

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Gemini Flash 2A, G-MWMS	
<b>No &amp; Type of Engines:</b>	1 Rotax 503 piston engine	
<b>Year of Manufacture:</b>	1990	
<b>Date &amp; Time (UTC):</b>	1 July 2009 at 1229 hrs	
<b>Location:</b>	Park Hall Country Park, near Weston Coyney, Stoke-on-Trent, Staffordshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - 1 (Serious)	Passengers - N/A
<b>Nature of Damage:</b>	Extensive	
<b>Commander's Licence:</b>	National Private Pilot's Licence	
<b>Commander's Age:</b>	58 years	
<b>Commander's Flying Experience:</b>	180 hours (of which 0 were on type) Last 90 days - 0 hours Last 28 days - 0 hours	
<b>Information Source:</b>	AAIB Field Investigation	

**Synopsis**

The pilot was on his first flight in a flexwing microlight. Shortly after takeoff the microlight crashed, seriously injuring the pilot.

The pilot had three-axis microlight flying experience but had not completed any differences training for a flexwing microlight as required by Licensing Administration Standardisation Operating Requirements Safety (LASORS). His fixed wing recency had also expired.

**History of the flight**

Having been given access to a friend's recently mown field the pilot assembled the microlight with the assistance of the friend. The friend stated that the

pilot's intention was just to taxi around the field a few times. Once the microlight was assembled the pilot donned his flying clothing and strapped in. The friend then pulled the rope to start the engine and it started on the second pull. The pilot taxied the microlight in a diagonal/easterly direction down the field, turned around halfway down the field and taxied back to where he had started. He set off again in the same direction but this time closed the throttle just less than halfway down the field. He re-opened the throttle and the aircraft accelerated, becoming airborne about halfway down the remaining part of the field.

The microlight initially climbed steeply and straight

ahead before turning right onto a southerly heading towards Park Hall Country Park. It turned further right, using about 45° of bank, towards a golf course (accident site) and descended. The friend lost sight of the microlight as it went below the horizon.

The aircraft subsequently impacted the golf course 700 m from the departure site. Eyewitnesses on the golf course assisted the pilot before he was taken to hospital by an air ambulance. He remained in hospital with serious injuries for six weeks.

### **Pilot's details**

The pilot held a 'three-axis' National Private Pilot's Licence (NPPL) with a current medical declaration.

The last flight entry in his log book was 18 October 2007. Prior to this he had maintained reasonable recency and had revalidated his licence skills test whenever it had expired.

### **Pilot's comments**

The pilot was interviewed seven weeks after the accident after being released from hospital.

He stated that he had no recollection of the accident or any of his activities during the morning before the accident. He added that he did not believe it was his intention to fly that day. Previously he had flown in the rear seat of a flexwing microlight and flown the takeoff and landing, but this was not on an instructional flight.

Although he did not understand why he had become airborne, he added that it was an "act of stupidity" to do so and to start the takeoff run from half way down the field. He said he had checked the manufacturer's manuals to calculate a takeoff distance required and paced out the field believing it to be 230 m along the takeoff direction.

The pilot added that while he was aware of his lack of recency, he had not renewed his skills test as he had been occupied with a new business. He stated that although the fuel selector needed to be reachable in flight, he would never turn it off.

Although he had been advised to take lessons in a flexwing microlight he does not know why he had not done so.

### **Aircraft information**

The Gemini Flash is a two-seat flexwing microlight aircraft. As with other flexwing microlights they are controlled by moving the control bar of the aircraft. The sense of the controls for this type of aircraft is different from that of conventional three-axis aircraft. For example to turn left in a flexwing the control bar is moved to the right, as opposed to moving the control stick to the left or applying left rudder pedal on a three-axis aircraft. Similarly, pulling the control bar rearwards results in pitching the nose down in a flexwing aircraft, whereas pulling the stick rearwards in a three-axis aircraft results in pitching the aircraft nose up.

The aircraft was manufactured in 1990 and was powered by a two-cylinder two-stroke Rotax 503 engine driving a three-bladed pusher propeller. This engine is air-cooled and has a fan mounted in a shroud near the cylinder heads to increase the airflow around the cylinders, and to provide warmed air to the air intake. The fuel selector lever was located close to the engine in a position that required the pilot to reach over his shoulder to reach it in flight.

The pilot bought the aircraft in August 2008 and sent the wing to the manufacturer for a strip and rebuild in April 2009. The BMAA issued a Certificate of Validity for the aircraft on 29 May 2009 which was valid for 12 months and included a flight test by a BMAA inspector.

## Field suitability

In the BMAA Code of Good Practice for Microlight Clubs it states in the section titled BMAA Minimum Criteria for a Microlight Flying Site the following:

### ***BMAA Site Recommendations For Private Sites***

1. *Permission for use must be obtained from the landowner*
2. *Location should be outside controlled airspace. If not, permission from the Senior Air Traffic Controller responsible for such airspace must be obtained.*
3. *The site should be smooth, reasonably level and well drained when in use.*

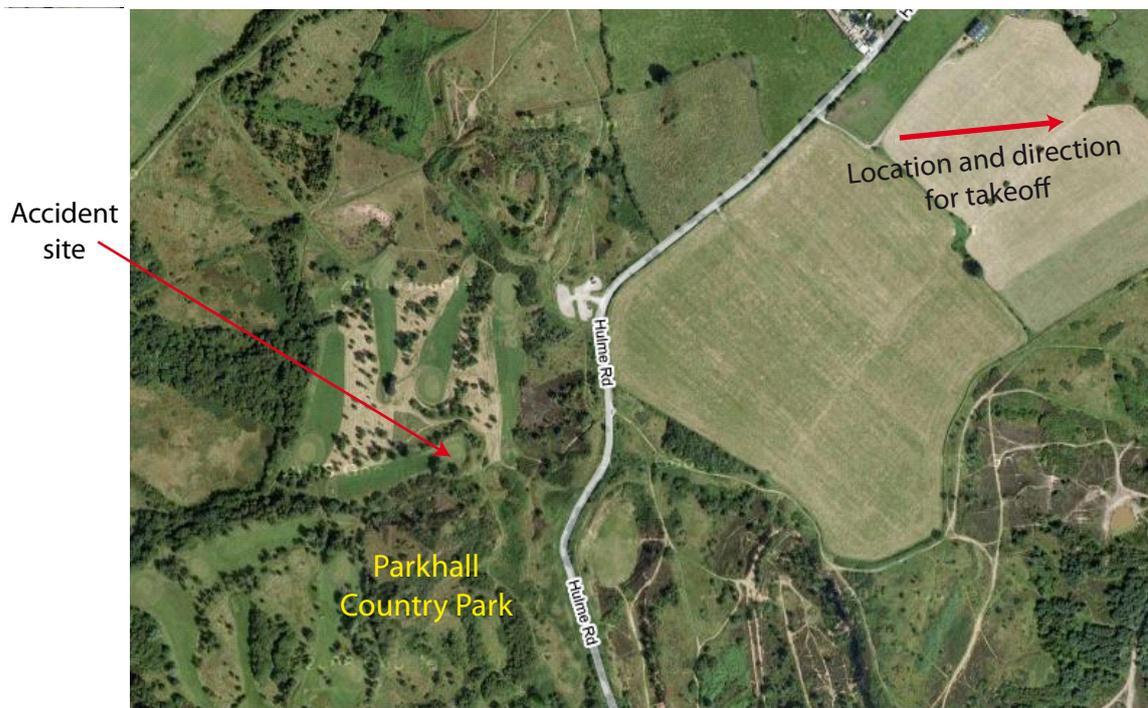
4. *The take-off/landing criteria are as follows-*

- *The runway should be a minimum length of 250 metres and a minimum width of 10 metres.*

The manufacturer agreed with this minimum runway length assuming there were no obstacles. They added that the takeoff roll was likely to be approximately 100 m.

### **Airfield information**

The field from which the aircraft departed had been recently mown, and measured approximately 200 by 100 m, see Figure 1. It was surveyed by



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**Figure 1**

the Staffordshire Police Collision Support Unit. The aircraft had taken off in a direction that had 180 m of field available on a downward slope of approximately 6%.

## LASORS

The General Information section of LASORS 2008 states in Section 3, National Private Pilot's Licence (Aeroplanes), under the title Differences Training the following:

*'He shall not fly as pilot in command of such a microlight aeroplane where the aeroplane has flexwing controls and his previous training and experience has only been in an aeroplane with 3 axis controls unless appropriate training has been completed and recorded in his personal flying logbook.'*

It was, however, noted that there was no such requirement for holders of Private Pilot's Licences (PPL) in LASORS. Schedule 8 of the Air Navigation Order (ANO), states the following:

***'Section 2 – Aircraft and instructor ratings which may be included in United Kingdom Licences, JAR-FCL Licences and National Private Pilot's Licences (Aeroplanes)***

*(1) The following ratings may be included in a United Kingdom pilot licence, a JAR-FCL pilot licence or a National Private Pilot's Licence (Aeroplanes) granted under Part 4, and, subject to the provisions of this Order and of the licence, the inclusion of a rating in a licence has the consequences respectively specified as follows-*

### *Microlight class rating*

*(2) (a) Where the current certificate of revalidation for the rating is endorsed "single seat only" the holder is only entitled to act as pilot in command of any single seat microlight aeroplane.*

*(b) Where:*

*(i) the aeroplane has 3 axis controls and his previous training and experience has only been in an aeroplane with flexwing/weightshift controls;*

*(ii) the aeroplane has flexwing/weightshift controls and his previous training and experience has only been in an aeroplane with 3 axis controls;*

*before he exercises the privileges of the rating, appropriate differences training, given by a flight instructor entitled to instruct on the aeroplane on which instruction is being given, must have been completed, recorded in his personal flying logbook, and endorsed and signed by the instructor conducting the differences training.'*

The CAA commented that the ANO requires both PPL and NPPL holders to do differences training if they intend to convert from a flex-wing to a three-axis aircraft, or vice versa, and the next edition of LASORS will include the requirement in the section on PPLs.

To keep his NPPL current a pilot is required to revalidate by either a certificate of experience (requiring a minimum number of hours flying experience in the previous two years), or by a certificate of test which involves passing a skills test with an examiner.

### **Wreckage site**

The wreckage was located approximately 700 m from the field from which the pilot had taken off (Figure 1). The nose of the aircraft had struck a steep embankment a few metres from the third green on a municipal golf course. No damage or witness marks were found on the trees that were growing on the top of the embankment and it was concluded that the aircraft had struck the ground in a slightly nose-down attitude, without excessive roll, having been flying in approximately the same direction as the third fairway and towards the green, possibly attempting a forced landing.

The throttle lever was found in a half-open position, the fuel valve was in the OFF position and the ignition switch in the ON position.

The airframe was inspected and there was no evidence of a structural failure or incorrect rigging.

### **Weather**

A complex front lay over the Western Isles of Scotland and the West of Ireland. An area of high pressure centred over the North Sea gave a light but unstable southerly flow over the Stoke-on-Trent area.

The nearest full observation available was from RAF Shawbury approximately 24 nm south-west of the accident site. Estimated values for the accident site, at the time of the accident, are temperature 25°C, dew point: 19°C, visibility 28 km, scattered convective cloud with bases between 3,000-3,300 ft agl, with broken altocumulus with bases between 7,000 ft and 12,000 ft agl. The surface wind was south to south-easterly at 5 kt and the 2,000 ft wind was southerly at 10 kt.

### **Engine inspection and test**

The engine was inspected. The shroud for the cooling fan had been penetrated, almost certainly when the aircraft struck the ground. All the blades of the cooling fan had broken away from the hub in a similar way and this was evidence that the engine was rotating when it struck the ground.

The engine was taken to an engineering organisation with significant experience of this type of engine. The engine was mounted on a test rig along with all the engine controls, the fuel tank and the fuel taken from the wreckage. A replacement cooling fan was fitted and the engine ran satisfactorily and all the controls operated normally. With the engine running the fuel selector was switched to OFF and the engine ran for about 10 seconds at full power and about 15 seconds at cruise power.

### **Analysis**

It appears that the pilot had been careful with his previous fixed wing flying ensuring his recency and skills tests were current before he flew unsupervised. The microlight's paperwork was also in order before the accident.

No engineering deficiencies were found to the microlight or its engine although the pilot was unable to recall if there was a technical problem during the flight. The engine ran satisfactorily on the test rig and there was good evidence that it was running when the aircraft struck the ground. The engine ran for only a short duration on the rig once the fuel was selected off and comparing this to the likely duration of the flight, it is unlikely that the pilot took off with the fuel selector in the OFF position. The fuel selector was probably selected off by the emergency services.

The pilot had not completed any differences training. Given his lack of experience and recency, it is likely that he would have found controlling the flexwing microlight demanding and this may have led to the subsequent ground impact.

While it appears the pilot did not intend to avoid the differences training, this accident highlights the possible consequences of not completing differences training as required by the ANO.