Collision Avoidance System |
| TGT | Turbine Gas Temperature |
| TODA | Takeoff Distance Available |
| UHF | Ultra High Frequency |
| USG | US gallons |
| UTC | Co-ordinated Universal Time (GMT) |
| V | Volt(s) |
| $V_1$ | Takeoff decision speed |
| $V_2$ | Takeoff safety speed |
| $V_R$ | Rotation speed |
| $V_{REF}$ | Reference airspeed (approach) |
| $V_{NE}$ | Never Exceed airspeed |
| VASI | Visual Approach Slope Indicator |
| VFR | Visual Flight Rules |
| VHF | Very High Frequency |
| VMC | Visual Meteorological Conditions |
| VOR | VHF Omnidirectional radio Range |

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Air Accidents Investigation Branch