Cessna 152, G-BTGR

AAIB Bulletin No: 3/2000 Ref: EW/G99/10/08 Category: 1.3

Aircraft Type and Registration:	Cessna 152, G-BTGR
No & Type of Engines:	1 Lycoming O-235-L2C piston engine
Year of Manufacture:	1980
Date & Time (UTC):	7 October 1999 at 1532 hrs
Location:	3 miles north-east of Shoreham Airfield
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - Minor - Passengers - N/A
Nature of Damage:	Aircraft destroyed
Commander's Licence:	Private Pilot's Licence
Commander's Age:	58 years
Commander's Flying Experience:	148 hours (all of which were on type)
	Last 90 days - 3 hours
	Last 28 days - 1 hour
Information Source:	Aircraft Accident Report Form submitted by the pilot, recordings of RT communications and further inquires by the AAIB

History of the flight

The pilot had planned to conduct a local flight from Shoreham Airfield to overhead the nearby Brighton Marina and return. He held a PPL and was only qualified for flight in VMC. The pilot requested taxi instructions at 1518 hrs and then announced that he was ready for departure at 1524 hrs. As he was cleared to line up on Runway 21 ATC informed him that the visibility was now 3,000 metres in moderate rain. The pilot acknowledged this transmission and said that the flight would only last 15 minutes. He was then cleared for take off and a left turn to route direct to the Brighton Marina.

At approximately 600 feet, as the pilot commenced the left turn, he encountered rapidly deteriorating conditions and informed ATC that he intended to return immediately. The controller, who had now lost sight of the aircraft, gave him clearance to return for Runway 21 and requested

that he call downwind. The pilot was informed that Runway 25 was also available if required. Although there was no lighting on this runway the controller believed that it gave the pilot the option of a speedy return for landing if he could still see the airfield. It also had the added benefit of keeping the aircraft clear of the high ground to the north. The controller then decided to bring the airfield fire and rescue service to a 'Weather Standby' status. At 1528 hr the pilot reported that he was downwind but could not see a great deal. Using information from the very high frequency direction finding equipment (VDF) the controller realised that the pilot was now probably in the vicinity of high ground and so he told the pilot to turn left towards the airfield. The pilot then reported that he could not see anything at all. ATC asked for his level but received no reply. Believing that the aircraft was now over high ground the controller instructed the pilot to climb and again requested his level. The pilot did not respond until he was asked his height when he replied that he was now at 1,600 feet. He was then instructed to turn onto a heading of 250° (from VDF information). At 1531 hr the pilot announced that he was lost. He was given further instructions to turn onto 200° whilst maintaining 1,600 feet.

By this stage the controller had contacted the Distress and Diversion cell at LATCC who offered to assist. They requested that the aircraft be told to climb to 2,000 feet in order for them to obtain an accurate position fix. The controller passed this instruction to Golf Romeo having considered that this might place the aircraft above the cloud. He then directed other arriving traffic into the hold at 3,000 feet whilst he attempted to place Golf Romeo onto a southerly heading on the assumption that the aircraft was now at 2,000 feet. At 1534 hr the pilot made a number of transmissions which indicated that he was now disorientated and very concerned. The controller attempted to reassure the pilot and limited further instructions to the pilot requesting only that he maintain 2,000 feet and continue heading southbound. Shortly afterwards the aircraft broke out of the base of the cloud at about 500 feet and the pilot found himself over open fields. He decided to land immediately. The aircraft landed in a sloping field but came to rest inverted. The pilot eventually managed to extricate himself from the wreckage.

As soon as the pilot transmitted that he was attempting to land in a field the controller advised him of the surface wind and then activated the crash alarm. The resident police unit responded immediately and their helicopter was airborne at 1540 hr. The helicopter pilot described the meteorological conditions as challenging but just within his limits. He estimated the visibility as 1,500 metres with a cloud base at 300 feet, the south westerly wind was reported as 15 kt with gusts to 25 kt. Over the hills to the north of the airfield he estimated the visibility to be 1,000 metres with a cloud base of about 200 feet. After searching in the area of the base leg for Runway 21 the helicopter then moved towards the higher ground to the north east of the airfield. The pilot was seen walking through a field and the helicopter landed to assist him. After directing the uninjured pilot to a police car which had arrived at the scene the helicopter pilot shut down the helicopter to await an improvement in the weather, and was able to fly out about 20 minutes later.

Local terrain

Shoreham Airfield is located on the English south coast at a height of 7 feet amsl. The South Downs are close to the northern boundary of the airfield. The aircraft landed in a field approximately 3·5 nm to the north east of the threshold for Runway 21. The field is approximately 400 feet amsl. Much higher ground lies adjacent to the accident site including a spot height of 672 feet less than 1·5 nm away with even higher ground a little further to the east at 813 feet. There is

also an illuminated mast at 863 feet amsl located 3 nm on the final approach to Runway 21. The Minimum Sector Altitude to the north east of Shoreham is 2,100 feet.

Meteorological conditions

The appropriate meteorological forecast for southern England indicated that there was an occluded front lying from the Wash to Bournemouth at 1100 hrs. The front was moving south east at 10 kt and weakening. The forecast indicated that the conditions would generally be 25 km visibility in occasional rain and rain showers with 5/8 cloud at a base of 2,000 feet and tops 8,000 feet. The visibility was forecast to reduce occasionally to 8 km, mainly in the north of the area, with cloud of 3 to 6/8 with a base of 1,000 feet and tops 8,000 feet. In isolated areas, mainly in the north east, conditions were expected to reduce further to a visibility of 4,000 metres in rain and drizzle with an associated cloud of 4 to 6/8 with a base of 500 feet. The forecast also indicated higher level cloud throughout the period and included a warning of strong south westerly winds with isolated gusts to 25 kt in exposed areas.

The automatic terminal information service (ATIS), that the pilot acknowledged when he requested taxi instructions, gave the following information: 'surface wind 230°/14 kt, visibility 6,000 metres in rain showers, cloud scattered at 1,600 feet, broken at 2,200 feet, broken at 3,000 feet.' When the pilot was cleared to line up on Runway 21 ATC informed him that the visibility was now 3,000 metres in moderate rain.

Air traffic control

Shoreham is located in Class G airspace. In such airspace the VMC minima whilst at or below 3,000 feet require an in flight visibility of 5 km whilst remaining clear of cloud and in sight of the surface. If the aircraft's speed is less than 140 kt or less then the in flight visibility requirement is reduced to 1,500 metres. However, in this instance the privileges of a PPL, without an IMC rating, are more restrictive and require the holder to operate in a minimum visibility of 3,000 metres whilst remaining in sight of the surface at all times. Flight in circumstances that require compliance with IFR is not permitted.

At the time of the incident the VDF at Shoreham was operating for test purposes only. It was a new installation and the appropriate acceptance checks had not been completed, however, there was no reason to believe that it was not working accurately. As the situation developed the controller decided to use the derived information to assist the pilot in routing towards the airfield and, consequently, away from the high ground.

The Manual of Air Traffic Services, Part 1, Section 5, provides guidance on handling aircraft in an emergency. Under the heading "Aircraft Lost - Terrain Clearance" the following advice is given: 'It is particularly important to consider terrain clearance if the aircraft is flying at a low level. Controllers must make allowance for terrain and obstructions within a wide area around the estimated position of the aircraft and advise the pilot to climb if there is any doubt that adequate clearance exists. If a pilot is unable or unwilling to climb he is to be warned of the potential hazard at that level.'

Supervision of flying

The flight was authorised by the operations manager as permitted by the flying club's operations manual. At the time that the flight was authorised the weather was suitable for the intended flight.

Later, as the pilot walked to his aircraft, he saw the flying club's instructor returning from a flight and he told her that he intended to conduct a brief local flight. He explained that he had left his log book and licence in the flying club because he required a signature to validate his certificate of experience which was due to expire in two days time. The instructor was not aware of his qualifications or experience but pointed out that there was a crosswind component of about 12 kt and that she had curtailed her training flight because the visibility in the circuit had reduced to an estimated 3,000 to 4,000 metres on the downwind leg.

The instructor returned to the flying club and became involved in other tasks. It was later brought to her attention that the weather had deteriorated further and that G-BTGR (GR) was taxiing. The instructor was surprised but, assuming that the pilot held an IMC rating, took no further action. A few moments later ATC contacted the flying club to enquire whether the pilot of 'GR' held any IMC qualification. Examination of his licence and log book revealed that he did not hold an IMC rating and that his only exposure to instrument flying had been during his PPL training 3 years previously.

Summary

After the flight had been authorised the meteorological conditions deteriorated markedly and rapidly below those that were forecast. The pilot was subsequently provided with an update on the meteorological conditions by the flying instructor and, prior to his take-off clearance, by ATC. Nevertheless, the pilot became airborne and rapidly encountered conditions that were beyond his capabilities.