ACCIDENT

Aircraft Type and Registration:	Gemini Flash IIA, G-MVKC	
No & Type of Engines:	1 Rotax 503 piston engine	
Year of Manufacture:	1988 (Serial no: 709-1188-6-W499)	
Date & Time (UTC):	15 May 2014 at 1650 hrs	
Location:	Caernarfon Airport, Gwynedd, Wales	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Fatal)	Passengers - N/A
Nature of Damage:	Aircraft destroyed	
Commander's Licence:	Student pilot	
Commander's Age:	61	
Commander's Flying Experience:	26 hours (of which 10 were on type) Last 90 days - 5 hours Last 28 days - 2 hours	
Information Source:	AAIB Field Investigation	

Synopsis

The aircraft was seen to depart from Runway 25 at Caernarfon Airport and make a normal climb to a height of about 200 ft. It then entered a left turn during which, the angle of bank was observed to steadily increase until the nose dropped and the aircraft descended, turning through some 180° before striking the ground in the area of the taxiway. The pilot was fatally injured.

History of the flight

The student pilot arrived at the airport to carry out a flight in the local area. The weather was good with a light westerly wind of about 4 kt, visibility in excess of 10 km, cloud FEW at 3,000 ft, QNH 1036 hPa and with a fog bank visible offshore to the north-west but not affecting the airport. The Chief Flying Instructor (CFI) briefed the student to remain in the airport circuit which was right-hand, using Runway 25 with a circuit height of 800 ft.

The aircraft had been flown that morning on its Permit to Fly check flight and was found to be in a fully serviceable condition. The student pilot involved in the accident was seen to carry out the pre-flight inspection of his aircraft and get dressed in his flying clothing and helmet. The accident flight was to be his eighth solo flight having accumulated 5.4 hours of solo flying in the last seven flights. He contacted the air-ground radio operator and was given airfield information of the runway in use as Runway 25 and the QFE/QNH 1036 hPa. The aircraft was taxied to the holding point where the pilot was seen to carry out the pre-takeoff checks before transmitting that he was ready for departure. The radio operator,

© Crown copyright 2014

in the tower, passed the wind as "light and variable" which was acknowledged by the pilot. The aircraft entered the runway and was seen to line up; the engine power was heard to increase normally with no misfiring or other unusual sounds. Witnesses saw the aircraft accelerate along the runway and become airborne adopting a normal climb. At a height, estimated at between 160 ft and 250 ft, the aircraft commenced a left turn with the angle of bank increasing steadily until the nose began to drop. The aircraft descended and struck the ground in an area of grass adjacent to the bulk fuel storage installation before sliding along the taxiway and coming to rest. The engine was heard to remain at the constant high power setting throughout the flight to the impact.

The CFI and another witness who saw the accident manoeuvre considered that the entry into the left turn appeared to be consistent with a control input by the pilot, but that no attempt to correct the increasing angle of bank or the nose drop was observed.

Various people ran or drove to the aircraft, amongst them was the duty paramedic from the Helicopter Emergency Medical Service (HEMS) helicopter based at the airfield. The pilot was given first aid before being transported to the local hospital in the HEMS helicopter. Despite the best effort of the paramedics the pilot was declared deceased on arrival at the hospital.

Medical and pathological information

A post-mortem examination of the pilot was carried out and the findings summarised by an aviation pathologist were as follows:

> *'In summary, the pilot died of the effects of traumatic injuries which he sustained when the aircraft struck the ground. While he survived the initial impact for a short period, the crash forces were such as to produce fatal injuries, and the provision of alternative or additional personal safety equipment would have been unlikely to affect the outcome. The medical investigation has revealed no evidence of any medical or toxicological factors which are likely to have played a role in the cause of the accident, although the possibility that the pilot may have sustained an incapacitating event which has left no evidence at the autopsy cannot be entirely ruled out. No recommendations arise from the medical investigation of this accident.'*

Engineering

Aircraft description

The Gemini Flash IIA is a tandem two-seat microlight aircraft, powered by a Rotax 503 piston engine, driving a three-bladed composite propeller. G-MVKC's Permit to Fly maintenance inspection had been completed on 14 May 2014. The Permit to Fly check flight had been conducted, to the satisfaction of the Check Pilot (who was also the CFI), on the morning of the 15 May 2014, following which the aircraft remained assembled in a hangar prior to the accident flight in the afternoon of 15 May 2014. The aircraft had accumulated 531 hours since manufacture.

© Crown copyright 2014

Accident site and wreckage examination

The aircraft had stuck the ground on an area of grass adjacent to the bulk fuel storage facility, approximately 130 m to the south of Runway 25, before sliding along a tarmac taxiway. The wreckage trail was 30 m in length and was aligned on a heading of 105°M. All components of the aircraft were accounted for at the accident site and inspection of the wreckage revealed that the aircraft had initially struck the ground with the left mainwheel, which had detached on impact. The left side of the trike and the left wing were damaged by the ground impact, whilst the right side of the trike, the right mainwheel and the right wing were largely undamaged. The damage to the aircraft and distribution of the wreckage were consistent with the aircraft striking the ground in a shallow, left wing low attitude, with moderate forward speed.

All three propeller blades had failed in overload at their root ends, indicating that significant engine power was being developed at the point of impact. The aircraft's flying wires, which connect the control bar to the wing, were found to be continuous and all failures of the aircraft's load-bearing structural components were consistent with the ground impact. A significant fuel spill had occurred due to abrasion of the aircraft's plastic fuel tank on the tarmac surface of the taxiway, and only traces of fuel remained in the fuel tank. Fuel was present in the carburettor bowl, consistent with engine operation at impact.

The wreckage was recovered to the AAIB's facility at Farnborough for detailed examination. The wing hang-point mounting at the top of the pylon was fixed in the forward of the three available hole positions; an approved condition that maximises the trimmed speed in flight. Both wingtip-mounted wing washout trim adjusters were set to the normal 'N' position, and the configuration of the leech lines'[1] rigging adjuster was found to be in accordance with approved maintenance data[2].

An unapproved hand throttle had been installed on the seat frame's upper left tube; its throttle handle had been deformed and pushed to the rearmost, idle throttle, position during the ground impact. Whilst this particular hand throttle was not approved by the BMAA, an optional approved hand throttle is available for the Gemini Flash IIA that would normally be mounted approximately 12 cm further forward on the front seat frame's upper left tube. The hand throttle is intended for use in cruising flight, not for takeoff and landing.

Due to its disruption, the operation of the hand throttle could not be checked, although the throttle cable was mechanically continuous between the throttle lever and the engine's carburettor. The aircraft's foot throttle, fitted above the right nosewheel steering pedal, was tested for operation and determined to function correctly.

Analysis

When the student pilot arrived at the airfield he appeared to be in good health and carried out the normal pre-flight preparations and checks. The CFI had discussed the weather with

Footnote

[1] The leech lines connect the trailing edge of the wing's upper surface to the top of the king post.
[2] Mainair Sports Service Bulletin 43.

© Crown copyright 2014

him and due to the presence of fog offshore had required him to remain within the airfield circuit. His takeoff appeared to be normal with no turbulence upsetting the aircraft. The turn to the left appeared to be smooth and controlled but was early for a normal circuit and was in the wrong direction for a right hand circuit. The CFI and another pilot were watching the takeoff and both described that there appeared to be no attempt to correct the left turn or to control the aircraft as it continued to increase the bank angle to the left with the nose dropping before striking the ground. It was also observed that there appeared to be no attempt to reduce the engine power. It is not known whether the fog offshore caused the pilot to make the early left turn.

The pilot had demonstrated previously to have a good standard in controlling the aircraft and to correct the developing situation should have been within his capability. Consideration was given to his moving the control bar in the wrong direction, but he had not exhibited any such tendency previously. Such an action would have been immediately apparent to the witnesses.

The Aviation Pathology report identified no incapacitating condition but stated that:

> *'the possibility that the pilot may have sustained an incapacitating event which has left no evidence at the autopsy cannot be entirely ruled out.'*

In the absence of any conclusive evidence, the investigation considered that the accident occurred due to the pilot not intervening in correcting the increasing left bank.

© Crown copyright 2014