

Aircraft Type and Registration: Cessna 150J, G-BTER

No & Type of Engines: 1 Continental O-200-A piston engine

Year of Manufacture: 1969

Date & Time (UTC): 22 April 1993 at 1539 hrs

Location: Bembridge Airport, Isle of Wight

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - Serious Passengers - Serious

Nature of Damage: Aircraft, garden fence and wheel barrow destroyed

Commander's Licence: Private Pilot's Licence

Commander's Age: 45 years

Commander's Flying Experience: 70 hours (of which 47 were on type)
Last 90 days - 1 hour 45 minutes
Last 28 days - 1 hour

Information Source: AAIB Field Investigation

History of the flight

The pilot was normally resident in Gibraltar. He had not flown a Cessna 150 for two years although he had flown a Cessna 172 in Spain for 45 minutes during January. Shortly before the accident he flew by scheduled airline to Britain in order to collect G-BTER ('ER') and fly it back to Gibraltar with a friend. This friend had once held a PPL(A) but it had lapsed 11 years previously and he intended to renew it in Gibraltar. Although he was to be a passenger, the friend had agreed to assist the pilot with navigation on the long journey. Neither man had seen or flown 'ER' prior to collecting it from Leavesden Airport; the aircraft was owned by a leasing company based in France.

On the day of the accident the pilot met his friend at Watford railway station. On meeting, it was immediately apparent to the pilot that his passenger was accompanied by a considerable amount of luggage. The passenger explained that he thought they would be travelling in a four-seater aircraft and the weight of the six pieces of baggage was only his standard airline allowance of 55 lb.

At Leavesden the pilot collected the aircraft keys from an intermediary, signed a leasing contract and obtained an envelope containing copies of some of the aircraft's vital documents. According to the pilot this envelope did not contain a copy of the weight and balance schedule. Both occupants carried out an external inspection of the aircraft including a test of the fuel drains for water. The pilot noted that the fuel tanks were approximately three quarters full of fuel. After some initial difficulty in starting the engine, it was tested and appeared to be running normally. The pre-take-off checks were then completed in accordance with a Cessna 150 checklist in preparation for a flaps-up take off. After some difficulty with RTF reception, the aircraft was taxied to the end of Runway 24 where the pilot applied full throttle for take off. He recalled that maximum RPM were 2,600 at brakes-off and he allowed the aircraft to accelerate to 70 mph. On achieving this speed he raised the nose, became airborne and allowed the aircraft to accelerate in ground effect. The pilot stated that the take-off ground roll consumed most of Leavesden's 957 metre asphalt runway.

The controller at Leavesden watched the take off. He stated that the aircraft became airborne early during its take-off run and then flew along the runway about one to three feet above it for most of its length. The aircraft achieved a height of about 20 feet as it crossed the upwind threshold and then commenced a slow climbing turn to the right. Because of its failure to accelerate and climb normally, the controller considered that there must be something wrong with the aircraft but decided not to distract the pilot with an R/T message until it had gained more height. After the aircraft had climbed well clear of the ground, the controller asked the pilot if he had a problem to which the pilot replied "NO, WE HAVE QUITE A LOT OF LUGGAGE ON BOARD, SORRY TO HAVE FRIGHTENED YOU". The pilot then changed frequency and flew to Fairoaks where he landed without incident.

At Fairoaks the aircraft was refuelled to full tanks with 49 litres of AVGAS. After a meal in the airfield restaurant, the occupants purchased lifejackets, maps and flight guides. Next they planned a flight to Lydd where they intended to clear customs en-route to France. At about 1120 hrs the pilot visited the Tower and informed the AFISO (Aerodrome Flight Information Service Officer) that he would be departing for Lydd that afternoon and, because the aircraft had been refuelled to full tanks, he would be taking off overweight. When he announced his intention to clear customs at Lydd, the AFISO advised him that he could, if he wished, save himself time by clearing customs at Fairoaks. The offer was accepted and the pilot went to the Fairoaks Flight Centre where he planned a flight to Jersey via the Goodwood VOR, and NDBs on the Isle of Wight and Alderney. Whilst in the planning room, he asked a flying instructor if weather information for Jersey was available. The instructor obtained a recent Jersey METAR from the VOLMET SOUTH broadcast. The instructor was unable to remember the exact details of the broadcast but he was certain that the report mentioned significant cloud cover at 600 feet or below, and so he advised the pilot that the weather was unsuitable for a VFR arrival. The pilot replied that he would check the weather by telephone before departing. At some time before

take off, the passenger telephoned a business colleague on Jersey to arrange overnight accommodation and to check the weather there.

The pilot returned to the Tower at about 1400 hrs where he filed a flight plan and reminded the AFISO that he would be taking off somewhat overweight. He also mentioned that on departure from Leavesden, he had been asked by ATC if he had a problem. The AFISO handed the pilot a folder containing appropriate METARs (airfield weather reports), TAFs (airfield weather forecasts), a low-level forecast weather chart and a forecast wind chart. The folder was overprinted with a very detailed explanation of the weather codes and the formats used within it.

The TAF for Jersey was: EGJJ 1322 20014 8000 10BR 4ST007 7SC020 TEMPO 1322 4000 62RA 6ST003 TEMPO 1317 1500 59RA 7ST001

The flight plan indicated that the pilot expected to arrive at Jersey at 1600 hrs. He had nominated Alderney as his diversion. A TAF for Alderney was not available but the low level forecast chart indicated that the weather at Alderney was unlikely to be much better than that at Jersey and the TAF for Guernsey showed that the weather there was likely to be worse (800 metres visibility and 7 oktas of stratus on the surface). Moreover, there was no indication on the pilot's map and flight log that he had made any allowance for the forecast wind of 210°/30 kt at 2,000 feet. The flight plan stated a flight time of 1 hour 30 minutes whereas, when allowance for the wind was made, the flight time was subsequently calculated to be at least 2 hours 25 minutes had the aircraft reached Jersey. At the ETA of 1 hour 30 minutes after departure, the aircraft would have been mid-way along the leg from Bembridge to Alderney and most probably out of radio contact with both the London and Jersey ATCCs.

After starting the engine at about 1430 hrs, the pilot informed the Tower that he was taxiing whereupon the AFISO initiated a standby of the airfield's own emergency services. For take off the aircraft occupants agreed that the passenger would hold one of his heavier bags on his lap so as to move the centre of gravity forward. At 1442 hrs they commenced the take-off run along Runway 24; the weather at the time was fine, the QNH was 1006 mb and the wind was 210°/15 kt. The pilot considered that the aircraft's performance on take off at Fairoaks was no better and no worse than at Leavesden. The AFISO stated that the aircraft accelerated slowly and used 600 metres of runway to get airborne. After lift-off he noticed that the aircraft did not climb or accelerate normally; it continued below the tree-line as seen from the Tower and achieved an estimated 20 feet agl about ¼ mile west of the airfield where it dropped a wing which, he presumed, was deliberate in order to clear a tree. The aircraft was still at a height of between 100 and 200 feet one mile west of the airfield.

Eventually the aircraft progressed south and the pilot contacted Farnborough and Dunsfold radars for service. En route to Goodwood the aircraft would not climb above 1,500 feet QNH. As it neared the south coast the visibility became progressively worse and the pilot used carburettor heat periodically as a precaution against induction icing. From Tangmere he was unable to see the Isle of Wight and he decided that if the weather was no better over the island, he would divert to Bembridge. On reaching the island there was no improvement and so he contacted Bembridge by radio and sought permission to land. The radio operator granted permission and passed the airfield details which were: runway in use 12; wind 180°/06 kt; cloud base 1,200 feet aal; weather light drizzle, temperature 10°C and QFE 1006 mb.

According to the pilot, he joined downwind and carried out the pre-landing checks from the checklist including the application of carburettor heat. He approached the runway using 20° flap (full flap is 40°) at about 70 mph which he considered prudent because of the aircraft's heavy load. He remembered bouncing once or twice and then deciding to go-around. He applied full throttle and returned the carburettor heat to cold. He remembered leaving the flaps at 20° initially and then raising them, he thought to 10°, at some stage during the attempted go-around. He could remember little else. His passenger did not notice anything wrong with the engine during the go-around but he did remember the ensuing sequence of events and a strange noise which he was unable to identify or describe.

According to the radio operator, 'ER' joined downwind at the normal height and distance abeam the runway. On final approach it overshot the extended centreline slightly and appeared to him to be higher than normal. He saw the aircraft's nose drop a little and the speed seemed to be increasing as it crossed the threshold about 50 feet agl. It first touched down firmly, on all three wheels, about one third of the way along the 837 metres long runway and then bounced back into the air. It bounced repeatedly, at least three times but not more than six times; after the first bounce each successive bounce was nosewheel first. The last bounce occurred about 200 metres before the end of the concrete whereupon the radio operator heard the engine power increase and the pilot state that he was "going around". The aircraft then flew very slowly, "porpoising and wallowing". It did not gain much height as it flew towards rising ground between the airfield and Whitecliff Bay. The radio operator was unable to recall whether the engine sounded to be at full power but he was sure that it was neither spluttering nor misfiring. The aircraft just cleared trees about 450 metres beyond the end of the runway and then the left wing dropped about 60° followed by the nose. The aircraft crashed into the garden of a cottage. The emergency services were alerted by the radio operator who also arranged for first aiders from the airport's factory to attend the scene.

Examination of Wreckage

Examination of the wreckage revealed that the aircraft had descended into an apple tree in a nose and left-wing down attitude with very little forward speed. At the time of impact, the flaps were retracted and the engine was delivering power. After striking the ground, the aircraft passed through a wooden fence and came to rest in a neighbouring garden.

Aircraft Performance

The maximum take-off and landing weight of the Cessna 150J is 1,600 lb. The two occupants weighed 440 lb; the nine pieces of baggage weighed at least 130 lb and the aircraft weighed 1,112 lb. With full tanks (135 lb of AVGAS) this made the aircraft at least 228 lb overweight on take off from Fair Oaks and at least 200 lb overweight on the go-around at Bembridge. (With no baggage the maximum allowable fuel on take off would have been six US gallons). The pilot stated that he did not perform a weight and balance estimate or calculation; he had assumed that the aircraft would carry two adults, full fuel and 120 lb of baggage.

Data from the most recent C of A flight test were obtained from the CAA. The static RPMs achieved at full throttle on take off from Leavesden and Fair Oaks were no less than that obtained during the flight test. An extract of the climb performance measured during the flight test was sent to the Cessna Aircraft Company for analysis. Using this data the company calculated that at 1,800 lb weight, the take-off ground roll would have been 700 metres and the take-off distance required to clear a 50 feet obstacle would have been 1,220 metres. They also calculated that at full throttle and the best rate of climb speed of 67 mph, under the prevailing weather and loading conditions, with 20° flap 'ER' would have **descended** at 25 ft/min. With the flaps up, the rate of climb would have been 135 ft/min which equated to a climb angle of 1.35°. When measured from the point at which the go-around commenced, the trees 450 metres beyond the end of the runway subtended an angle of at least 1.5°.