**ACCIDENT**

| | | |
|---|---|---|
| **Aircraft Type and Registration:** | Beagle B121 Series 2 Pup, G-TSKY | |
| **No & Type of Engines:** | 1 Lycoming O-320-A2B piston engine | |
| **Year of Manufacture:** | 1968 (Serial no: B121-010) | |
| **Date & Time (UTC):** | 12 July 2018 at 1430 hrs | |
| **Location:** | 0.5 miles north-west of Bembridge Airfield, Isle of Wight | |
| **Type of Flight:** | Private | |
| **Persons on Board:** | Crew - 1 | Passengers - 1 |
| **Injuries:** | Crew - 1 (Serious) | Passengers - 1 (Serious) |
| **Nature of Damage:** | Aircraft destroyed | |
| **Commander's Licence:** | Private Pilot's License | |
| **Commander's Age:** | 69 years | |
| **Commander's Flying Experience:** | 316 hours (of which 31 were on type)<br>Last 90 days - 5 hours<br>Last 28 days - 3 hours | |
| **Information Source:** | AAIB Field Investigation | |

## Synopsis

Shortly after takeoff the engine lost power and the aircraft made a forced landing in marshland. Both occupants suffered serious injuries. The most likely cause of the loss of power was fuel starvation but the cause of the fuel starvation could not be determined.

## History of the flight

The flight was intended to be a return trip to Bembridge from the aircraft base at Kemble Airfield. Having arrived at Kemble, the aircraft was refuelled and the pre-flight checks completed. The pilot and passenger then departed Kemble at 1224 hrs for their flight to Bembridge. They arrived at Bembridge at around 1320 hrs, paid the landing fee and had some refreshments.

At around 1415 hrs, the pilot started the aircraft engine for departure. Whilst completing the pre-takeoff checks, the pilot heard a noise that he had not heard before on the aircraft. He consulted another member of the flying group by telephone who advised him to shut down and re-start to see if the noise reoccurred. The flying group member suggested that he had not heard the noise before either, and if after re-starting there was no repeat of the noise, and all the checks were normal, then there was nothing to suggest the pilot should not take off and fly back to Kemble.

The pilot completed the pre-flight checks once the aircraft had been re-started and both he and his passenger confirmed that everything was normal, there was no repeat of the sound, and all the checks were satisfactory. At 1427 hrs, the aircraft was seen to begin its takeoff roll from Runway 30 at Bembridge by a witness who then lost sight of the aircraft behind some buildings which blocked his view. The witness then departed in their own aircraft from the reciprocal runway and was not aware of any problems with G-TSKY.

The pilot recalled that the takeoff was normal and that as the aircraft passed 300 ft aal in the climb he retracted the flaps as required in the checklist. Shortly afterwards he sensed that the engine power was decreasing rapidly. There was no noise or change of note that he detected. He concentrated on flying the aircraft, lowering the nose and looking out for a suitable landing area. The area ahead did not look particularly flat for a forced landing, but he assessed that he was at too low a height to attempt to manoeuvre the aircraft. He completed some of the forced landing checks but very quickly the aircraft was approaching the ground. There was a loud thump as the aircraft struck the ground. The pilot suffered a head injury which rendered him unconscious for some time, as well as other injuries including to his back and pelvis.

The passenger described the takeoff as “fine” until the aircraft passed the upwind end of the runway. She described the engine “switching off” with no noises or vibrations. The aircraft then began a descent with the pilot “moving some switches”. As the aircraft struck the ground, she suffered injuries to her back. As she could smell fuel, she was fearful of a fire and managed to undo her harness before extracting herself from the cockpit. Due to the pain in her back she was unable to move beyond the wing.

Neither the pilot nor the passenger was able to reach and use their mobile phones. They could not recall hearing the stall warning sound at any time from the loss of power to striking the ground.

The pilot had made a MAYDAY call after the loss of power on Bembridge Airfield’s Air/Ground radio frequency, which was unmanned at the time of the accident. This radio call was heard by the pilot of another aircraft, who contacted Sandown Airfield by radio to report it. Further information was then received on Sandown’s frequency from an aircraft who had noticed the aircraft wreckage. At 1450 hrs, the police were alerted at Sandown Airfield by someone flagging down a patrol car. A helicopter pilot on Sandown’s frequency, who was inbound, passed close by where the accident was reported to have occurred and offered to search. He saw that the aircraft was in marshland beyond the airfield almost aligned with the runway. He was able to land some distance from the wreckage, and he and his two passengers made their way to the aircraft to see if they could offer assistance.

The accident site was difficult to access, located in marshland 580 m from the end of Runway 30 at Bembridge and 105 m right of its centreline. Figure 1 shows the accident site in relation to the airfield.


**Figure 1**
Accident site location © Google Earth

Sometime after 1450 hrs the helicopter pilot at the accident site told the police emergency call handler that the accident site was not on the airfield. He stated that he could clearly hear the sirens but that they were on the airfield rather than near where the aircraft was located. He attempted to direct the emergency services to the site, but they could not find a route to access the marshland. At 1522 hrs the emergency services began to arrive at the site, firstly on foot and then using specialist all-terrain vehicles. The pilot and passenger were evacuated by two air ambulances which had been dispatched to assist.

## Wreckage and impact information

The aircraft had struck the ground on a track of about 310°(M) and then bounced 13 m before coming to rest. The damage to the aircraft indicated that it had struck the ground with a high vertical descent rate and with the right wing low (Figure 2). One of the propeller blades was undamaged, while the other blade was bent aft. There were about 3 litres of fuel remaining in the left inboard wing tank and about 1 litre remaining in the right inboard wing tank. The fuel strainer bowl on the underside of the aircraft had been dislodged and showed evidence of impact damage. Soil samples revealed high concentrations of volatile organic compounds in the area where the engine was located. A environmental company contracted to examine the site estimated that approximately 35 litres of Avgas had entered the subsurface, but it stated that this figure could have been higher.

**Figure 2**

Accident site, view towards the south-east

## Recorded information

There were no radar recordings for the accident flight as the aircraft was below radar coverage. The radio transmissions at Bembridge Airfield were not recorded. The aircraft's arrival at Bembridge was recorded by an aviation app on the pilot's tablet device, but the accident flight was not. The app did not record the start of the flight to Bembridge, or the start of several other flights, possibly because the device had not acquired enough satellites at that stage of the flight to provide a position fix.

The app continued to record the position of the tablet device after landing, including a stationary position on the grass to the north-east of the Runway 30 threshold. Its last recorded location prior to the accident was at 1426 hrs, consistent with the aircraft having lined up on Runway 30 approximately 46 m short of the displaced threshold.

The arrival of the helicopter which provided initial assistance was captured by radar recordings. Its last position prior to landing was at 1450 hrs, after which it was below radar coverage[1]. The helicopter was next detected at 1720 hrs as it departed the area. The recordings also captured the flight paths of the two air ambulance helicopters when they were high enough to be in radar coverage. Their last radar points arriving to the area were at 1549 hrs and 1628 hrs. The first radar contacts on departing the area were at 1655 hrs and 1711 hrs respectively.

**Footnote**

[1] The lowest altitude for each of the arrivals and departures of the three helicopters was between 500 ft amsl and 1,100 ft amsl. Some of these were not in the immediate vicinity of the accident site. Factors besides altitude can also affect whether radar detects an aircraft at a specific location.

## Aircraft information

The Beagle B121 aircraft, known as the Pup, was designed as a single-engined all-metal two-seat aerobatic aircraft and as a four-seat touring aircraft. The first delivery of the Series 1 variant was in 1968. G-TSKY was a Series 2 aircraft with a 150 hp Lycoming O-320-A2B piston engine, and configured with three seats.

G-TSKY was fitted with two 12 imp gal (54.6 litre) inboard wing tanks and two optional 6 imp gal (27.3 litre) outboard wing tanks which feed directly into the inboard tanks. The unusable fuel quantity per tank is 2.3 litres[2]. The fuel passes from the tanks to a fuel selector which can be set to direct fuel from the left, right or both tanks. From the fuel selector, the fuel passes to an electric fuel boost pump, then to an engine-driven pump and then into the carburettor.

The fuel tanks are vented through a single vent on the left landing gear leg which the pilot is required to check on each external inspection. This vent allows air to enter the tanks as fuel flows to the engine, equalising the pressure. If the vent is blocked and fuel continues to flow to the engine, the pressure inside the tank will drop and eventually the fuel pump will be unable to draw any fuel.

The aircraft had electrically operated flaps with three positions: UP, TAKEOFF (10°) and DOWN (40°). According to the aircraft operating manual a stall warning device operates a warning horn when the speed falls to about 5 kt above the stall speed when the flaps are at TAKEOFF or DOWN positions. When the flaps are in the UP position the horn is inhibited, and the manual states that: '*sufficient stall warning is given by aerodynamic buffet*'.

The published stall speeds at maximum weight are:

| Flap position | Stall Speed (KIAS)[3] |
|---|---|
| UP | 50 |
| TAKEOFF | 49 |
| DOWN | 46 |

The aircraft was certified to BCAR[4] Section K Issue 2 dated 21 March 1967. G-TSKY was being operated on a EASA Restricted Certificate of Airworthiness.

**Footnote**

[2] This figure was taken from the aircraft's original weight and balance sheet which specified a total unusable fuel quantity of 1 imperial gallon. The aircraft operating manual does not specify the unusable fuel quantity.
[3] kt indicated airspeed.
[4] British Civil Airworthiness Requirement.

**Aircraft examination**

The engine was removed and taken to an engine overhaul organisation for a strip examination. No defects were found that would explain a significant loss of power. Both magnetos were tested and operated satisfactorily. The sparks plugs were also tested and operated normally. The carburettor had broken into two sections and could not be tested, but a strip examination did not reveal any defects or blockages. The engine-driven fuel pump and electric boost pump were tested and operated normally.

Prior to engine removal the AAIB noticed that the nut connecting the fuel pipe from the engine-driven pump to the carburettor was not wire locked and was loose by 1/8 of a turn. The nut connecting the fuel pipe to the outlet of the engine-driven pump was also not wire locked, but was tight. Both of these nuts had holes for wire locking and according to the aircraft maintenance manual these should have been wire locked.

There were no disconnections in the throttle or mixture control systems. There were no blockages in the engine air intake, and the carburettor heat valve was in the cold position. The fuel tank vents were clear of blockages.

Fuel system tests were carried out by connecting two small fuel tanks to the fuel hoses at the wing roots (both wings had been cut off at the roots during recovery of the wreckage). Using calibrating fluid and the electric boost pump, fuel was pumped through the fuel selector and fuel strainer to a fuel hose forward of the engine firewall. The fuel flow was measured with the fuel selector in different positions between left and right, and in all cases the fuel flow was above the minimum specification. There was a small fuel leak from the fuel selector which was measured at about 30 ml/hr. The non-return valves in the fuel system operated normally.

A test was carried out to see if the nut at the carburettor inlet would leak in the position as found, about 1/8 turn backed off from fully tight. With the electric boost pump on and the other outlet holes blanked off a leak of about 0.34 l/hr was measured at the nut. With the nut backed off slightly more (less than 1 mm radius), the leakage rate increased to 2.25 l/hr. However, when one blanked port was opened, to simulate an open carburettor float bowl, the leak stopped.

Fuel samples from both tanks were tested and were consistent with Avgas 100LL with no significant contamination.

The flap actuator in the right wing was found extended by 3.2 cm which corresponded to 10° of flap deflection.

**Fuel remaining**

The aircraft owners did not require the recording of fuel remaining after the completion of a flight, nor were they required to do so by regulation. To calculate the estimated fuel on board on departure from Kemble, it was necessary to work forwards from when the aircraft tanks were last filled to capacity (36 imp gal) six days before the accident flight. Using an

average fuel flow of 8 imp gal per flight hour[5] and the fuel uplift figures it was calculated that the aircraft left Kemble for the flight to Bembridge with about 31 imp gal of fuel. The flight to Bembridge was around one hour and it is likely the aircraft landed at Bembridge with about 23 imp gal. The pilot reported that he checked the fuel level in Bembridge and recalled that it was just visible in the outer tanks which indicated that the inner tanks were full (24 imp gal). The weight of 24 imp gal is approximately 78 kg.

**Weight and balance**

The aircraft empty weight, as stated on the weight and balance schedule, was 605.9 kg and the total crew and passenger weight was 185 kg. With an estimated fuel weight of 78 kg, this adds up to 868.9 kg. Together with a small amount of baggage, oil and sundries meant that the aircraft was close to the maximum certified weight of 873 kg. The investigation estimated that centre of gravity was at or about 1 cm forward of the forward limit.

**Survivability**

Bembridge is an unlicensed aerodrome and is used at a pilot's own risk and discretion. There may be no fire and rescue equipment available at an unlicensed aerodrome or it could be limited to a fire extinguisher for self-help use. Civil Aviation Publication (CAP) 793, '*Safe Operating Practices at Unlicensed Aerodromes*', gives guidance on the provision of emergency equipment within the airfield boundary. There is no requirement to provide a comprehensive off airfield rescue plan or service.

In this accident it took the emergency services just over 30 minutes to find the scene after they received the first report, which was approximately 20 minutes after the accident. It took a further 23 minutes after the first emergency services reached the site before specialist medical assistance could be provided to the pilot and passenger. This was due to problems locating and accessing the marshland area where the aircraft wreckage was located.

*Available equipment*

The aircraft was equipped with a portable personal location beacon (PLB) which was carried in a bag positioned behind the pilot. A PLB is designed to transmit a distress signal which can alert rescuers to a need for help as well as its GPS location. The PLB carried on G-TSKY required manual activation. The pilot was aware of the carriage of the PLB but could not recall thinking of it after the accident. In any case, the injuries to both the pilot and passenger prevented them from reaching the PLB and therefore from activating it.

EASA regulated aircraft of the same class issued with a first certificate of airworthiness on or after 1 July 2008 are required to be fitted with automatically activated Emergency Locator Transmitters (ELT). These are activated automatically by the forces of the accident and mean that none of the occupants are reliant on someone remembering or reaching the PLB.

**Footnote**

[5] Actual average fuel consumption of G-TSKY over the previous month before the accident flight which closely matched the average figure obtained from the Aircraft Operating Manual.

Both the pilot and passenger were carrying mobile phones. The pilot suffered a head injury in the accident which rendered him unconscious for a short time. His phone was also lost into the footwell of the aircraft during the accident so was inaccessible. The passenger's phone was contained in a bag in the back of the aircraft and due to her injuries she was unable to reach it.

**Aircraft procedures**

When the engine fails on a single engine aircraft just after takeoff the first thing the pilot must do is to reduce the angle of attack to ensure that the aircraft does not stall. This can involve a significant movement of the control column or stick. The speed can reduce very quickly if positive action is not taken by the pilot. Flying too close to the stall speed may mean the aircraft has insufficient energy for the pilot to arrest the descent before touchdown.

The emergency section of the Aircraft Operating Manual does not contain a procedure specifically for dealing with an engine failure on takeoff. The section entitled '*Forced Landing*' recommends the following actions:

> *Check:*
>
> *1) Mixture lever – CUT-OFF*
> *2) Booster pump – OFF*
> *3) Ignition switch – OFF*
> *4) Fuel cock – OFF*
> *5) Harness – adjust and secure*

The manual suggests maintaining an airspeed of 70 KIAS with the flaps up, reducing to 65 KIAS once the flaps are lowered. With the flaps fully down, the battery master should be switched off with the aim to touchdown at 50 to 55 KIAS.

The pilot of G-TSKY had little time to complete these actions, and to select full flap. Although the aircraft had taken off with the flaps at 10°, the pilot recalled retracting them just before the engine lost power. The flap actuator was found in the flap 10° position, so it is probable that that he lowered them back to 10°, although he has no recollection of doing so.

**Meteorology**

There is no weather reporting or recording at the airfield.

A Met Office aftercast was obtained for the day of the accident which showed that a ridge of high pressure was dominating the United Kingdom. This gave light winds and benign weather with little cloud. The nearest locations with recorded weather reports were on the mainland at Bournemouth and Southampton Airports. Both reported light winds varying between 170° and 310° at 5 and 10 kt.

The aftercast gave the most likely wind at Bembridge at the time of takeoff as between 220° and 250° at 5 to 10 kt, a temperature of 22°C and a dew point of 11 or 12°C.

## Tests and research

*Flight test*

A flight test in a Beagle Pup Series 2, similar to G-TSKY, was commissioned in order to assess the aircraft's handling qualities and performance with respect to stalling, rates of descent with 10° of flap selected and elevator effectiveness for the landing flare at various speeds. The test aircraft was flown at a similar weight and centre of gravity as G-TSKY when it took off from Bembridge on the accident flight.

The test showed that in a wings-level stall with the flaps up there was distinctive moderate aerodynamic buffet some 3 to 4 kt above the stall speed. In the test aircraft, with the flaps deployed in TAKEOFF or DOWN positions, the audio stall warner sounded at 9 kt above the stall. The Operating Manual stated it should be '*within approximately 5 knots of the stall'.*

A series of idle power descents were flown with the flaps at 10°. At 65 KIAS, which is the recommended glide speed after an engine failure once flaps have been selected, the aircraft descended at 800 ft/min. At 60 and 55 KIAS this was 750 ft/min. Once the aircraft was slowed to 50 KIAS the rate of descent increased to 1,000 ft/min with a noticeable nose-up attitude. The stall occurred at 48 KIAS, which was close to the published figure of 49 KIAS.

The test pilot then flew a series of simulated touchdown flares at altitude with 10° of flap and at various speeds. It was possible to flare the aircraft to zero rate of descent at 65, 60 and 55 KIAS. At 50 KIAS, with the aircraft marginally above the stall speed '*there was no evident flare effect*'. A series of glide approaches were then flown to the runway. At 65 KIAS the test pilot found '*it was easy to level the aircraft during the flare'.* At 60 KIAS the aircraft could again be levelled, and the landing was "satisfactory". At 55 KIAS the flare required to arrest the rate of descent was aggressive and started from a lower height. The test pilot reported that this required finer judgement and resulted in a higher nose-up attitude. He also reported that this was the limiting approach speed at which a landing could be made; at lower airspeed it would not have been possible to completely arrest the descent rate in the flare.

## Other information

*Missing wire locking*

The maintenance organisation was contacted to comment on the missing wire locking on the two nuts between the engine-driven fuel pump and the carburettor. They stated that they had investigated the matter and had visited three airfields and found that none of the Lycoming-engined aircraft, including Beagle Pup and Bulldogs, had any wire locking or had nuts to take wire locking in these positions. They stated that they did not believe the engine manufacturer required wire locking in these locations

The engine manufacturer stated that the fuel pipe between the engine-driven fuel pump and the carburettor on this engine type is an airframe part and not a part supplied by the engine manufacturer. They stated that published information supplied by the aircraft manufacturer should be followed.

Light aircraft manufacturers in the USA such as Cessna and Piper do not require wire locking on the nuts in these locations; and when correctly torqued, there has not been a history of these nuts coming loose.

*Stall warning requirements*

The Beagle B121 was certified to BCAR Section K Issue 2 which required an "unmistakable" stall warning that did not need to include an aural warning. Until 15 August 2017 the EU Certification Specification 23 for Normal, Utility, Aerobatic and Commuter category aeroplanes (Amendment 4) stated in CS 23.207:

> *'The stall warning may be furnished either through the inherent aerodynamic qualities of the aeroplane or by a device that will give clearly distinguishable indications under expected conditions of flight. However, a visual stall warning device that requires the attention of the crew within the cockpit is not acceptable by itself.'*

Amendment 5 to CS-23, which became effective on 15 August 2017, states in CS 23.2150:

> *'The aeroplane must have controllable stall characteristics in straight flight, turning flight, and accelerated turning flight with a clear and distinctive stall warning that provides sufficient margin to prevent inadvertent stalling. A stall warning that is mutable for aerobatic flight phases is acceptable.'*

This latest amendment to CS 23 requires a clear and distinctive stall warning but does not specify what form that should take. However, the new acceptable means of compliance for CS 23 are published in ASTM F3180/F3180M-16, which states in 4.4.2.2[6]:

> *'For Level 2, 3, and 4 aeroplanes, the stall warning shall consist of either:*
>
> *(1) An aural warning in combination with a system that provides tactile feedback through the pilot's controls to deter the pilot from further reducing airspeed or increasing angle of attack, or*
>
> *(2) A voice warning such as "STALL STALL" along with an additional voice callout that occurs prior to the stall warning.*
>
> *(a) The additional voice callout shall be provided no less than 4 s in advance of the stall warning callout assuming a steady deceleration in straight or turning flight for the maneuvers specified in 4.1, and*
>
> *(b) Must not overlap or conflict with the stall warning.'*

**Footnote**

6 Aeroplane certification levels are:
(1) Level 1 — for aeroplanes with a maximum seating configuration of 0 to 1 passengers;
(2) Level 2 — for aeroplanes with a maximum seating configuration of 2 to 6 passengers;
(3) Level 3 — for aeroplanes with a maximum seating configuration of 7 to 9 passengers; and
(4) Level 4 — for aeroplanes with a maximum seating configuration of 10 to 19 passengers.

*Previous Beagle B121 accidents with loss of power*

The AAIB has published reports on 23 Beagle B121 accidents (excluding this one) with the earliest having occurred in 1970. Nine involved a loss of power. Of these, six involved the Series 1 B121 aircraft with a Rolls Royce O-200 engine, of which three were attributed to probable carburettor icing, two to insufficient fuel and one with no reason found. Of the three loss-of-power accidents involving the Series 2 aircraft with the Lycoming O-320 engine, one involved probable carburettor icing and of the remaining two, no reason was found.

The AAIB did not report on loss-of-power occurrences that did not result in an accident.

**Analysis**

*Loss of power*

No engine defects or mechanical failures were found that would explain a loss of power. The magnetos and spark plugs worked correctly when tested. The atmospheric conditions were not conducive to carburettor icing and the air intake was clear of blockages. Therefore, the most likely cause of the loss of power was fuel starvation. Based on recent fuel uplifts and fuel burn calculations there should have been sufficient fuel onboard, and the findings of fuel in the soil beneath the wreckage support this conclusion. Therefore, some fuel system-related issue probably prevented sufficient fuel from reaching the engine.

A blocked fuel tank vent in the left landing gear leg could have prevented fuel flow. Although the vent was found to be clear it is possible that some debris fell out in the impact. The location of the fuel tank vent, low on the left landing gear leg, could make it prone to picking up debris from a runway, and as both tanks are vented from this single point, a single blockage could result in a loss of power. The pilot reported having removed the fuel tank filler caps prior to departure from Bembridge which would have vented the tanks to atmosphere. If the vent had been blocked it is unlikely that in the short time from engine start to power loss, a sufficient vacuum would have built up in the tanks to prevent fuel flow.

The nut at the carburettor inlet that was loose and not wire locked could have resulted in a leak sufficient to cause a loss of power but not in the position as found. However, it is possible that the nut was tightened in the impact by forces acting at the union when the carburettor separated. It is also possible that some debris entered the carburettor and caused a fuel flow restriction, but that this debris was released when the carburettor broke open on impact.

The nuts between the engine-driven fuel pump and the carburettor should have been wire locked in accordance with the aircraft maintenance manual.

No explanation was found for the “strange” noise heard by the pilot and passenger after the first engine start.

*Speed on descent*

Flight tests with a similar aircraft to G-TSKY showed that at 55 KIAS, about 7 kt above the stall speed, and the flaps set at 10°, aircraft energy was just sufficient to eliminate a rate of decent in the flare, if a late and aggressive flare technique was employed. If the approach speed had been slower than this or if the flare had been initiated too high, then this would have resulted in a heavy landing or heavy impact.

At 55 KIAS and flaps 10° the stall warner would have been sounding continuously, but neither the pilot nor the passenger could recall hearing it. However, it is known that high stress situations can affect the perception and recollection of warning sounds.

The damage to the aircraft and the ground marks revealed that the aircraft had struck the ground with a high rate of descent, a slight nose-down attitude and right bank. Indications of a high descent rate at touchdown suggest that the aircraft had insufficient airspeed for a successful flare. It was not possible to determine if the aircraft had stalled prior to impact, but it was probably close to stalling when the flare was initiated. If the pilot had maintained the recommended glide speed of 65 KIAS it may have been possible to arrest the rate of decent before touchdown. This would probably have reduced the severity of the injuries sustained by both the pilot and the passenger.

*Survivability*

There was a delay of over an hour before the pilot and passenger were seen by paramedics. Shortly after the paramedics arrived, the first air ambulance landed at the accident site. Whilst this delay could have been significant given the injuries sustained in the accident, this may have been as fast as could be expected to such an inaccessible site.

The aircraft equipment included a manually activated PLB but neither the pilot nor the passenger remembered that it was available and could not reach it given their injuries, so it was not activated. Leaving a manually activated PLB in a bag in the back of the aircraft means that someone in the aircraft must remember where it is and be able to reach it after an accident. Had the PLB been in plain sight of either occupant and easily reachable, it might have been activated, allowing the emergency services to locate the accident site more rapidly. The carriage of an automatic ELT avoids anyone having to activate the device in the event of an accident.

Both occupants of G-TSKY had a mobile phone but as with the PLB, both devices became inaccessible due to the accident. Securing mobile phones within easy reach will make them easier to access in the event of an accident.

After the engine lost power the pilot made a MAYDAY call which was heard by another pilot on the frequency who then relayed this to Sandown Airfield. This call meant that the emergency services were alerted and could begin to search for the wreckage. This demonstrates the benefit of transmitting a MAYDAY even on local frequencies that may not be monitored all the time, particularly if there is insufficient time to change to a monitored frequency.

**Conclusion**

The most likely cause of the loss of power was fuel starvation but the cause of the fuel starvation could not be determined. Among the possible causes was a blocked fuel vent on the left landing gear leg. As both tanks are vented from this single point, a single blockage could result in a loss of power which means that checking this vent during the pre-flight walkaround checks is very important.

The pilot's decision to land straight ahead was consistent with there being insufficient height to turn back. The aircraft did not stall from a significant height, but it is likely that the pilot did not maintain the recommended glide speed. A research flight revealed that conducting the manoeuvre very close to the stall would leave insufficient energy to flare the aircraft and reduce the descent rate sufficiently at touchdown. This emphasises the importance of pitching down immediately to maintain the correct speed in the event of a loss of engine power on a single engine aircraft.

*Published: 27 June 2019.*