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AAIB Special Bulletins / Interim Reports

AAIB Special Bulletins and Interim Reports

This section contains Special Bulletins and Interim Reports that have been published since the last AAIB monthly bulletin.

SERIOUS INCIDENT

Aircraft Type and Registration:	Sikorsky S-76C++, G-WIWI
No & Type of Engines:	2 x Turbomeca Arriel 2S2
Year of Manufacture:	2007
Location	Private landing site, East Sussex
Date & Time (UTC):	3 May 2012 at 2155 hrs
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 2 Passengers - 2
Injuries:	Crew - None Passengers - None
Nature of Damage:	None
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	55 years
Commander's Flying Experience:	10,250 hours (of which 4,800 were on type) Last 90 days - 11 hours Last 24 hours - 2 hours
Information Source:	AAIB Field Investigation

Synopsis

Following an event in which high torque was used, flight data was analysed on behalf of the operator using incorrect conversion information relevant to earlier variants of the helicopter. The operator was therefore unaware that total torque had exceeded a level at which maintenance action was required. The investigation revealed the existence of the correct information and one Safety Recommendation is made to publish it in a single document.

History of the flight

The helicopter was on a commercial air transport (passenger) flight from Battersea Heliport to a private landing site in a field surrounded by trees. The commander was pilot flying (PF) and the conditions were night with low cloudbase, poor visibility, and rain. While manoeuvring, the commander became disorientated and the helicopter descended towards the tops of trees in the forested area to the south and west of the landing site. The commander executed a go-around, during which high torque was applied. The helicopter diverted to Lydd where it landed safely. The minimum radio altimeter value recorded during the go-around was two feet.

Flight recorder readout

Following the event the combined flight data and cockpit voice recorder fitted to the helicopter was downloaded by the operator. This was several weeks after the incident by which time the voice recordings for the incident had been overwritten by subsequent helicopter operations; however, flight data for the incident was available.

The operator used a third party organisation, recommended to it by Sikorsky, the helicopter manufacturer, to perform a readout service of the flight data. During this process the recorded data were converted into engineering units. These conversions were based on documentation[1] which, although supplied by Sikorsky, was written by Teledyne Controls, the flight data acquisition unit (FDAU)[2] manufacturer. The FDAU fitted to the helicopter had part number 2231230-10-A-1.

Footnote

[1] Teledyne Controls document - Engineering Units Conversion for Sikorsky S76-B, S76-C Helicopter - Drawing No. EUC 2231230-10-A-1 Rev. B.

[2] The purpose of the FDAU system is to acquire, condition, and process aircraft parameters and output them in a structured format to the crash protected flight data recorder (FDR).

The readout indicated that during the go-around manoeuvre a maximum of 114.5% and 113% torque had been recorded for engine 1 and 2 respectively.

When the AAIB was subsequently notified of the incident, a copy of the flight data was made available immediately. This was converted into engineering units by the AAIB using the same conversions detailed in the documentation supplied by Sikorsky; however, it was found that the document did not explicitly reference the C++ variant of the Sikorsky S-76, leaving doubt over the accuracy of the converted data.

Both Sikorsky and Teledyne were asked if an explicit document detailing the FDAU and FDR installation on the S-76C++ existed. Teledyne replied that such a document did exist and had been written in response to a request by Sikorsky following a configuration change to the FDAU from the -10-A-1 to the -21 version. The -21 version was designed to meet the FAA rule 2010 requirements, Part 135 Appendix C for helicopters built after April 2010 and included the requirement to record additional parameters on the FDR. To reflect these changes, the document[3] detailed the altered format of the recorded parameters on the FDR together with the necessary conversions required to convert these into engineering units. Teledyne also stated that for those S-76C++ helicopters not affected by the FAA rule 2010, the -10-A-1 document was still to be used for determining how the parameters were recorded on the FDR but to use the -21 document to convert these into engineering units.

Comparison of the conversion factors of parameters common to both documents revealed that the main

Footnote

[3] Teledyne Controls document – Specification Control Document for Flight Data Acquisition Unit (FDAU) Sikorsky S76C++ Helicopters P/N 2231230-21- Drawing No. SCD2231230-21 Rev. A.

difference was for engine torque[4], increasing the linear coefficient factor by about 6%. Using this revised conversion meant that during the go-around manoeuvre of G-WIWI a maximum of 121.5% and 120% torque had actually been recorded for engine 1 and 2 respectively. Total torque was therefore greater than 240%, a level at which maintenance action was required.

A subsequent calibration check was made of the torque measurements on G-WIWI. The torque on each engine was stepped up to 100%, based on the output of the digital cockpit torque gauge. The FDR was then downloaded so that the recorded data could be compared with the gauge output to determine the correct factor needed to correlate the two outputs. The resulting factor was within 1% of the -21 conversion factor.

FDR documentation requirements

FDRs record binary data containing encoded parametric information. The binary data can then be converted to engineering units (knots, feet etc.) by referencing detailed documentation specific to the aircraft installation. The organisation most likely to possess the information and expertise required to generate such documentation is the aircraft manufacturer or the design organisation responsible for the FDR installation. The CAA, in CAP 731, and the FAA, in AC20-141B, have published guidance material to assist aircraft manufacturers or design organisations in producing such documentation.

For aircraft issued with an EASA type certificate, which includes the Sikorsky S-76C++, Commission Regulation (EC) No 1702/2003 of 24 September 2003 Part 21 requirement 21A.61 '*Instruction for continued airworthiness*' states:

> *'(a) The holder of the type-certificate…shall furnish at least one set of complete instructions for continued airworthiness…to each known owner of one or more aircraft…upon issue of the first certificate of airworthiness for the affected aircraft…and thereafter make those instructions available on request to any other person required to comply with any of the terms of those instructions. …'*

This regulation does not explicitly reference FDR documentation and this is not reflected in any guidance material; however, correspondence with the CAA and EASA has established that Part 21 requirement 21A.61 implicitly includes the provision of FDR documentation that will enable the conversion of the binary record to engineering units. The same is true for requirements 21A.107 and 21A.120, which are applicable to holders of Minor and Major design change approvals respectively.

The documentation available to operators of the S-76C++ (equipped with Teledyne Control FDAU part number 2231230-10-A-1) contained anomalies. A document providing the correct conversion information for the -21 version was available for use in conjunction with the -10-A-1 document, but operators were not aware of it. Moreover, the correct information did not appear in a single document providing clear guidance. There may therefore have been other instances in which operators were unaware that engines had exceeded the manufacturer's stated torque limit, and that necessary maintenance was not carried out.

Sikorsky Aircraft Corporation sent a letter[5] dated 5 October 2012 to all S-76 operators, S-76 centres

Footnote

[4] Other differences were identified in the engine free turbine speed (N_f).

Footnote

[5] Sikorsky Aircraft Corporation letter – S-67C+ and S-76C++ FDR Data, Interpretation of – CCS-76-AOL-12-0005 dated 5 October 2012.

and field service representatives advising them of the issues identified in this Special Bulletin and the correct conversions to be used. However, the accuracy of FDR documentation is fundamental to air safety investigation; therefore, the following Safety Recommendation is made:

Safety Recommendation 2012-033

It is recommended that the Sikorsky Aircraft Corporation issues, in a single document, correct flight data recorder engineering unit conversion information for S-76C++ helicopters equipped with a Teledyne Control Flight Data Acquisition Unit part number 2231230-10-A-1. This document should follow the guidance given in Federal Aviation Administration Advisory Circular 20-141B and UK Civil Aviation Publication 731.

Published 9 October 2012

AAIB Field Investigation reports

ACCIDENT

Aircraft Type and Registration:	1) Taylorcraft BC12D, Twosome, G-BVXS 2) Pitts S-2C, Pitts Special, G-IICI
No & Type of Engines:	1) 1 Continental Motors Corp A65-8 piston engine 2) 1 Lycoming AEIO-540-D4A5 piston engine
Year of Manufacture:	1) 1946 (Serial no: 9284) 2) 1998 (Serial no: 6017)
Date & Time (UTC):	18 December 2011 at 1400 hrs
Location:	Leicester Airport
Type of Flight:	1) Private 2) Private
Persons on Board:	1) Crew - 1 Passengers - None 2) Crew - 1 Passengers - 1
Injuries:	1) Crew - 1 (Fatal) Passengers - N/A 2) Crew - None Passengers - None
Nature of Damage:	1) Destroyed 2) Damaged beyond economic repair
Commander's Licence:	1) Private Pilot's Licence 2) National Private Pilot's Licence
Commander's Age:	1) 55 years 2) 48 years
Commander's Flying Experience:	1) 640 hours (of which in excess of 150[1] were on type) Last 90 days - 15 hours Last 28 days - 1 hours 2) 948 hours (of which 150 were on type) Last 90 days - 21 hours Last 28 days - 4 hours
Information Source:	AAIB Field Investigation

Synopsis

The mid-air collision occurred when both aircraft were on the crosswind leg of the visual circuit for Runway 33 at Leicester Airport, soon after G-BVXS had taken off and as G-IICI had joined the circuit from the northeast. G-BVXS became uncontrollable after the collision and the pilot was fatally injured when the aircraft struck the ground. The two occupants of G-IICI were uninjured after making a forced landing.

Footnote

[1] Only the pilot's current logbook was recovered after the accident. 150 hours on type had been recorded in this logbook, but it was known that the pilot had completed the majority of his flying on type.

History of the flights

The pilot of G-IICI stated that he was returning to Leicester Airport from Langar Airfield, 18 nm north-north-east of Leicester Airport. He occupied the rear seat and a passenger, who was a microlight pilot, occupied the front seat. Enroute they both practised some aerobatics overhead Melton Mowbray Airfield, 9 nm north-east of Leicester Airport. Prior to commencing the aerobatics, the pilot tuned the radio to the Leicester frequency and turned down the volume to a level at which he could perceive transmissions[2], but not hear speech. He did this to improve communication between himself and the passenger whilst maintaining an awareness of radio activity. Having completed the aerobatics they headed south. The pilot stated that he probably then turned up the volume on the radio, to listen to Leicester Radio, when he was at about 6 nm from Leicester. He subsequently flew some rolling aerobatic manoeuvres. During this time the pilot of G-BVXS had made the radio calls for start-up, taxi and takeoff, and began the takeoff roll from Runway 33 at Leicester Airport, with the intention of completing about two visual circuits.

Upon completion of the aerobatics the pilot of G-IICI said to the passenger "we are getting close to Leicester, I'll take it from here". A few seconds later, when the aircraft was just north of Houghton-on-the-Hill, about 2 nm north-east of Leicester Airport, the pilot stated that he transmitted "Leicester radio, golf india india charlie india inbound".

An observer in the tower, who was also a pilot, not only heard the Air to Ground Operator (A/G) reply with the runway in use as "three three left hand" and the QFE "nine nine eight millibars", but also heard the pilot of G-IICI acknowledge. The pilot stated that he had responded with "three three left, nine nine eight, charlie india has about three miles to run from the north and will join deadside at a thousand feet". He then looked at the altimeter to check that the correct QFE was set. At this point, G-BVXS had just started its takeoff roll.

The pilot of G-IICI positioned the aircraft to the north of the airfield to join the crosswind leg for Runway 33. He then believes he transmitted "golf charlie india deadside at one thousand feet". At this time the pilot estimated that the aircraft's heading was about 240°, at 1,000 ft aal with an IAS of 110 mph. The sun was low and about 45° to the aircraft's left. The pilot stated that no circuit traffic had been notified to him nor had he heard or seen any other traffic, with the exception of a helicopter using Runway 24. G-BVXS was still climbing on the crosswind leg. This resulted in it being in front of and below G-IICI.

The pilot of G-IICI reported that he then initiated a left turn onto the downwind leg for Runway 33 and noted that the sun was particularly bright. The aircraft was at 1,000 ft aal, 110 mph, flying almost directly into the sun, with about 30° of bank, when the pilot heard a loud bang, the aircraft "shuddered", and the propeller stopped. His initial thought was that the engine had "exploded"; however, on asking his passenger "what was that?", the passenger replied, "aircraft". The pilot attempted to maintain airspeed and transmitted "MAYDAY MAYDAY MAYDAY golf charlie india mid-air collision," and he looked for a suitable landing area.

Witnesses observed G-BVXS in a near vertical dive from which it did not recover. It struck the ground in

Footnote

[2] The aircraft was in Class G airspace at this time and therefore there was no requirement for radio communications.

a field next to some houses on the road on the southern boundary of the airport. The pilot was fatally injured.

After the collision, G-IICI had debris of G-BVXS trailing from its propeller. It touched down on a disused aircraft dispersal area in a field adjacent to the airport boundary road and headed towards a hedgerow. In an attempt to increase the available landing distance the pilot applied right rudder; however, this had limited effect. The aircraft struck the hedgerow left wing first and came to rest on its left side in the middle of the road. Having secured the aircraft's engine and electrics, the pilot and passenger exited the aircraft unaided and uninjured.

G-IICI pilot's additional comments

The pilot of G-IICI stated that owing to the poor visibility from the Pitts Special he had been taught to perform a visual "sweep" of the airspace ahead by gently weaving the aeroplane from side to side, and to deliberately fly with a small amount of bank, or out-of-balance yaw, to improve his lookout. When joining the visual circuit he noted that flying at a speed of around 110 mph allowed him to keep the nose low, to improve forward visibility.

The pilot of G-IICI noted that his joining transmission to Leicester Information was made later than usual because of a combination of the tailwind, his higher airspeed in the descent and cloud avoidance which had altered his usual route and expedited his flight. As a result he was aware of the importance of maintaining a good lookout.

He also commented that he was aware that an overhead join was preferred at Leicester, but because of the observed cloud base to the north of the airport, he decided to carry out a crosswind join.

He was aware that he needed to pay special attention and to look out to the left and right at 1,000 ft during the turn from the crosswind leg onto the downwind leg because of the sun. He believed that this was the most likely location for other traffic since he had already looked down at the runways and had not seen any traffic.

The pilot of G-IICI did not report any technical problems with the aircraft prior to the collision.

Air to Ground operator's (A/G) comments

The A/G operator, who co-owned G-BVXS with the accident pilot, had flown a local flight in G-BVXS with the accident pilot prior to commencing his duty. He stated that the pilot of G-BVXS made all the appropriate transmissions during start-up, taxiing and takeoff. The observer in the tower had stated that a joining transmission from G-IICI had been made and that the A/G operator had acknowledged, but the A/G operator had no recollection of these transmissions.

The A/G operator did not report any technical problems with G-BVXS on its previous flight.

G-IICI wreckage site

The wreckage of G-IICI was located on a road that borders the southern boundary of Leicester Airport. It was largely intact and was lying on the left side of its fuselage. Both left mainplanes were severely damaged. The cockpit area was intact and the occupants were able to vacate the aircraft using the hinged canopy.

In the field next to the road were several sets of ground marks covering a distance of 150 m, consistent with all three wheels touching the ground during the forced landing. These marks stopped at the electric fence and dense hedgerow that marked the boundary between the

field and the road. A tree stump and a fence post in the hedge were no longer in the ground and were close to the location of the aircraft. Attached to the propeller of the G-IICI was the wreckage of the empennage and some of the rear fuselage of the G-BVXS (see Figure 1).

G-BVXS wreckage site

With the exception of the rear fuselage and the empennage, the majority of the G-BVXS wreckage was located in an uncultivated area in the corner of a field. The wings, whilst significantly damaged and crumpled, were still attached to the forward fuselage. The fuselage appeared to have struck the ground at more than 90° nosedown. Most of the engine was below ground level, and there was a distinct, full-span ground impact mark underneath the wings. There was slightly more damage to the right wing than the left.

Approximately 12 other pieces of wreckage from G-BVXS were located away from the main wreckage sites. The most significant of these were the right mainwheel and the tailwheel of G-BVXS which were 75 m and 200 m respectively due south of the main G-BVXS wreckage.

Aircraft information

The Taylorcraft is a two-seat high-wing monoplane with a tailwheel configuration. It was built in 1946 and was fitted with a 65 hp continental engine. Both the airframe and the engine had had an annual check in April 2011 when the Permit to Fly for the aircraft was renewed.

The typical rate of climb for a Taylorcraft BC12D, Twosome, is around 600 ft/min, and the typical straight-and-level airspeed in the circuit is around 70 kt (about 80 mph).

Figure 1

Location of G-IICI - note some wreckage from G-BVXS (silver and red) attached to the propeller of G-IICI

The Pitts Special is a two-seat biplane with a tailwheel configuration. It was built in 1998 and was fitted with a 260 hp Lycoming engine. Both the airframe and engine had been the subject to a 50-hr check in September 2011. The aircraft had a valid Airworthiness Review Certificate.

Engineering investigation

The controls on both aircraft were checked and nothing significant was found that might have contributed to the accident.

The wreckage from both aircraft was inspected and compared. There were some black witness marks halfway along one propeller blade of G-IICI; these matched a distinctive gouge in the tailwheel (which was made of solid black plastic) of G-BVXS that had become detached. There was a large dent in the inboard section of the upper right main-plane of G-IICI that was consistent with it having struck the right mainwheel of G-BVXS and causing the wheel to detach from the gear leg during the collision.

Weather information

An aftercast was provided by the Met Office. In summary, it stated that at Leicester Airport, at 1400 hrs, the visibility was 40 to 45 km with no cloud, the temperature was +4°C and the dew point was between 0°C and -2°C. The surface wind was from approximately 300° at 10 kt. At 2,000 ft the wind was estimated to be from 340° at 22 kt. Satellite imagery taken over the area at the time of the accident showed mainly clear skies, with some scattered cloud. A review of video evidence confirmed that there was scattered cloud at the time.

At 1400 hrs the sun's bearing was 207°T and its elevation was 10° above the horizon.

Recorded data

Radar data for G-IICI and GPS data for G-BVXS was recovered that allowed the position of each aircraft leading up to the collision to be determined. Additionally, video and audio recordings from a digital video camera mounted on the helmet of G-IICI's pilot were analysed.

Radar and GPS

Radar coverage from the Clee Hill radar head in Shropshire tracked G-IICI for the majority of its flight until two seconds before initial touchdown. This coverage was a combination of both Primary (PSR) and Secondary (SSR) Surveillance Radar. PSR coverage within the vicinity of the airfield was intermittent, such that the last 30 seconds of the flight was only detected by the SSR. For these SSR recordings, the transponder fitted to G-IICI was only responding with Mode A messages so no altitude information was available. The collision occurred out of coverage of the PSR. G-BVXS was not fitted with a transponder and therefore was not detected by the radar.

A Garmin GPSMAP 496 was recovered from the wreckage of G-BVXS. The GPS unit had sustained damage during the ground impact but data was recovered from its internal memory that included a log of the accident flight. The last recorded point positioned G-BVXS on the crosswind leg of the left-hand circuit to Runway 33,973 ft aal[3] and about two seconds after the collision. The GPS altitude data together with a calculated climb rate (averaged over consecutive points[4]) is illustrated at Figure 2 and shows that G-BVXS was climbing at about 500 ft/min during the climb onto the crosswind leg. The calculated groundspeed, again between consecutive points, showed that G-BVXS's average speed over the last 10 seconds of the recorded log was 45 kt. Similarly, the groundspeed of G-IICI during this same period leading up to the collision was about 90 kt.

The complete GPS track of G-BVXS and the radar track of G-IICI from time 1358:22 hrs (coincident with G-BVXS beginning its takeoff rollout) are illustrated at Figure 3, together with the collision point and wreckage

Footnote

[3] The actual recorded GPS altitude has been converted to height above airfield level such that the takeoff ground roll occurs at zero feet.

[4] Note that the period between the last two pairs of recorded points was 15 and 10 seconds respectively.

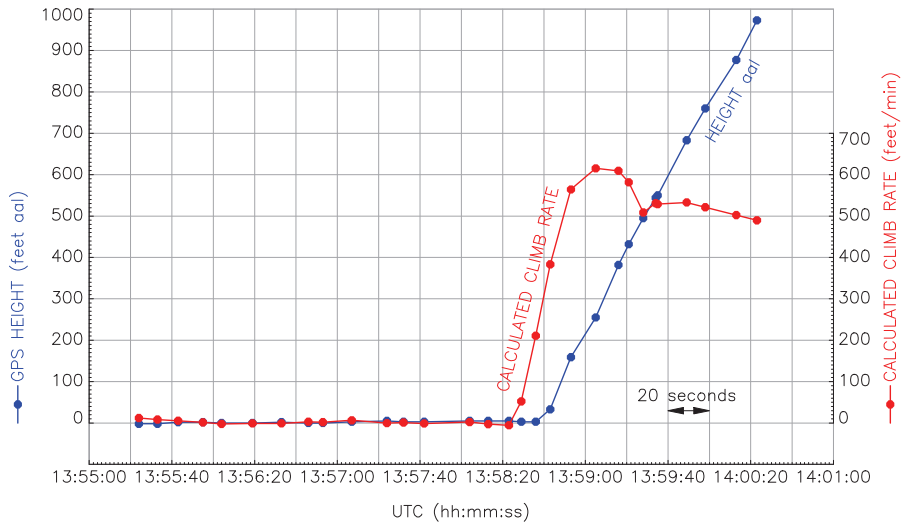

Figure 2

GPS derived height above airfield level for G-BVXS

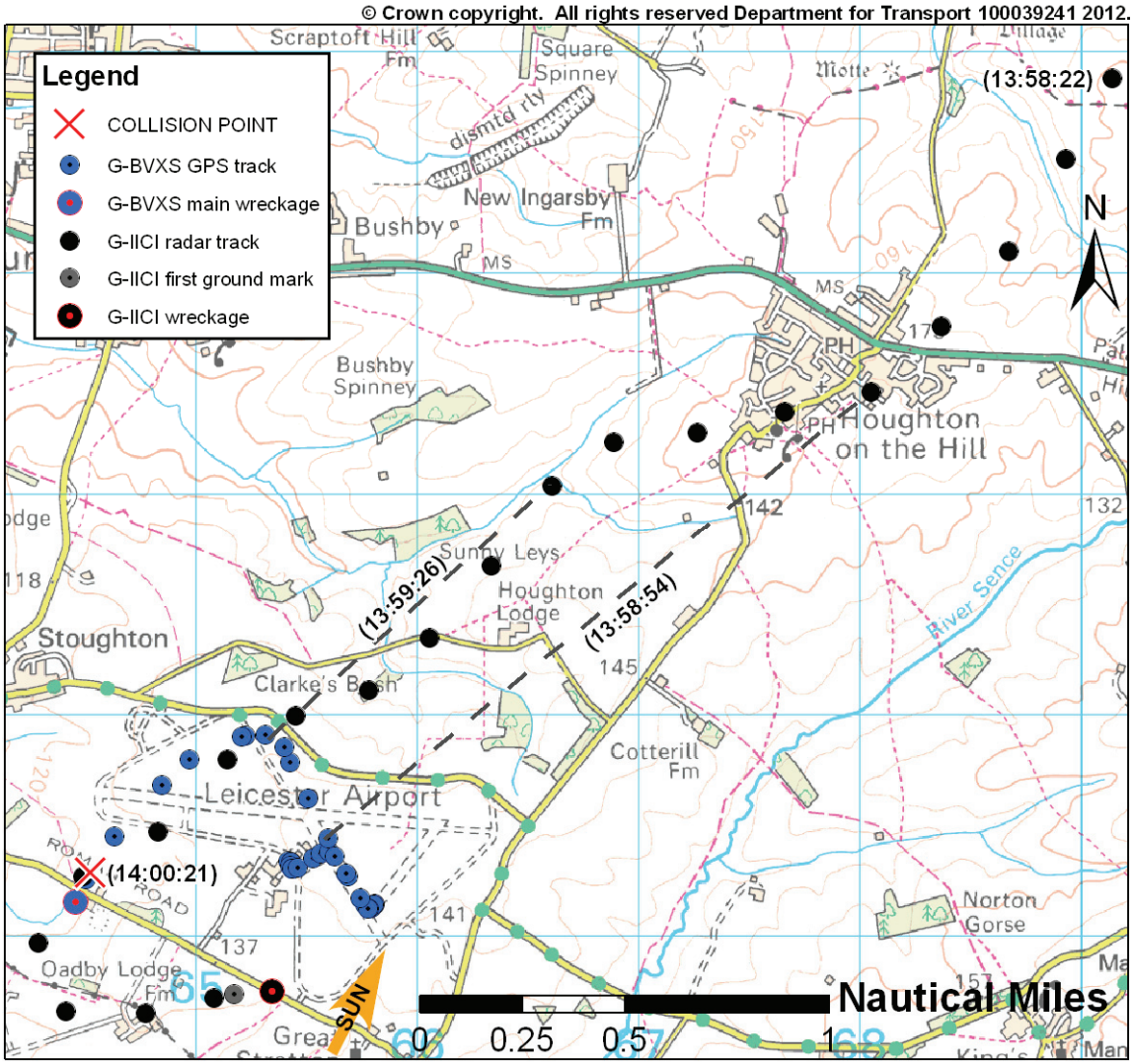

Figure 3

G-BVXS and G-IICI ground tracks from GPS and radar

locations of both aircraft. Also indicated are the relative positions of both aircraft to each other at a number of points leading up to the collision. They show that G-BVXS was either directly ahead, but under the nose (and in the general direction of the sun – also indicated), of G-IICI, or on a constant bearing from the time G-IICI turned onto the crosswind leg, until the collision.

Video evidence

The pilot of G-IICI was wearing a headset and canvas aerobatic pilot helmet with a *Mini DV* digital video camera mounted on the top left (thus filming slightly higher than the pilot's line of sight). The camera was recording at 25 frames per second, with 720 x 480p resolution and a field of view of about 140°.

A general observation from the video was that the pilot of G-IICI was moving his head left to right, consistent with his statement that he was keeping a good lookout as he joined the circuit.

The audio recording from the camera was taken from its own microphone such that any radio transmissions or conversations between the pilot and passenger were generally masked by the sound of the engine. However, at time 1356:38 hrs, with the aircraft passing the village of Twyford 6 nm to the north east of the airfield, unintelligible speech could be heard immediately after the pilot momentarily looked down inside the cockpit. He subsequently flew some seven rolling aerobatic manoeuvres; the last manoeuvre was completed at 1358:34 hrs when the aircraft was about 2.3 nm from Leicester Airport. The pilot momentarily looked down again at 1358:49 hrs with the aircraft at Houghton-on-the-Hill (just under 2 nm from the airfield). This is consistent with the pilot's statement that he checked the QFE after making his joining transmission. An image from the video recording at this time is given at Figure 4 which also shows the altimeter indicating 1,200 ft aal.

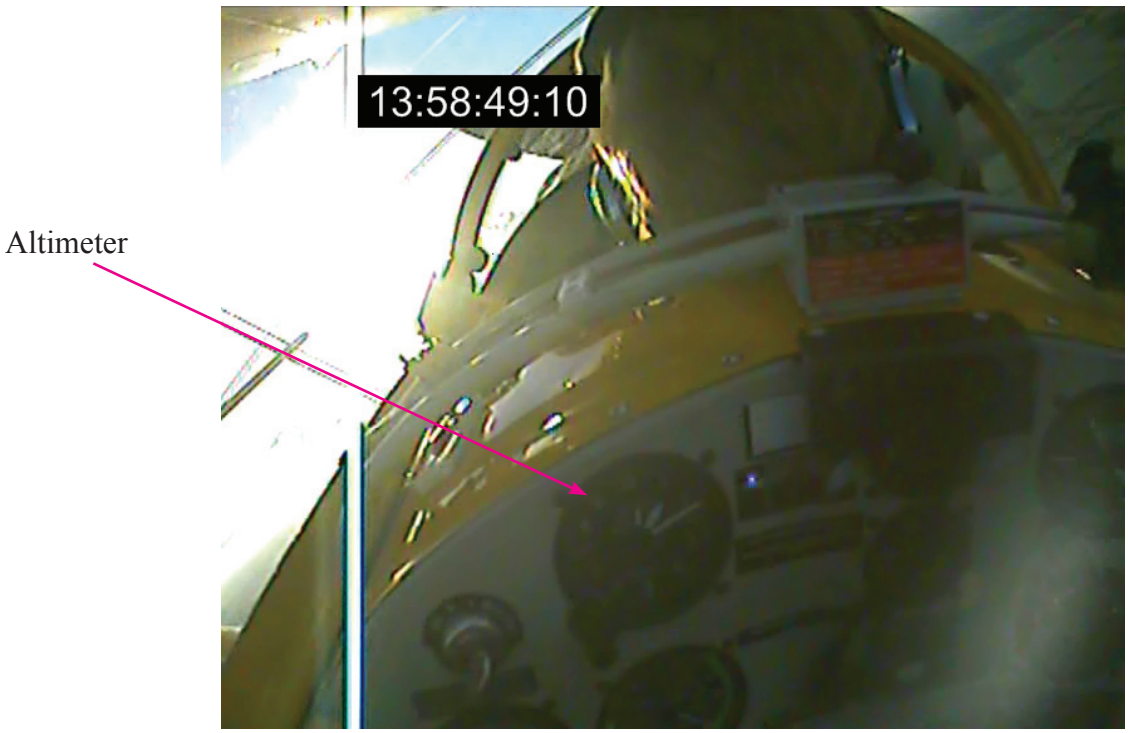

Figure 4

Head-down view from helmet-mounted camera video recording as the aircraft reaches Houghton-on-the-Hill with the altimeter visible and indicating 1,200 ft

Figure 5

View from helmet-mounted camera with the airfield just in view

Figure 5 is an image from the video recording with the airfield just visible at the bottom and left of centre, with the sun clearly in the view. G-BVXS would have been out of view, masked by the nose of G-IICI. This image also shows that, given the lack of contrast between G-BVXS and the surrounding countryside and the position of the sun[5], the aircraft would have been difficult to detect visually[6].

The first recorded view with G-BVXS in the image occurred just before 1400:19 hrs, as the pilot moved his head from left to right (Figure 6). The collision occurred two seconds later during which time the pilot continued this look out scan to the right and then scanned back to the left and right again. The nose of G-IICI was not always in the camera's field of view during the head turns so only glimpses of G-BVXS were seen in the subsequent video images.

Medical examination

A post-mortem examination of the pilot of G-BVXS was carried out by a consultant aviation pathologist. He concluded that the pilot died as a result of multiple injuries consistent with having been caused when his aircraft struck the ground. Additionally, there were no medical or toxicology factors that may have contributed the accident.

Footnote

[5] The sun's appearance as seen on the video is not necessarily representative of how it would be perceived by the pilot.

[6] Limitations of the See-and-Avoid Principle; ATSB Research Report, April 1991, http://www.atsb.gov.au/publications/1991/limit_see_avoid.aspx states "*...particularly poor contrast between an aircraft and its background can be expected when:...• A dark aircraft appears against a dark background*". The report also discusses the effect of glare and its "*reduction in visual effectiveness*".

Figure 6

First recorded image with G-BVXS in view (a small portion of the left wing and strut is visible at the junction of G-IICI's propeller blade and upper nose cowling)

Airfield information

Leicester Airport is 469 ft amsl and has three runways orientated 15/33, 04/22 and 10/28. It has a 2 nm diameter Aerodrome Traffic Zone (ATZ) centred on the mid-point of Runway 10/28 from the surface to 2,000 ft aal.

An air/ground communications service (AGCS), callsign 'Leicester Radio' was provided by an A/G. The introduction to CAP 452, *Aeronautical Radio Station Operator's Guide* states the following:

> *'1.1 Air Ground Communications Service (AGCS) is a service provided to pilots at specific UK at aerodromes. However, it is not viewed by the UK as an Air Traffic Service because it does not include an alerting service as part of its content.*
>
> *1.2 AGCS radio station operators provide traffic and weather information to pilots operating on and in the vicinity of the aerodrome. Such traffic information is based primarily on reports made by other pilots. Information provided by an AGCS radio station operator may be used to assist a pilot in making a decision; however, the safe conduct of the flight remains the pilot's responsibility.'*

The section on Leicester Airport in the *UK Aeronautical Information Publication* states the following:

> *'FLIGHT PROCEDURES*
>
> *1. Circuits*
>
> *a. All fixed-wing circuits are to the left.*
>
> *b. The standard overhead join is preferred for fixed wing.*
>
> *c. Fixed wing circuits will be at 1000 ft QFE.'*

Commercially available flight guides also state '*the standard overhead join is preferred'*.

Leicestershire Aero Club Pilots' Order Book

Leicester Airport was operated by Leicestershire Aero Club. All members of Leicestershire Aero Club are to indicate they know and understand the contents of the orders book by signing prior to first flying at Leicestershire Aero Club, annually or after the issue of amendments.

> ***'ORDER No: 2.4 - Turns after take-off***
>
> *Provided the ANO and Rules of the Air are complied with at ALL times:*
>
> *2.4.1 Pilots shall not make turns immediately after take-off below 1000 feet above ground level when departing from Runway 28, or 500 feet from any other Runway.*
>
> ***ORDER No: 5.3 - Signals square and signal instructions from ATC***
>
> *Order 5.3.3: An Air/Ground Service only provides basic information and may not give instructions. Pilots shall notify the A/G station of their intentions at all stages of the taxi, take-off and whilst in the circuit or ATZ. Pilots are responsible for deciding the course of action in all circumstances.*
>
> ***ORDER No: 5.4 - Circuit procedures***
>
> *5.4.1. Normal circuit height is 1000 feet agl (QFE) and the circuit direction is left hand.*
>
> *5.4.2 When using Runway 28, all aircraft are to climb straight-ahead maintaining runway centre line to 1000 feet A.G.L before turning.*
>
> *5.4.4 Pilots shall report **DOWNWIND** with their intention (Land, Go-around or Touch and Go) and any non-standard powered approach information (eg: Glide-Approach, Flapless etc.).*
>
> ***5.4.9 VFR Circuit Rejoin***
>
> ***A VERY GOOD LOOKOUT MUST BE KEPT WHEN REJOINING***
>
> *5.4.10. Rejoins are variable. Either:*
>
> *a) Overhead at a height of typically 2000 feet agl, but not below 1500 feet agl commencing descent on the DEADSIDE once passed the centreline of the active runway in an arc so as to cross the upwind end and 1000 feet agl (to join the conventional crosswind leg). An appropriate R/T call must be made prior to commencing the descent. Descending aircraft must give way to traffic already established in the circuit.*

b) Rejoin directly onto a conventional circuit leg (crosswind, downwind, base) at the circuit height of 1000 feet agl. Joining traffic must make their intentions know by R/T prior to entering the ATZ and give way to established circuit traffic.

ORDER No: 5.6 - Lookout near and within the circuit

5.6.1 Qualified pilots and solo students are responsible for maintaining a vigilant lookout and adequate separation within the ATZ.

5.6.2 Pilots are to report entering the ATZ, joining with position, Downwind and Final.

ORDER No: 5.8 - Use of RTF

5.8.4 The following positional calls will be made to Leicester Radio (whether manned or otherwise):

***Downwind** - when abeam the upwind end of the active runway.*

***Final/full stop** - when the turn from base leg onto final approach is complete.*

***Final/touch & go** - when the turn from base leg onto final approach is complete.'*

At the time of the accident it did not state an overhead join was preferred. The operator of Leicester Airport stated that an amendment has been issued to include that overhead joins are preferred to align with the advice given in the AIP.

CAA Safety Sense Leaflets

CAA Safety Sense Leaflet 6, *Aerodrome Sense,* states the following:

'3 Arrival

i) Keep a good lookout, using others' radio calls to help identify all traffic joining or already in the pattern. Give way to aircraft already in the pattern.

4 CIRCUIT PATTERN

a) Follow the pattern illustrated [standard overhead join], unless a different procedure is published. Watch out for others who may follow the 'wrong' pattern.'

It also includes a diagram of an overhead join (Figure 7).

CAA Safety Sense Leaflet 13, *Collision Avoidance*, contains advice for avoiding mid-air collisions and in its summary contains the following points amongst others:

'• Plan your flight so you are looking ahead for expected features.

- *Plan to avoid busy areas if possible.*
- *Beware of blind spots, move your head or manoeuvre the aircraft.*
- *Spend the minimum time with your head down checking the charts (or GPS), changing radio frequencies etc.*
- *Aircraft below you may blend into the background of buildings etc.*

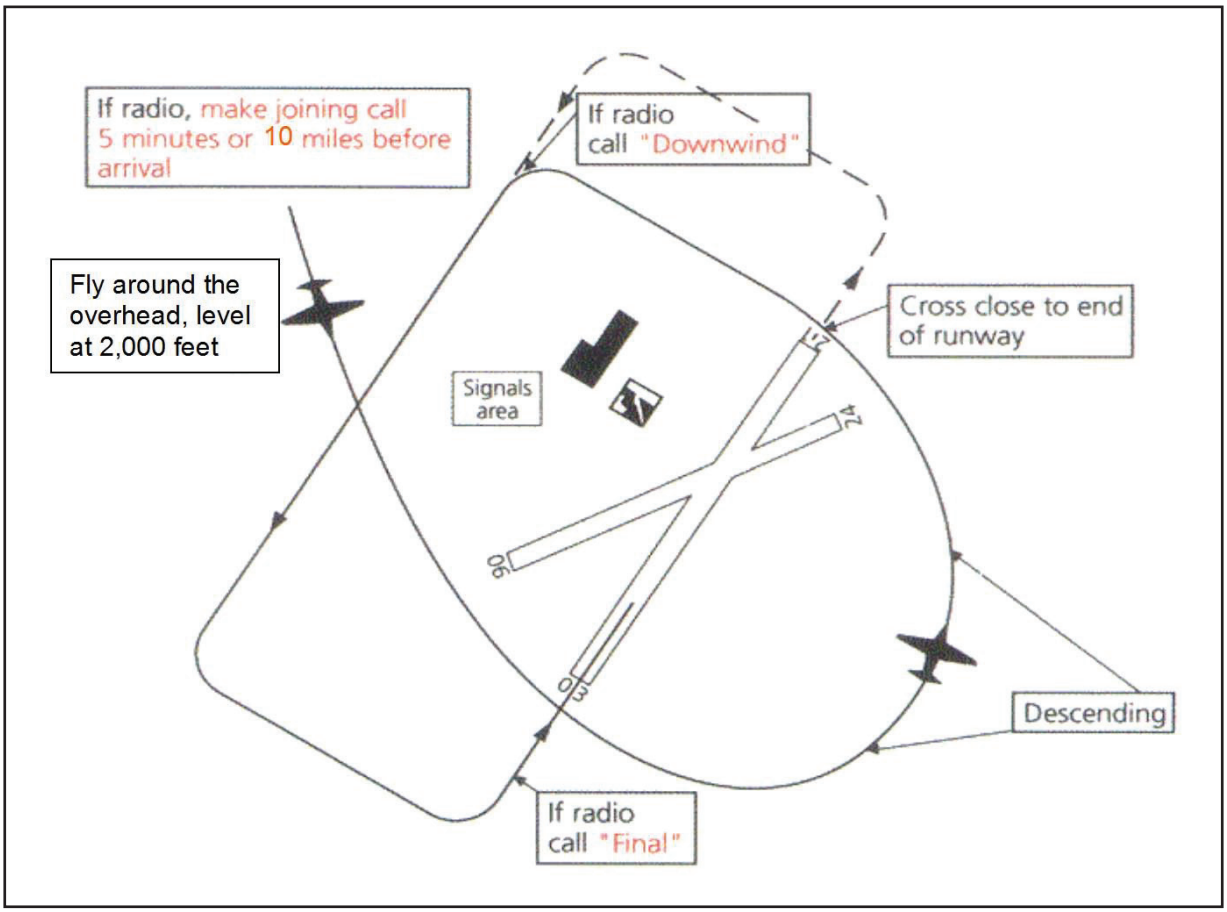

Figure 7

Diagram of the overhead join from CAA Safety Sense Leaflet 6

- *Use LARS and other radio information to form a mental picture of what is going on. Don't rely solely on it – someone could be NON-RADIO.*
- *Encourage your passengers to assist in the look-out.'*

ATC procedures

An ATZ has the characteristics of the airspace in which it is located. The Leicester ATZ is located within an area of Class G 'uncontrolled' airspace. As such, ATC are not required to provide 'separation' between VFR traffic.

Civil Aviation Publication (CAP) 393, *Air Navigation: The Order and the Regulations, Section 2, The Rules of the Air Regulations 2007* states in *Section 4, General Flight Rules*:

'Avoiding aerial collisions

'8 (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.'

Analysis

The GPS data from G-BVXS and the images of the aircraft captured on the helmet-mounted camera indicated that the aircraft's engine and controls were performing normally at the time of the collision. The pilot of the G-IICI did not report any technical problem with his aircraft, and nothing significant was found during the inspection of the controls for both aircraft. It is therefore very unlikely that there was a technical problem that caused or contributed to the accident.

The video images from the helmet-mounted camera showed that G-BVXS was approximately wings level (wings parallel with the horizon) when the collision occured. G-IICI was banked at approximately 30° to the left, almost on the same heading as G-BVXS, with the spinner of G-IICI approximately half a metre below and to the right of the tail wheel of G-BVXS. The witness mark located halfway along one of the propeller blades of G-IICI (which appeared to match the damaged tail wheel of G-BVXS) and the fact that the right main wheel of G-BVXS became detached but the left wheel remained attached, are all consistent with analysis of the flight paths using the video images.

The pilot of G-IICI turned down the volume on the aircraft's radio prior to commencing aerobatics. He then turned it up again about 6 nm from Leicester and flew some rolling aerobatic manoeuvres prior to making his joining call at about 2 nm from Leicester Airport. During this time the pilot of G-BVXS started up, taxied out and took off making all appropriate calls as he did so.

In appropriate conditions, a standard overhead join offers the opportunity for a pilot to gain improved situational awareness of other circuit traffic. The pilot of G-IICI had not carried out a standard overhead join due to his assessment of the cloud base to the north of the airfield. In addition, situational awareness may have been improved by keeping the radio's volume to a level at which radio calls from other aircraft in the circuit can be heard and making joining radio transmissions 5 mins or 10 nm from the airport, as recommended in Safety Sense Leaflet 6.

The GPS and radar data confirmed the two aircraft were on a converging course. The video evidence shows that G-BVXS was climbing but obscured from the view of the pilot of G-IICI by the nose of his aircraft.

The lack of contrast between G-BVXS and the surrounding countryside, compounded by the position of the sun, would have made it difficult for the pilot of G-IICI to detect the other aircraft visually.

It is not known if the pilot of G-BVXS heard the transmissions from the pilot of G-IICI or the responses from the A/G operator. As G-BVXS was turning onto the crosswind leg after takeoff, G-IICI would have been above and to the right of G-BVXS and about 1 nm away. However, after completing the turn onto the crosswind leg, G-IICI would have been behind and above G-BVXS, and therefore would not have been visible to the pilot of the G-BVXS.

Conclusion

The mid-air collision occurred when both aircraft were on the crosswind leg of the visual circuit, soon after G-BVXS had taken off and as G-IICI had joined the circuit from the northeast. The two aircraft collided because their respective pilots either did not see the other aircraft, or did not see it in time to take effective avoiding action. Contributory factors were a combination of poor forward visibility from G-IICI, the lack of contrast between G-BVXS and the surrounding countryside, the position of the sun and the relative positions of G-IICI and G-BVXS.

ACCIDENT

Aircraft Type and Registration:	Gemini Flash IIA, G-MVSV
No & Type of Engines:	1 Rotax 503 piston engine
Year of Manufacture:	1989 (Serial no: 757-589-5-W550)
Date & Time (UTC):	12 April 2012 at 1305 hrs
Location:	Near Clackmannan, Scotland
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Fatal) Passengers - N/A
Nature of Damage:	Aircraft destroyed
Commander's Licence:	None
Commander's Age:	49
Commander's Flying Experience:	Not known
Information Source:	AAIB Field Investigation

Synopsis

Immediately after takeoff, the weight-shift microlight entered a steep climb. The nose then dropped (probably as a result of a stall) and the aircraft struck the ground in a steep nose-down altitude. The owner piloting the aircraft was fatally injured. This was the owner's first flight in the aircraft and also his first solo flight. There was no evidence that the pilot had received any formal training prior to this attempt.

History of the flight

The owner mentioned to some friends that he would be flying his microlight from a field near Alloa, Scotland on 12 April 2012 and invited them to attend. Two of them arrived at the field. One of them had limited knowledge of aviation and the other was an experienced microlight pilot.

The aircraft was nearing the completion of the rigging process, with the wing already attached to the trike. The experienced pilot assisted the owner to complete the rigging and the owner then carried out an inspection of the aircraft using the pre-flight checklist contained in the operating manual.

Having prepared the aircraft, the experienced pilot taxied it from the small paddock, where it had been rigged, into the large field from which it was intended to operate. The pilot climbed out of the trike and discussed with the owner aspects of the flight to be performed. The engine, which had been idling, stopped, but the owner indicated that this was not unusual when it was not properly warmed up. The owner donned a one piece suit, a protective helmet and secured himself into the trike seat. The experienced pilot pulled the

starting handle for the owner and the engine started. The owner taxied the aircraft around the edge of the field, and lined up facing the south-east diagonal of the field, which was the takeoff run proposed by the experienced pilot.

Power was increased but not sufficiently to take off, and the aircraft accelerated to a fast taxi speed. After it stopped the experienced pilot explained to the owner that he would need full power to become airborne. The owner responded that he was just carrying out a fast taxi and then taxied back to the downwind end of the field. The weather was good with a light, 5 kt wind from the south east. The owner increased the power to a high power setting and the microlight accelerated across the field but veered slightly left of the intended takeoff path. It became airborne and pitched nose-up; this attitude increased rapidly to a very steep climb. The power was then heard to reduce and the nose dropped rapidly. The power then increased and the aircraft struck the ground, nose first. The owner was fatally injured.

Owner's background and flying experience

The owner had not joined a microlight club and no record was found of his having attended any formal flying training course. He did not have a medical declaration, which is required prior to flying solo in a microlight. A pilot stated that he had flown with the owner on one occasion, but the owner was a passenger and did not operate the aircraft. This was prior to the owner purchasing G-MVSV. There was some anecdotal evidence that the owner had taken lessons, but theprovider was not traced and it is not known how many lessons were undertaken or if the person delivering them was aqualified instructor. Documentation belonging to the owner was subsequently found that contained the aircraft manuals, together with ground school course notes, including sections on performance and meteorology.

Takeoff technique

The Aircraft Manual provides the following information regarding takeoff:

> *'Take Off*
>
> *Take offs are straight forward and the wing will lift the weight and hence fly when the correct airspeed is reached. The correct technique is to hold the wing back slightly during the initial stages of the take off run so as to reduce the drag and increase the acceleration. At around 20 mph, allow the bar to move forward, and as the aircraft accelerates push forwards slightly until the aircraft un-sticks. The trike unit will swing forward under the wing, and a wise pilot will hold the aircraft climb rate down until a safe climb out speed is reached. Never, ever, push the bar full out holding it there as the aircraft claws its way skywards. Climbing on the propeller this way is inefficient, indicative of poor-piloting technique and very dangerous in the event of turbulence or engine failure'*

The Aircraft Manual gives the stall speed as 22–24 kt depending on aircraft all-up weight with a height loss of 80-90 ft during recovery.

Pathological and medical information

A post-mortem examination was carried out which established that the pilot had died of multiple injuries sustained as a result of the accident. The pathologist reported that there was no evidence of drugs or alcohol having been consumed or natural disease which could have contributed to the accident.

Accident site details

The field that was being used as an airstrip consisted of an area of pasture bordered by a post and wire fence, giving an essentially rectangular layout. The length of the rectangle was approximately 225 m, with the southeast-facing diagonal providing some additional distance available for use as a runway. The ground was firm, with short grass, although there was a small, poorly drained area in the centre of the field in which standing water was visible.

The trailer on which the aircraft had been transported was found in the adjacent paddock. Additional items were found nearby, including cleaning equipment, a full fuel can and the aircraft manufacturer's instruction manual, which was open at the 'aircraft rigging' and 'pre-flight inspection' pages.

On site investigation

A number of tyre tracks were visible, where the aircraft had been taxied around prior to the flight. In addition there was a straight set of tracks that was considered most likely to have been made on the takeoff run. These originated in the northern corner of the field and curved onto a track of approximately 128ºM, which would have been predominantly into wind. The tracks became increasingly difficult to discern, with the nosewheel being the first to disappear completely. No tracks were visible after approximately 110 m from the estimated start of the takeoff roll; this was before the area of standing water in the centre of the field had been reached. The aircraft had come to rest approximately 100 m beyond the estimated lift-off point.

It was apparent that the aircraft had struck the ground in a steep, nose-down attitude, banked to the right. The main impact had been borne by the nose of the trike, shattering the fibreglass nose of the fairing and causing extensive disruption to all the structural members of the trike. This had allowed the propeller to contact parts of the landing gear struts, causing substantial damage to the propeller blades, with one of the tips becoming detached and thrown several metres beyond the main wreckage. The degree of damage suggested that the engine was developing power at impact. The right wing leading edge spar had bowed such that the right wing had partially inverted after it had struck the ground, with part of the trike, including the engine, having come to rest on its underside.

After the accident, fuel was reportedly leaking around the engine and the emergency services had applied clamps to the fuel feed and vent lines that were connected to the fuel tank in the rear of the trike. The tank was subsequently found to contain nearly 4 litres of fuel. Witness information indicated that the total contents had been around 7 litres before the accident.

The right wing leading edge spar had broken close to the apex which, together with some general distortion to the leading edge, was indicative of the right wing's impact with the ground. The fabric of the wing had remained largely intact and there was no evidence of pre-impact damage, such as tears. All the wing battens, which give the wing its cambered shape, were in place.

The aircraft manufacturer recommends that ballast be carried on the rear seat when flying this aircraft solo. No ballast was observed on the rear seat or found after the accident.

History of the aircraft

The aircraft had been owned by a pilot in Yorkshire for most of its life. It was kept under cover and the available records indicate that the Permit to Fly was most recently renewed on 29 April 2008 which, according to the aircraft's log book, was the last time

it flew. It was sold in late summer of 2011. The new owner did not renew the Permit and, when his personal circumstances suddenly changed approximately one month later, he decided to sell the aircraft on. This resulted in the person who was subsequently involved in the accident acquiring the aircraft during the autumn of 2011. The two ownership changes were not notified to the Civil Aviation Authority, who de-registered the aircraft in December 2011.

Detailed examination of the aircraft

It was noted that all but one of the rigging wires had remained intact. The exception was a pitch control cable, running between the right hand end of the 'A' frame control bar to the rear of the wing keel. The cable was encased in a red plastic sheath and appeared to have been cut: a fragment of the sheathing material was found on a piece of propeller blade, indicating that the cable had been severed by the propeller during the impact sequence.

The front strut, which connected the top of the monopole to the front end of the trike keel beam, was made up of three sections that were pinned together. It was found to have broken at the top and at the junction of the central and lower sections. The fractures were consistent with having occurred at impact. A secondary loadpath was provided by a cable within the strut, with integral eye ends that engaged with the same pins that joined the strut sections together. This was a modification introduced to preserve a measure of structural integrity in the event of the strut breaking as a result of a violent contact with the control bar, such as has occurred in aircraft 'tumbling' events. It was found that the lower section of cable was not connected to the centre section, in that the connecting pin, although correctly securing the strut sections, did not pass through the cable eye end.

Elsewhere on the aircraft, it was noted that the trike was suspended, via its mounting block, from the central of three available holes in the wing keel beam, thereby giving the most neutral of trim settings. The adjustable wing tip sections had five settings that controlled the tip incidence and hence the washout angles. It was observed that the right hand tip was set at the No 4 position, which was one stop from the maximum incidence, while the left tip was found to be at the No 2 position, ie one stop from the minimum incidence angle. In fact this position corresponded to the manufacturer's neutral setting, and was marked as such.

The leech lines rigging adjustment controlled the tension in the wires running between the top of the king post and the wing trailing edge. This was found to be at the lowest tension setting, which is the least stable in terms of wing pitching moment. However, all the adjustments described above are permitted by the aircraft manufacturer.

Finally, the wing battens, which consist of specifically profiled alloy tubes that give the wing its upper and lower surface shape, were examined and compared with the manufacturer's drawings. It was found that many of the battens from the left wing had become distorted after contacting the wing cross-tube during the impact. However, either side of the distortions the profiles closely matched the drawings. The right wing battens were more difficult to assess, due to the more severe damage caused to the wing during the impact.

Analysis

The accident occurred on the first attempted solo flight by the owner who may not have undertaken a formal course of flying training and who possibly only had limited experience of flying as a passenger. Whilst the owner appeared to be in good health, he did not hold the required medical declaration prior to undertaking a

solo flight. The individual assisting him to prepare the aircraft was an experienced weight-shift microlight pilot but was not an instructor.

The owner had acquired an aircraft that was de-registered by the CAA and it had not been inspected by appropriate persons for approximately three years. Despite this, the aircraft appeared in good condition and no evidence was found of a pre-impact failure of any component. Enquiries of previous owners suggested that the wing battens had not been adjusted from the manufacturer's settings. The subject owner is unlikely to have altered the wing tip washout or any of the other permitted adjustments, even if he had been aware of their effects, as he had no experience of how the aircraft handled in its as-received state. Examination of the aircraft revealed that a section of the back-up safety cable located within the front strut of the trike had not been connected. This had no bearing on the accident, but could be seen as another indication of the pilot's lack of familiarity with the aircraft. The omission is likely to have occurred during the process of assembling the wing to the trike.

The engineering investigation did not identify any technical cause for the extreme nose-up pitch achieved during the initial climb. In the absence of such evidence, it is probable that the owner did not use the correct takeoff technique and allowed the wing to remain in a high angle of attack. The rapid nose drop probably occurred as the result of a stall which may have been exacerbated by the reduction in power. The resulting nose-down attitude, with the possible subsequent addition of power so close to the ground, would have made recovery difficult.

The investigation concluded that the accident occurred as a result of the owner attempting a solo flight without undertaking the required training.

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:	Aeronca 11BC Chief, G-BUTF
No & Type of Engines:	1 Continental Motors Corp C85-8F piston engine
Year of Manufacture:	1947
Date & Time (UTC):	20 June 2012 at 1345 hrs
Location:	High Easter Airfield, Essex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to rudder, tailplane, tailwheel, left wing and right main wheel
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	41 years
Commander's Flying Experience:	71 hours (of which none were on type) Last 90 days - 8 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot, who had not flown the aircraft type before, taxied the aircraft around the airfield, including a fast taxi along the runway to satisfy himself that he "felt confident at the controls". He then taxied to the beginning of the runway, lined-up and applied full power. At 25 to 35 mph and with the tail up, he felt the aircraft drifting to the left and applied right rudder to compensate. As he did so, the aircraft turned sharply right. He lowered the tail and selected "power off" but the aircraft skidded into a crop to the right of the runway. The left wingtip, rudder, tailplane, tailwheel and right mainwheel were damaged before the aircraft stopped. The pilot believed that he accidentally depressed the right heel brake when applying the initial right rudder correction.

ACCIDENT

Aircraft Type and Registration:	Bell 206L-3 Longranger III, G-LVDC
No & Type of Engines:	1 Allison 250-C30P turboshaft engine
Year of Manufacture:	1989 (Serial no: 51300)
Date & Time (UTC):	8 July 2012 at 1000 hrs
Location:	Near Silverstone, Northampton
Type of Flight:	Commercial Air Transport
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to the vertical fins and main rotor blades
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	52 years
Commander's Flying Experience:	1,737 hours (of which 126 were on type) Last 90 days - 57 hours Last 28 days - 23 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

While taking off, the helicopter's low rotor rpm warning horn sounded. The pilot entered autorotation and carried out a forced landing into a field. Having landed, lowered the collective and closed the throttle, the pilot re-opened the throttle and lifted into the hover, watching the engine gauges. All appeared normal and the pilot flew on to his destination.

Following the flight, damage was discovered on the vertical fins and main rotor blades. This was linked to the forced landing. No fault was found with the engine, fuel, fuel system or associated controls.

History of the flight

The pilot had dropped passengers at Silverstone Circuit and was taking off to return to the "feeder site", some 12 km to the east. In the climb, at about 300 ft, the low rotor rpm warning horn sounded and he immediately lowered the collective lever to enter autorotation and carry out a forced landing into a field. The warning horn remained on throughout the autorotation but the landing was successful with a short run-on, although the pilot noticed some "rocking". He lowered the collective lever and closed the throttle to idle. He then opened the throttle and lifted into the hover, watching the engine gauges. Everything appeared normal, so he transitioned out of the field and returned to the feeder site without further incident. After shutdown, he noticed that the vertical fins on the horizontal stabilisers were

damaged and that there was associated damage to the main rotor blades.

In his report, the pilot linked the damage to the landing in the field but was unsure of the reason for the low rotor rpm. He concluded that there was either a "transient reduction in engine power" or that the throttle was not fully open on departure.

Subsequently, the engine, fuel, fuel system and associated controls were examined by a maintenance company and no faults were found. The engine was also run on a test bed at an engine test facility but, again, no faults were detected.

ACCIDENT

Aircraft Type and Registration:	Bolkow BO 209-160FV Monsun, G-EFJD
No & Type of Engines:	1 Lycoming IO-320-D1B piston engine
Year of Manufacture:	1971
Date & Time (UTC):	11 June 2012 at 1201 hrs
Location:	Perranporth Airfield, Cornwall
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Nose landing gear, propeller, engine and cowling
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	70 years
Commander's Flying Experience:	281 hours (of which 106 were on type) Last 90 days - 6 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot reported that after making a short local flight, he intended to perform a touch-and-go on Runway 05 at Perranporth Airfield. He flew a curved approach from the downwind position and touched down on the mainwheels. As he gently lowered the nose landing gear onto the runway it collapsed, causing the propeller to strike the runway and shatter. The aircraft slid for a short distance but remained on the runway. The pilot made the aircraft safe and vacated it with his passenger; there were no injuries. The weather conditions were reported as good, with the surface wind from 330° at 15 kt.

ACCIDENT

Aircraft Type and Registration:	Cessna 152, G-BNAJ
No & Type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1979 (Serial no: 152-82527)
Date & Time (UTC):	14 August 2012 at 1405 hrs
Location:	Runway 20, Shoreham Airport, West Sussex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - 1 (Minor) Passengers - N/A
Nature of Damage:	Nosewheel assembly, nose, propeller and radio antenna
Commander's Licence:	Private Pilot's Licence
Commander's Age:	62 years
Commander's Flying Experience:	99 hours (of which 6 were on type) Last 90 days - 7 hours Last 28 days - 5 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot was carrying out practice circuits at Shoreham Airport; the reported wind was 180º at 6 kt. On the first approach to Runway 20, the pilot stated that he was a "little fast", and touched down "slightly" hard before bouncing back into the air. The second and final approach was again fast buton touchdown the nose landing gear collapsed. As it collapsed, the nosewheel and nosewheel leg both separated from the aircraft and the propeller sustained damage as it struck the ground. The lower surface of the aircraft nose also sustained damage as the aircraft slid and veered to the left, stopping at the edge of the paved runway. The pilot was uninjured.

ACCIDENT

Aircraft Type and Registration:	Cessna T210M Turbo Centurion, G-BEYV
No & Type of Engines:	1 Continental Motors Corp TSIO-520-R piston engine
Year of Manufacture:	1977 (Serial no: 210-61583)
Date & Time (UTC):	20 July 2012 at 1130 hrs
Location:	Runway 20, North Weald Airfield, Essex
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to gear doors, left wing tip and aileron, left horizontal stabiliser
Commander's Licence:	Private Pilot's Licence
Commander's Age:	41 years
Commander's Flying Experience:	593 hours (of which 32 were on type) Last 90 days - 11 hours Last 28 days - 6 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The pilot was unable to lower the main landing gear and, despite attempts by the pilot and passenger to lower the gear, the aircraft landed with the nose gear extended and the main landing gear still retracted. It is likely that the cause was either an in-flight loss of hydraulic fluid or an internal failure in the hydraulic pump.

History of the flight

Following an uneventful flight from Thurrock, in Essex, the pilot selected the landing gear down while approaching his destination airfield of Nottingham. However, the 'down and locked' indication for the main gear failed to appear and the pilot was aware that the electrically-operated hydraulic pump that powered the system continued to run. After over-flying the airfield the pilot received information from observers on the ground that the nose gear appeared to be down and locked, the main gear doors were open but the landing gear itself had remained within the wheel well.

The aircraft flew overhead the airfield while the pilot carried out the checks and actions in accordance with the Pilot's Operating Handbook. Dispite operating the manually-operated back-up pump, the main landing gear remained in the 'up' position.

The passenger was co-owner of the aircraft with the pilot and both had an in-depth knowledge of the aircraft

systems. The passenger was able to access the hydraulic reservoir, which was located in the right footwell, and pour in some hydraulic fluid. Further operation of the handpump failed to lower the gear, with virtually no resistance to the pumping action being felt, leading to the conclusion that no pressure was being generated. It was then decided to divert to North Weald Airfield where the aircraft conducted two low passes that allowed personnel in the tower and airfield fire service to make a visual assessment. Their observations accorded with those made earlier at Nottingham. Realising that the nose gear could not be retracted, and that as a consequence the aircraft would tip over on landing, the pilot burned off fuel from the right hand fuel tank, thus making the aircraft slightly 'left wing heavy'. Meanwhile the passenger moved his seat to its fully aft position, leaving the right hand door readily accessible for evacuation after landing.

After the emergency services had positioned themselves adjacent to the runway, the pilot brought the aircraft in to land, with the touchdown initially on the tie-down hook on the rear fuselage. He then lowered the nosewheel to the ground. As the aircraft slowed it tilted to the left, as the pilot had intended, causing the left wing tip and left horizontal stabiliser to contact the runway surface. The nosewheel then castored to the right, with the result that the aircraft turned right through 180º before coming to a halt. Both occupants, who were uninjured, evacuated the aircraft via the right hand door.

The investigation

During a subsequent inspection of the aircraft, the only obvious indication as to the potential cause of the landing gear problem was the left main landing gear door hydraulic actuator, in which the piston had been pushed clear of the actuator body. Whilst this would have allowed the hydraulic fluid to escape, thus dissipating the pressure, it was not clear whether the actuator failure had precipitated the incident, or had occurred during the ground slide.

As far as the main landing gear is concerned, a DOWN selection results in hydraulic pressure being applied to the door actuators. When these have extended, the system is sequenced so that pressure is then applied to the uplock actuator. This releases the uplocks which in turn allow the gears to extend under the action of the main gear actuators. However, it was confirmed after the accident that the main gears had remained engaged with the uplocks. In the event that hydraulic fluid was lost at some stage during the door deployment, either via the door actuator or elsewhere, it would not be possible to apply release pressure to the uplock actuator. The manually-operated lever would be similarly ineffective in progressing the gear lowering sequence – again, due to the loss of fluid (the manual system is generally only effective in the event of a failure of the electric motor that drives the hydraulic pump.) However, in addition to the possibility on an in-flight fluid loss, it is also possible that an internal hydraulic pump failure occurred, such that there was no delivery pressure to the system.

It is anticipated that the repair of the aircraft could take a number of months. The repair organisation intends to conduct a detailed inspection and test of the landing gear hydraulic system in order to determine the reason for the failure. Any pertinent information arising from this may be published in an Addendum to this Bulletin.

It is noteworthy that Cessna 210 series aircraft constructed during 1979 and onwards were equipped with a modified hydraulic system that deleted the main landing gear uplocks and doors. In this design, the gears are maintained in the UP position by means of hydraulic pressure.

SERIOUS INCIDENT

Aircraft Type and Registration:	DH82A Tiger Moth, G-APFU
No & Type of Engines:	1 De Havilland Gipsy Major 1C piston engine
Year of Manufacture:	1943 (Serial no: 86081)
Date & Time (UTC):	16 August 2012 at 0955 hrs
Location:	Goodwood Aerodrome, West Sussex
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to engine and propeller
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	3,317 hours (of which 2,006 were on type) Last 90 days - 21 hours Last 28 days - 8 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot had already conducted three flights before the incident occurred. Runway 24 was in use, with a strong wind blowing directly across the runway. Before the fourth flight, ATC warned the pilot that the wind was increasing, and that gusts of 30 kt had been observed. The pilot elected to continue the planned flight. The initial stages of takeoff were normal, but as the pilot lifted the tail during the takeoff run, the aircraft was pitched forward onto its nose by what the pilot described as a gust of wind. Both occupants, who were wearing full harnesses and protective helmets, were uninjured and able to push the aircraft back to its hangar. The pilot's assessment of cause was that the wind was too strong for the Tiger Moth.

ACCIDENT

Aircraft Type and Registration:	1) Piper PA-28-161 Cherokee Warrior III, G-GFTB 2) Piper PA-28-180 Cherokee, G-BBHY
No & Type of Engines:	1) 1 Lycoming O-320-D3G piston engine 2) 1 Lycoming O-360-A4A piston engine
Year of Manufacture:	1) 1999 (Serial no: 2842048) 2) 1973 (Serial no: 28-7305474)
Date & Time (UTC):	23 July 2012 at 1530 hrs
Location:	Guernsey Airport
Type of Flight:	1) N/A 2) Private
Persons on Board:	1) Crew - None Passengers - None 2) Crew - 1 Passengers - None
Injuries:	1) Crew - N/A Passengers - N/A 2) Crew - None Passengers - N/A
Nature of Damage:	1) Substantial damage to fuselage 2) Spinner, engine, propeller, right wing and windshields
Commander's Licence:	1) N/A 2) Private Pilot's Licence
Commander's Age:	1) N/A 2) 57 years
Commander's Flying Experience:	1) N/A 2) 466 hours (of which 429 were on type) Last 90 days - 34 hours Last 28 days - 10 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

With the intention of the taxiing the aircraft a short distance to a nearby maintenance facility, the pilot boarded G-BBHY and closed the door, leaving the upper door latch unlatched. As the engine was already warm the pilot performed a hot start but, as he was reducing the throttle setting, he noticed that the door had opened. He reported that he "instinctively" let go of the throttle and grabbed the armrest of the door to close it. The aircraft had by this time started to accelerate along the ground. The pilot's instinct again made him stamp his right foot on the right rudder pedal as if he were braking in a car. This aircraft does not have toe brakes fitted and this action made the aircraft veer to the right into the rear section of G-GFTB which was parked and unoccupied. Both aircraft received substantial damage.

The pilot stated that he would normally ensure that the parking brake was on but believed that he either forgot

to check this, or that the brake locking mechanism had somehow become disengaged. A subsequent check of the brake system found no faults.

ACCIDENT

Aircraft Type and Registration:	Tecnam P92-EA Echo, G-CBGE
No & Type of Engines:	1 Jabiru Aircraft Pty 2200A piston engine
Year of Manufacture:	2002 (Serial no: PFA 318-13680)
Date & Time (UTC):	5 September 2012 at 1320 hrs
Location:	Farm strip, near Ledbury, Herefordshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Left wingtip and nosewheel assembly damaged
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	210 hours (of which 120 were on type) Last 90 days - 3 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot reported that he made an overhead join to land at a farm strip near Ledbury. The reported surface wind at Gloucestershire Airport, approximately 12 miles away, was 350° at 8 to 10 kt. However, as the windsock indicated a wind at the farm strip that did not appear to favour either runway direction, the pilot elected to land on Runway 25.

During the approach, the pilot became aware that the wind was coming from the right and therefore used the crab technique in order to maintain the aircraft on the runway centre line. Everything appeared normal until the pilot initiated the flare and reduced the engine power when the aircraft started to drift to the left side of the runway. On touching down the aircraft was angled towards the edge of the runway, so the pilot braked and applied rudder to regain the centre line. However, the aircraft ground looped during which it momentarily tipped onto its left wing and nose.

The pilot stated that, in his opinion, the incident happened as a result of braking hard and steering the aircraft to avoid some rough ground.

ACCIDENT

Aircraft Type and Registration:	Tecnam P2002-RG Sierra, G-CFSB
No & Type of Engines:	1 Rotax 912 ULS piston engine
Year of Manufacture:	2010 (Serial no: LAA 333A-14864)
Date & Time (UTC):	15 July 2012 at 1535 hrs
Location:	West Wales (Aberporth) Airport
Type of Flight:	Private
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to propeller and nose leg support strut
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	68 years
Commander's Flying Experience:	699 hours (of which 165 were on type) Last 90 days - 9 hours Last 28 days - 4 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot taxied the aircraft from the circular turning area onto the grass at the end of the asphalt runway in order to complete his final takeoff checks. Whilst taxiing back onto the side of the runway for takeoff, the aircraft encountered a concrete drainage channel which was obscured from view by grass, such that the transition from grass to runway had appeared level. The nosewheel struck the drainage channel and collapsed, causing the propeller to strike the surface.

ACCIDENT

Aircraft Type and Registration:	Dynamic WT9 UK, G-EECC
No & Type of Engines:	1 Rotax 912 ULS piston engine
Year of Manufacture:	2007 (Serial no: DY189)
Date & Time (UTC):	10 July 2012 at 1630 hrs
Location:	West Lydford, Somerset
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Left wing, right wing root, nosegear and propeller
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	55 years
Commander's Flying Experience:	720 hours (of which 390 were on type) Last 90 days - 13 hours Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

Whilst changing between fuel tanks, the fuel selector lever detached as it was moved to the FUEL OFF position. The pilot was unable to restore the fuel supply to the engine and landed the aircraft in a field but impacted a fence and hedge. The pilot was uninjured. The UK CAA advised that a Service Bulletin relating to the failure of the fuel selector lever is to be issued.

History of the flight

The aircraft is equipped with two fuel tanks which are selected within the cockpit by a three position lever. The intermediate lever position is FUEL OFF. Whilst routing within the northern boundary of the Yeovilton MATZ at a height of about 500 ft, the pilot tried to select the left fuel tank, but as he moved the selector lever from the right tank, through the FUEL OFF position, the lever detached from the valve assembly. The pilot attempted to reattach the lever and also move the valve with his fingers, but he was unsuccessful and the engine stopped several seconds later. At this time Yeovilton ATC contacted the pilot and he declared a PAN, whilst also positioning the aircraft to land in a field ahead. Shortly after, the pilot realised that he would not make the selected field and repositioned to land downwind in a field to his left. The aircraft landed longer than expected and struck a fence and hedge before coming to a stop. The pilot was restrained by a full safety harness and exited the aircraft normally. The pilot stated that in hindsight, he had been distracted from concentrating on the forced landing when responding to ATC.

The UK CAA advised that a Service Bulletin relating to the failure of the fuel selector lever is to be issued.

ACCIDENT

Aircraft Type and Registration:	Flight Design CT2K, G-CDJF
No & Type of Engines:	1 Rotax 912ULS piston engine
Year of Manufacture:	2005 (Serial no: 8104)
Date & Time (UTC):	19 August 2012 at 1546 hrs
Location:	Redhill Aerodrome, Surrey
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damage to propeller, nose wheel, wingtip, rudder and door
Commander's Licence:	Student pilot
Commander's Age:	40 years
Commander's Flying Experience:	44 hours (of which 44 were on type) Last 90 days - 10 hours Last 28 days - 3 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and Redhill ATC

The student pilot flew a normal approach to Runway 26L at Redhill as part of a training flight. The weather was fine, with a surface wind from 230° at 7 kt. The runway surface was dry grass. The aircraft bounced on landing and, on the second touchdown, the nose landing gear was damaged. The aircraft pitched forward and inverted. The pilot, who was uninjured, vacated the aircraft unaided.

The Aerodrome Controller observed the bounced landing and nose leg collapse. He activated the crash alarm and saw the pilot vacate the aircraft. Aerodrome emergency services attended one minute forty seconds after crash alarm activation.

ACCIDENT

Aircraft Type and Registration:	Fournier RF4D, G-AVKD
No & Type of Engines:	1 Volkswagen Rectimo 4AR-1200 piston engine
Year of Manufacture:	1967 (Serial no: 4024)
Date & Time (UTC):	23 August 2012 at 1220 hrs
Location:	Lasham Airfield, Hampshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Damaged propeller
Commander's Licence:	Private Pilot's Licence
Commander's Age:	77 years
Commander's Flying Experience:	17,000 hours (of which 42 were on type) Last 90 days - 4 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The aircraft's landing gear warning horn, designed to sound when airbrakes were used with the landing gear not locked down, tested satisfactorily during a pre-flight test. Before landing, the pilot lowered the landing gear in the normal manner by pulling the landing gear latch lever, which locked the single main wheel in either the up or down position, freeing the selector lever which was then put to the DOWN detent. The warning horn did not sound when he deployed the airbrakes briefly during the approach. The aircraft landed normally on the grass landing area, but after a short ground roll the landing gear collapsed, causing damage to the propeller when it struck the ground.

The aircraft was lifted and the landing gear lowered and locked. After a visual check, the aircraft was lowered onto the landing gear and wheeled to a hangar. In his report, the pilot observed that the landing gear latch lever, which was not visible in flight, may have been worn such the main wheel was not locked, but that the warning horn had not indicated the unsafe condition.

ACCIDENT

Aircraft Type and Registration:	Ikarus C42 FB80, G-CFLD
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	2008 (Serial no: 0807-6982)
Date & Time (UTC):	5 September 2012 at 1240 hrs
Location:	Glenrothes Fife Airport, Fife
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to nose landing gear, propeller, engine cowling and left wheel spat
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	55 years
Commander's Flying Experience:	198 hours (of which 103 were on type) Last 90 days - 21 hours Last 28 days - 14 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft touched down in a crosswind at the side of the runway and bounced. It began a 'porpoising' motion and the pilot, in an attempt to recover, lost control of the aircraft. It touched down again in soft ground to the side of the runway and the nose landing gear collapsed.

History of the flight

The pilot was making his first visit to Fife Airport. Runway 25 was in use, which is a hard surface runway, 700 m long by 18 m wide. The weather was fine, with good visibility and broken cloud. The surface wind was from the north-west at an estimated 12 kt for the approach, but variable in direction and speed up to 20 kt.

The pilot flew a normal circuit pattern, appropriately modified to meet local requirements. The aircraft became high on final approach so the pilot initiated a sideslip, a manoeuvre with which he was familiar. When the aircraft reached the point of flare, it had drifted to the left (downwind) side of the runway. The aircraft bounced and started a 'porpoising' motion and the pilot responded by adding power in an attempt to regain positive control and to make a second landing further along the runway. This was unsuccessful; the aircraft adopted a nose-high attitude and veered further left, landing again on soft ground adjacent to the runway. The nose landing gear collapsed and the aircraft came to rest on the grass in a nose-down attitude.

The pilot made the aircraft safe and assisted his passenger to vacate the aircraft. They were both wearing full harnesses and were uninjured. The aerodrome fire service responded to the accident, and was joined by the civil emergency services a short time later.

The pilot observed that the bounced landing had escalated to a worse situation through a combination of incorrect or inadequate response and inputs. In view of the crosswind, he realised that it had been inadvisable to continue the approach once the aircraft had drifted to the downwind side of the runway.

ACCIDENT

Aircraft Type and Registration:	Ikarus C42 FB80, G-SFLB
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	2007 (Serial no: 0709-6914)
Date & Time (UTC):	15 July 2012 at 0948 hrs
Location:	Lower Upham Airfield, Hampshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 (Minor) Passengers - None
Nature of Damage:	Left wing, fuselage and landing gear damaged. Substantial damage to the engine and propeller
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	45 years
Commander's Flying Experience:	94 hours (of which 94 were on type) Last 90 days - 11 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

The aircraft stalled during a go-around after touching down heavily approximately half-way down the runway.

History of the flight

Following a local flight, the pilot positioned the aircraft to land on Runway 04 at Lower Upham Airfield. The wind was reported as calm and the 570 m, uphill, grass runway was described as wet.

The pilot reported that he was slightly higher than normal on the approach and therefore increased his rate of descent by sideslipping the aircraft. Witnesses reported that the aircraft seemed to be high and fast on the approach and that it touched down heavily approximately half-way along the runway. The aircraft was then seen to bounce twice before touching down on a heading approximately 20° to the left of the runway direction. After a short ground roll, the engine power was heard to increase and the aircraft became airborne and just cleared a hedge which ran along the left edge of the runway. The aircraft struck the ground in a nose down attitude in a field on the other side of the hedge. The pilot suffered a minor back injury but the passenger was uninjured.

AAIB comment

The reported facts indicate that the aircraft stalled during the go-around as the pilot attempted to gain sufficient height to clear a hedge that ran along the edge of the runway.

ACCIDENT

Aircraft Type and Registration:	Pegasus Quantum 15 Quantum, G-MZBB
No & Type of Engines:	1 Rotax 582-40 piston engine
Year of Manufacture:	1996 (Serial no: 7139)
Date & Time (UTC):	21 July 2012 at 1400 hrs
Location:	Pilgrims Field, Lathones, Fife
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Forward flying wires severed and pod, wing and monopole damaged
Commander's Licence:	National Private Pilot's Licence - Microlight
Commander's Age:	58 years
Commander's Flying Experience:	390 hours (of which 390 were on type) Last 90 days - 15 hours Last 28 days - 7 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot reported that the aircraft was five miles into a 20-mile flight from a farm strip at Kingsmuir to Fife Airport when at a height of approximately 1,200 feet the engine suddenly stopped. He positioned the aircraft for an into-wind field landing, but at a height of approximately 25 feet he encountered a downdraft and at the same time noticed a row of electrical cables ahead of the aircraft. The aircraft struck the electrical cables, causing them to break. The forward flying wires between the basebar and the nose plate of the wing also broke and the aircraft descended rapidly to the ground where it rolled onto its left side.

While the pilot and passenger were uninjured, the pod, wing and monopole were all damaged in the accident. The reason for the engine stoppage is not known at this time.

ACCIDENT

Aircraft Type and Registration:	Pegasus Quasar, G-MWJH
No & Type of Engines:	1 Rotax 503 piston engine
Year of Manufacture:	1990 (Serial no: SW-WQQ-0340)
Date & Time (UTC):	6 September 2012 at 1700 hrs
Location:	Redlands Airfield, Wiltshire
Type of Flight:	Training
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Significant damage
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	60 years
Commander's Flying Experience:	18,280 hours (of which 28 were on type) Last 90 days - 188 hours Last 28 days - 40 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot was flying the aircraft solo as part of formal training for the issue of a NPPL for flex-wing microlights. Runway 24 North at Redlands is a grass runway, 700 m long and 11 m wide. The weather was fine, with a surface wind from 240° at 10 kt. Following a local flight, the pilot made two successful approaches and landings on Runway 24 North before making an approach to Runway 24 South. This approach was discontinued as the aircraft was not correctly lined up on the centreline on short finals. The pilot made his last approach to Runway 24 North again but, at a height of about 100 ft, the aircraft drifted to the left. The pilot decided to go around again, but before he did so, the aircraft struck a tree to the left of the runway.

The aircraft suffered significant damage but the pilot, who was wearing a lap strap and protective helmet, was uninjured. In his report, the pilot considered that his extensive flying experience on fixed wing aircraft, with their different control techniques, may have been a factor in the accident.

ACCIDENT

Aircraft Type and Registration:	Thruster T600N 450, G-CDSO
No & Type of Engines:	1 Jabiru Aircraft Pty 2200A piston engine
Year of Manufacture:	2005 (Serial no: 1051-T600N-115)
Date & Time (UTC):	1 September 2012 at 1750 hrs
Location:	2 nm south of Yarmouth, Isle of Wight
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 1
Injuries:	Crew - 1 (Minor) Passengers - None
Nature of Damage:	Damage to front pod and windscreen, propeller, rudder pedal sub assembly and right wing front spar
Commander's Licence:	National Private Pilot's Licence
Commander's Age:	49 years
Commander's Flying Experience:	89 hours (of which all were on type) Last 90 days - 2 hours Last 28 days - None
Information Source:	Aircraft Accident Report Form submitted by the pilot

The pilot prepared for a flight from a farm airstrip in fine, calm conditions. Pre-flight inspections and checks were normal, and there were 30 litres of fuel on board. After a satisfactory engine power check, and with all engine indications normal, the aircraft took off. After a local flight of about 45 minutes, the pilot returned to the airstrip for landing.

The aircraft was slightly fast on final approach, so the pilot decided to go around. As the aircraft started to climb under full power, the engine began making unusual noises and the pilot felt a significant loss of power. He identified an area for landing which, to avoid obstacles and livestock, required a turn to the left, but was unable to land in the selected narrow stretch of ground. With rising ground beyond, he instead landed the aircraft at low speed in a substantial hedge that ran alongside. The pilot sustained a minor foot injury but both he and the passenger, who had been wearing full harnesses, were able to vacate the aircraft without assistance.

At the time of reporting, no reason for the loss of engine power had been established.

ACCIDENT

Aircraft Type and Registration:	Thruster TST Mk1, G-MTKA
No & Type of Engines:	1 Rotax 503 piston engine
Year of Manufacture:	1987 (Serial no: 867-TST-021)
Date & Time (UTC):	21 July 2012 at 1230 hrs
Location:	Otherton Airfield, Staffordshire
Type of Flight:	Training
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Left and right wings, nose fairing and fuselage main tube damaged
Commander's Licence:	Private Pilot's Licence
Commander's Age:	69 years
Commander's Flying Experience:	9,670 hours (of which 250 were on type) Last 90 days - 22 hours Last 28 days - 5 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

At approximately 100 ft agl, after taking off from Otherton Airfield on a training flight, the aircraft's engine lost power. The commander took control and elected to make a 90º turn to the right, towards a crop field, in order to avoid a hedge and power lines. During the landing the aircraft's right wing touched the crop, resulting in a ground loop that damaged the wings, nose fairing and fuselage main tube. The aircraft owner reported that following the accident the engine was stripped, revealing scoring marks on the exhaust side of both pistons, consistent with engine overheating and seizure. He attributed the engine failure to misadjusted carburettor jet needles in both carburettors, which caused the engine to run with a lean mixture and subsequently overheat.

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).

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

1/2010 Boeing 777-236ER, G-YMMM at London Heathrow Airport on 17 January 2008.

Published February 2010.

2/2010 Beech 200C Super King Air, VQ-TIU at 1 nm south-east of North Caicos Airport, Turks and Caicos Islands, British West Indies on 6 February 2007.

Published May 2010.

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.

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