

AAIB Bulletin No: 2/93

Ref: EW/C92/12/4

Category: 1c

Aircraft Type and Registration: Beech A36 Bonanza, VR-CYY

No & Type of Engines: 1 Continental IO-550-B piston engine

Year of Manufacture: 1990

Date & Time (UTC): 9 December 1992 at 1848 hrs

Location: 8 nm east of Luton Airport, Bedfordshire

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - None

Injuries: Crew - Fatal Passengers - N/A

Nature of Damage: Aircraft destroyed

Commander's Licence: Private Pilot's Licence with night rating

Commander's Age: 57 years

Commander's Flying Experience: 1322 hours (of which 213 were on type)
Last 90 days - 26 hours
Last 28 days - 5 hours
Last 7 days - 3 hours

Information Source: AAIB Field Investigation

History of the flight

VR-CYY left Luton at 1027 hrs on the morning of 9 December for a flight to Guernsey, via Southampton. Three passengers were picked up at Southampton and the aircraft was refuelled; 145 litres of fuel were loaded and this brought the fuel level in each tank to the bottom of the tabs which gave a total fuel load of about 325 litres. Departure was at 1210 hrs and arrival at Guernsey was at 1255 hrs. The aircraft left Guernsey at 1550 hrs for the return journey to Luton, again via Southampton where it arrived at 1641 hrs. The pilot checked the weather and a VFR flight plan, transmitted at 1657 hrs, was filed to Luton, alternate Stansted; the route was via Compton VOR and Bovingdon VOR at 2,400 feet amsl. The passengers remained at Southampton and the aircraft departed for Luton at 1814 hrs.

Analysis of the recorded speech transcript of the Luton ATC tape indicated that, at 1838 hrs, when about 8 nm south-west of the Bovingdon VOR at 2,500 feet, VR-CYY called Luton Radar on frequency 129.55 MHZ. An SSR code, 7240, was allocated and the aircraft was subsequently

identified and given a Radar Advisory Service. At about 1840 hrs, the pilot was asked to reduce speed and was told that he was number two to a Boeing 757 for the ILS approach to runway 08; he was informed that the airport information was "India" and the QNH 1027 mb. This was acknowledged and the instruction was given to leave the Bovingdon VOR on a heading of 330°. At about 1842 hrs, the aircraft had about 1/2 nm to run to the VOR and the outbound heading was revised to 350°; the pilot repeated this back incorrectly as 360°. At this time the Boeing 757 became established on the localiser at 7³/₄ nm from touchdown.

Due to work in progress on the airfield it was necessary for the Boeing 757, which landed at about 1846 hrs, to backtrack the runway. To facilitate this the controller asked VR-CYY to carry out a rate one turn to the right and to roll out on a heading of 350°. While the aircraft was in the orbit the controller apprised the pilot of the restricted runway distance caused by the work in progress; this was acknowledged and, shortly before 1847 hrs, the pilot told the controller that he was on the required heading of 350°. At 1847 hrs, the aircraft was given a heading of 050° to close the localiser, from the right, at 9 nm from touchdown and was told to report established; clearance was then given to descend to 2,000 feet on QNH 1027 mb. Shortly before 1848 hrs, the controller asked the aircraft to confirm his handling agents name and in his reply the pilot reported that he was established. The controller acknowledged this and, at 8 nm from touchdown, VR-CYY was cleared for further descent with the ILS; he also asked whether the pilot wished to use the QNH or QFE pressure setting for landing. About 9 seconds later, at 1848:09 hrs, a momentary, ambiguous transmission was recorded. The controller had noticed that the height readout on the radar was 1,500 feet and he asked VR-CYY what his altitude was. There was no reply and, despite several calls, no further contact on radar or radio was made with the aircraft. Full search action was initiated.

Radar data

Computer recorded data was obtained from both Debden and Heathrow radar heads. This confirmed that an aircraft with SSR code 7240 crossed Bovingdon VOR shortly after 1842 hrs and turned onto a track of about 347°(T); the altitude was 2,500 feet and the groundspeed about 112 kt. The wind at 2,000 feet was 060°/20 kt. An orbit to the right was started at 1845:26.9 hrs and was complete by 1846:40.9 hrs. At 1847:18.1 hrs a right turn was made to track about 047°(T) and the groundspeed reduced to about 103 kt. At 1847:42.8 hrs the altitude had started to reduce and, at 1848:1.3 hrs, it was 2,000 feet; the Boeing 757 had passed this point on the approach, at the same altitude, about 6 minutes previously at 1842:9.5 hrs. The last recorded contact from the Debden radar was at 1848:7.4 hrs; the altitude was 1,500 feet and the aircraft was in a right turn, descending at about 4,900 feet/min.

Meteorological information

An aftercast provided by the Meteorological Office at Bracknell indicated that there was an occlusion, lying from Skegness to near Southampton, moving south-west. The TAFs available at Southampton for Luton and Stansted Airports, at the time the VFR flight plan was filed, were:

EGGW 1601 01006KT 0600 44FG 8ST001 TEMPO 1601 0200 PROB20
TEMPO 1901 5000 10BR 6ST010
EGSS 1601 01005KT 0600 44FG 7ST001 TEMPO 1601 1500 7ST005
PROB20 TEMPO 1822 5000 10BR 3SC040

The 1820 hrs and 1850 hrs meteorological reports for Luton Airport were:

1820 EGGW 04006 2500 10BR 3ST002 7ST003 06/05 1027
1850 EGGW 06008 3000 10BR 3ST003 7ST004 05/05 1027

The commander of the Boeing 757 reported that the cloud on the approach was very patchy; the airport lights were visible at 7 nm, when the aircraft was at 2,000 feet, but he was then in and out of cloud until about 3 nm from touchdown.

Examination of the wreckage

Examination of the accident site revealed that the aircraft had struck the ground at a very high speed. The aircraft had passed through the outer edge of a tree and then struck the ground, whilst banked about 90° to the right. An assessment of the relative positions of where the aircraft struck the tree and the ground showed that it had been diving at about 45 degrees to the horizontal. At impact, the aircraft's track was about 250° M with its fuselage orientation indicating that the wing was at a fairly high angle of attack. The airframe was severely compressed, longitudinally, but the bulk of the aircraft had come to rest at the point of impact. The landing gear legs and some of the flaps had become detached and had been thrown up to 60 metres down track of the impact site into a small wood. The propeller had become detached from the engine with the separation being the result of fragmentation of the hub. The aircraft was recovered to the AAIB facility at Farnborough for more detailed examination.

Examination of the airframe did not reveal any evidence of pre impact failure of either the structure or the flying controls. Witness marks on the aileron end ribs indicated that they were positioned near neutral with a slight right roll input. No clear witness marks could be detected on either the elevators

or rudder, however, the balance of evidence suggested that they were both around the neutral position with slight up elevator and right rudder. The elevator trim was neutral and although the autopilot appeared to have been switched on, it was not possible to determine whether or not it was engaged. By examination of their respective operating mechanisms, it was established that the landing gear had been extended and the flaps were in the retracted position.

The main altimeter was found to have its subscale set to 1027 mb, which was correct for the Luton QNH at the time of the accident; the two other altimeters were set at 1024 mb. The Rate of Climb indicator mechanism was trapped at the maximum rate of descent position. Both artificial horizons indicated that the aircraft was in a 90° right bank and pitched nose down. The engine tachometer had become trapped at 2,550 RPM and the fuel flow meter at 15.5 gph. these readings being reasonably consistent with normal cruise power settings. Examination of the airspeed indicator revealed evidence that the speed at impact was about 205 kt.

Pilot information

Although the pilot flew the necessary exercises, followed by a flight test, in October 1990 he did not complete the requirements for the grant of an IMC rating; 39 hours instrument flying were recorded in his log book. As he held neither an IMC rating, an instrument rating nor a radiotelephony operators licence he was not qualified to fly an instrument approach, under IFR, into an aerodrome in the United Kingdom.

Post mortem examination revealed no pre-existing medical condition which could have contributed to the accident.