

ACCIDENT

Aircraft Type and Registration:	Mainair Blade, G-MZMB	
No & Type of Engines:	1 Rotax 462 two-stroke piston engine	
Year of Manufacture:	1998	
Date & Time (UTC):	14 April 2007 at 1807 hrs	
Location:	Mellor, Blackburn. Lancashire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - 1 (Serious)	Passengers - 1 (Serious)
Nature of Damage:	Microlight destroyed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	47 years	
Commander's Flying Experience:	393 hours (of which 123 were on type) Last 90 days - 4 hours Last 28 days - 1 hour	
Information Source:	AAIB Field Investigation	

Synopsis

The microlight was returning to Higher Barn Farm airstrip, east of Preston, when the engine began hunting from low to moderate power. After several cycles the engine stopped and the pilot attempted to carry out a forced landing in a grass field. The airspeed decayed and the microlight probably stalled, undershooting the intended landing area, and collided with a substantial hedge. Both the pilot and passenger received serious injuries. It was highly likely that fuel starvation, due to a lack of fuel, was the cause of the engine failure.

History of the flight

The pilot was carrying out the fourth flight of the day in his microlight aircraft which he based at Higher Barn Farm, a privately owned grass airstrip. His first flight

was one solo circuit to confirm that the microlight was operating normally, before he carried passengers later that afternoon. His first passenger arrived at about 1245 hrs and was provided with safety clothing and a protective helmet. A safety briefing was given and, following a normal start and departure, a flight in the local area was conducted at about 2,000 ft. The microlight returned some 15 to 20 minutes later and parked adjacent to the hangar.

Having met his next passenger, the pilot refuelled the microlight. Firstly, he measured out a quantity of two-stroke oil and poured it into the single fuel tank, which had a capacity of 24 litres. He then filled the tank with petrol, which mixed with the oil to make the correct

two-stroke mixture. After refuelling, the pilot started the engine on the third attempt, and let it run for a short period before shutting it down. The passenger, who was himself an experienced microlight pilot, then occupied the rear seat and the pilot sat in the front seat.

The microlight departed at approximately 1530 hrs, initially landing at Pilling Sands where the engine was shut down. Before he took off to fly to Middleton Sands for refreshments, the pilot rang Heysham power station to advise them that he would shortly be flying past. No times were recorded for these flights. The pilot reportedly checked the fuel quantity before departing Middleton Sands and noted that the tank was approximately half full. After departing Middleton Sands, the microlight flew south along the M6 motorway, to Preston, and then east, to the area of Mellor and Salesbury, northwest of Blackburn. After flying around the general area, it was then flown back towards Higher Barn Farm airstrip.

Witnesses on the ground at Nab's Head, heard the sound of a microlight approaching. Initially, the engine sounded normal but it began a 'hunting' sound before coming into their view, at a low height. It was heading southwest. The engine sound then stopped and the microlight disappeared into a valley and out of sight.

The witnesses rang the emergency services and then went to locate the accident site. They found the pilot and passenger still seated in the wreckage which was entangled in a small thicket of brambles and stout holly trees. Both occupants were seriously injured and the witnesses, one of whom was a nurse, provided first aid until the emergency services arrived. The rear seat passenger, in his conversation with the nurse, stated "the engine just cut out". Both pilot and passenger were evacuated to hospital.

Microlight performance

Data provided by the manufacturer showed that this model of microlight has a fuel consumption of between 9 and 14 litres/hour, depending on the power setting. Its stall speed is approximately 30 mph.

Accident site and microlight examination

It was apparent that during the latter part of its approach, the microlight had cleared the top of a large tree but had then descended rapidly, and landed heavily, before colliding with a boundary hedge/thicket separating two large fields in the bottom of the valley. It had run into the thicket horizontally, at ground level, and the trike was wedged between two holly trees, whose trunks were about 10 cm in diameter. A third, similar, trunk between these two had been knocked down and was apparently the reason for severe facial injuries suffered by the pilot. The wing was entangled in the upper branches of the trees.

Although it appeared that there had been no weight on the wheels as the microlight entered the thicket, tracks made by all three wheels could be discerned some 19 metres before the thicket, and it was apparent that after the microlight had touched-down, it had bounced. It was, therefore, surmised that it had been close to flying speed when it collided with the thicket, and evident that had been brought to a halt in less than the length of the trike.

There was no evidence of any major mechanical failure of the engine, which could be turned by hand and there appeared to be no loss of compression in either cylinder. The ignition system was examined and found to be serviceable, as was the engine-driven fuel pump. Inspection of the fuel system generally found no evidence of blockages, and the fuel filter was free of debris. No evidence of water was found in the fuel system or tank;

the carburettor bowl was found to contain only a small quantity of fuel. The fuel tank was found to contain slightly less than two litres of fuel, with no evidence that any leakage had occurred. The unusable fuel is quoted by the manufacturer as two litres. In addition, the flexible fuel feed pipe, which hangs down inside the tank from the top, was deflected to one side, such that it did not draw fuel from the tank's lowest point.

There is no fuel gauge fitted to this microlight; fuel tank contents are assessed visually through the translucent plastic wall of the tank against a calibrated scale. The location of the tank was such that the pilot would require to lean out to one side, look to the rear and downwards to assess its contents.

The carbon fibre three-bladed propeller was completely intact, and virtually unmarked, suggesting that no power was being developed by the engine at the time of the collision with the thicket.

Discussion

The pilot had suffered severe head injuries and had very little recall of the accident. Whilst the microlight had departed from Higher Barn Farm with the fuel tank full, it was not possible to determine the microlight's flight

time after departure or what power settings had been used. The fuel system was intact with no leaks identified and the tank had not ruptured on impact. Therefore, as the fuel tank was found to contain only two litres of fuel after the accident, the available flight time should have been between 1½ hours and 2½ hours, depending on the power set during flight. If the microlight had departed Middleton Sands with the fuel tank half full, there would have been around 11 litres of useable fuel on board, sufficient for between ¾ of an hour and 1¼ hours of flight time, again depending on the power set.

The witnesses were consistent in their evidence of the low height of the microlight as it came into view, with the engine 'hunting' before it stopped. From that height, the pilot had limited options for carrying out a forced landing. He appeared to have been trying to land in one of the large fields in the bottom of the valley but, as the microlight crossed a large tree, it stalled and landed heavily before entering the thicket.

The investigation concluded that the engine had stopped, probably resulting from fuel starvation due to a lack of fuel, and that the pilot was unable to reach a suitable area on which to carry out a forced landing, due to his low height.