

ACCIDENT

Aircraft Type and Registration:	Pegasus XL-R, G-MVKM	
No & Type of Engines:	1 Rotax 447 piston engine	
Year of Manufacture:	1989 (Serial no: SW-WA-1399)	
Date & Time (UTC):	6 October 2013 at 1653 hrs	
Location:	Stourton, West Midlands	
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:	Nil	
Commander's Age:	52	
Commander's Flying Experience:	73 hours (of which 59 were on type) Last 90 days - 2 hours Last 28 days - 1 hour	
Information Source:	AAIB Field Investigation	

Synopsis

The pilot was making an approach to a field when the microlight struck a set of power cables and fell to the ground. The microlight was de-registered and the pilot, who was unlicensed, was fatally injured in the accident.

History of the flight

The pilot was conducting a private flight from a farmer's field which he had used on previous occasions. He was assisted while he rigged the microlight and witness evidence suggested that the process proceeded normally. Witnesses also thought that the pilot appeared to be healthy and in good spirits.

The pilot started the engine, boarded the microlight and, at approximately 1640 hrs, carried out an uneventful takeoff in a south-westerly direction. Between 5 and 10 minutes later, the microlight returned to the area and, after circling the field, commenced an approach from a north-easterly direction. In the latter stages of the approach, the microlight struck a set of high-voltage power cables that spanned the corner of the field under the final approach path. Several people witnessed the approach, which appeared normal, and none of them reported seeing the microlight manoeuvre in an attempt to avoid the cables. The collision caused the cables to short circuit and part, after which the microlight crashed into the ground. The pilot suffered fatal injuries in the accident.

Weather information

At the time of the accident, the weather conditions were good, with light winds from the southwest, clear skies and good visibility. The sun was low in the sky and the pilot would have been flying almost directly into it during his final approach to the field.

Medical and pathological information

A post-mortem was carried out by an aviation pathologist. It established that the pilot died as a result of head and chest injuries sustained in the accident. In addition, the pathologist identified a number of pre-existing medical conditions, one of which had the potential to cause painful, distracting or possibly incapacitating symptoms. Toxicology tests revealed no evidence of drugs or alcohol.

Pilot information

The pilot had been flying microlight aircraft since 2006; however, the investigation was unable to find evidence of him ever holding a pilot's licence. The pilot's logbook showed that he undertook 12 training flights between June 2006 and August 2007, with a total airborne time of 12 hours 5 minutes. Since then, he had recorded a further 82 flights in microlights that he was recorded as owning. None of these flights appeared to have been flown under instruction. The average duration of all flights undertaken by the pilot was 42 minutes.

Pilot's licence requirements

The minimum qualification to fly microlight aircraft in UK airspace is the UK National Private Pilot's Licence (NPPL(A)) with a Microlight Aeroplane Class Rating – Restricted with Operational Limitations. Civil Aviation Publication (CAP) 804, *Flight Crew Licensing: Mandatory Requirements, Policy and Guidance*, specifies the requirements for the issue of this licence. These are, in summary:

1. A minimum of 15 hours flight time under instruction.
2. A minimum of 7 hours solo flight time.
3. Pass written examinations in the following subjects:
 - a. Meteorology.
 - b. Navigation.
 - c. Aviation law, flight rules and procedures.
 - d. Human Performance and Limitations.
 - e. Aircraft (General).
4. Pass a General Skills Test including an oral examination on the aircraft type used for the test.

In addition, a pilot must hold valid medical certification.

Accident site

The accident site was located in a field next to farm buildings and a wooded area. The field was approximately rectangular, with the long axis orientated north-south; visible ruts on the surface ran the length of the field. A set of three high-voltage power cables, horizontally arranged, spanned the northeast corner of the field and, when viewed from the direction of the microlight's final approach, would have been closely aligned with the surface ruts below. Also, viewed from that direction, one support pole for the cables was located in the wooded area on the left and another was situated in the hedge line on the right. The microlight struck the ground 13 m from the overhead power cables which had short circuited and parted, causing the local electricity substation to trip. This was timed at 1653 hrs. There were several ground impact marks within the footprint area of the wreckage.

Microlight description

The Pegasus XL-R is a two-seat, flex-wing (weight shift control) microlight aircraft, comprising a trike unit and wing connected by an upright monopole. The trike incorporates a tricycle undercarriage and a two-stroke Rotax 447 engine, fitted with a pusher propeller, and has a tandem seating arrangement for a pilot and one passenger. The wing is controlled via a control 'A' frame, which consists of a control bar braced by fore and aft flying wires and two uprights attached to the wing keel tube.

Microlight examination

The microlight was found on its side with its flex wing lying across the rear of the trike. Both the monopole upright and wing keel tube had fractured, and the left wing leading edge tube was bent a short distance from the wingtip. The front tubular strut, between the trike 'snoot' (a forward extension of the trike keel tube) and monopole, was bent at its mid-point and there was evidence of cable abrasion, localised pitting and electrical arcing on its leading surface. The control frame was attached and structurally intact but there was evidence of power cable contact on the leading faces of its left and right uprights, and on the associated front flying wires.

The trike keel was fractured at its mid-section. The main landing gear axle wire-braced aluminium strut was also fractured and the left main wheel had folded underneath the trike, with evidence of soil and grass trapped between the outer edge of the rim and tyre. The nosewheel and yoke was undamaged except for a small area of electrical arcing on the head of the steel axle bolt. The fibreglass snoot fairing, directly above the nosewheel, had a short straight split in its gel-coat and fibreglass substrate and had separated from its attachment bolts, such that it was loose around the trike keel.

The Rotax 447 engine was undamaged but one of the two propeller blades had fragmented into several pieces. Otherwise, there was no evidence of pre or post-impact damage on any of the engine ancillary components. The fuel tank, supply pipes and filter were intact and were free from leakage, and there were 23 litres of two-stroke petrol/oil mix in the fuel tank. The blade fragmentation, together with propeller witness marks in the ground, indicated that the engine was producing power at the point of impact.

A detailed inspection of the structure, rigging, engine and ancillary components, together with witness video evidence taken shortly before the accident, showed that the microlight was in good condition and appeared to be operating normally prior to the accident.

Certification

Data held by the BMAA indicated that the microlight's certificate of validity lapsed on 27 May 2010, following the last inspection and check flight by a BMAA authorised inspector and check pilot on 28 May 2009. The CAA aircraft register also showed that the microlight had been permanently withdrawn from use and de-registered on 30 November 2012.

Analysis

The average duration of the pilot's previous flights, from records in his logbook, was 42 minutes. However, on this occasion, he returned to the field from which he had taken off after a flight lasting only 5 to 10 minutes. His reason for returning earlier than normal could not be established but two causes were considered possible. The flight was conducted late in the day and the pilot may have been concerned about the fading light. Secondly, the pilot had a pre-existing medical condition that had the potential to cause painful symptoms, which could have been distracting or partially incapacitating.

The microlight's approach, into wind and towards the low, setting sun, appeared to be under control until it struck the power cables. Although the pilot had operated from the field before, the angle of the sun and the close orientation of the power cables with the surface ruts in the field, together with the location of the power cable support poles, may have made the cables difficult to detect. The pilot did not appear to take any avoiding action, indicating that he did not see the cables or that he only did so when it was too late to avoid them.

The arc pitting, burning and abrasions on the airframe components indicated that the microlight made contact with the power cables, before further structural break-up was caused by impact with the ground. The evidence showed that the microlight had been in good condition and appeared to be operating normally prior to the accident. However, it could not be considered airworthy as it did not have the required certification in place.

The pilot had not completed the training required for a pilot's licence and this cannot be discounted as a contributory factor in the accident.