

ACCIDENT

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| Aircraft Type and Registration: | Auster J5F Aiglet Trainer, G-AMZU | |
| No & Type of Engines: | 1 De Havilland Gipsy Major 1F piston engine | |
| Year of Manufacture: | 1953 | |
| Date & Time (UTC): | 19 September 2009 at 1430 hrs | |
| Location: | Bicester Airfield, Oxfordshire | |
| Type of Flight: | Private | |
| Persons on Board: | Crew - 1 | Passengers - 1 |
| Injuries: | Crew - 1 (Serious) | Passengers - 1 (Minor) |
| Nature of Damage: | Left wing broken, landing gear, propeller and right wing very badly damaged | |
| Commander's Licence: | Private Pilot's Licence | |
| Commander's Age: | 61 years | |
| Commander's Flying Experience: | 870 hours (of which 705 were on type) Last 90 days - 3 hours Last 28 days - 1 hour | |
| Information Source: | Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB | |

Synopsis

During the takeoff run the aircraft was slow to accelerate and, once airborne, it was slow to climb. As it passed over some trees, the aircraft appeared to stall at such a low level that recovery was impossible and it descended into the trees. A combination of factors contributed to a lift-off point that was further along the runway than expected. It is possible that the high density altitude contributed to degraded climb performance thereafter.

History of the flight

The aircraft, with two people on board, taxied out for departure from a grass airfield and the pilot decided that he would takeoff on Runway 36. The weather, obtained later from the Met Office, was a light and variable wind,

visibility 15 to 20 km, few clouds between 3,500 and 4,000 ft, a temperature of 25°C and a dew point of 13°C. The pilot taxied onto the runway and stopped to carry out the engine power checks. Shortly afterwards, the aircraft began its takeoff run from a position which was estimated to be approximately 150 to 200 m from the start of the 1,000 m long runway.

The aircraft was thought by witnesses to be slow to accelerate but then it "lurched upward" as if the pilot was trying to "haul the aircraft into the air". The aircraft began to climb but only gently and once again it was seen to "lurch" upward as it approached a line of trees. As it passed low over the trees, the left wing and the

nose dropped and the aircraft descended into the trees and came to rest in the corner of a small industrial site approximately 380 m beyond the end of the runway. The passenger was helped from the wreckage soon after the impact but the pilot had to be cut free before being flown to hospital.

Witness information

A witness saw the accident from close to the start of the takeoff run and saw the aircraft “accelerate rather slowly” and lift off approximately $\frac{2}{3}$ of the way along the runway. When it lifted off the ground, it “pitched very nose-up, as if [the pilot] had pulled back hard on the stick”. Immediately afterwards “the tail flicked up very quickly indeed, as if he had pushed the stick forward rapidly”. As the aircraft approached the trees, it “pitched nose-up and then levelled out again”. The aircraft began to descend slowly while turning gently to the right but, just before it disappeared below the tree line, the right wing “went up a bit”. The witness estimated that the aircraft was never more than 10 to 15 ft above the trees.

Another witness, who was an experienced Auster pilot, saw the accident from a similar location. He recalled that the aircraft used a lot of runway during the takeoff and was in a slightly nose-down attitude rather than level or slightly tail-down as he would have expected. The witness estimated that the aircraft lifted off approximately $\frac{3}{4}$ of the way along the runway. As the aircraft left the ground the nose “pitched up noticeably” and he saw some “pilot induced oscillations” in pitch. The aircraft settled into quite a nose-high attitude but was only climbing slowly and it began to turn right gently. The witness then saw the “left wing drop and the nose yaw left”. The aircraft was only “a few feet above the trees when it rolled approximately 60° left and the nose pitched down”.

This witness was one of the first people to reach the aircraft after the accident. He reported that the elevator trim was in the full nose-up position rather than neutral, which would be the norm for takeoff. He also noticed that the flaps were set to the second position whereas they would usually be at the first position for takeoff.

Information from the pilot

The pilot survived the accident and was able to remember some of the events leading up to the takeoff. Before taxiing out, the pilot noticed that the windsock near the southern end of the airfield was showing a very light southerly wind, which he estimated to be approximately 2 kt. The windsock near the eastern boundary showed a very light easterly wind. He decided not to take off towards the east because he would cross the takeoff run being used by gliders operating at the airfield. He assessed that the very slight tailwind at the southerly end of the airfield would become a crosswind as he approached the mid-point. He decided not to use the full length of the airfield to avoid activity near the southern boundary, which included cars, gliders and people. He estimated that he began his takeoff run approximately 150 m from the southern boundary and he considered at the time that the remaining distance available (approximately 850 m) would be sufficient.

The pilot commented that, although he could not remember the actual trim position, full nose-up trim would have required more force than normal to raise the tail which might have prompted him to reject the takeoff. He stated that he had never before used two stages of flap to take off and it was highly unlikely that he did so on this occasion. He thought it unlikely that the flap lever moved during the impact sequence and wondered whether he had lowered the flap in an attempt to clear the trees although he did not remember doing so.

Information from the passenger

The passenger in the aircraft was also an Auster pilot. He remembered the winch operator discussing whether to change the takeoff direction for the gliders but deciding that the wind was so light that it was not necessary. He remembered that the aircraft “bounced” into the air at about 60 mph and, once airborne, flew normally with the engine running well. He did not think that the pilot adjusted the flap setting as the aircraft approached the first line of trees.

Analysis

The airfield is at an altitude of 267 ft amsl but in the conditions of the day its density altitude was approximately 1,270 ft. The aircraft started its takeoff run approximately 150 to 200 m inset from the start of the runway although there was approximately 800 to 850 m still available. It is possible that there was a very slight tailwind during the early part of the takeoff run. The nose-down attitude of the aircraft would have

resulted in a greater down force on the tyres than usual, which was likely to have reduced the acceleration. The higher density altitude would also have led to an acceleration that was less than usual. The combination of factors contributed to a longer ground run, and a lift-off point further along the runway, than would otherwise have been expected.

Once airborne, the aircraft’s climb performance would probably have been reduced by the high density altitude and the aircraft might not have accelerated at its usual rate. There was no evidence that the aircraft hit the trees before the loss of control but its clearance from them was marginal. It is possible that the “lurch” upwards as the aircraft approached the trees represented an attempt by the pilot to clear the tree line, perhaps by lowering a stage of flap. The evidence suggested that the aircraft stalled with an accompanying wing drop at such a low height above the trees that recovery was impossible. It was not possible to positively determine the flap or trim setting during the takeoff ground roll.