MW5(K) Sorcerer, G-MYGS, 4 August 1996

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Aircraft Type and Registration:	MW5(K) Sorcerer, G-MYGS
No & Type of Engines:	1 Rotax 447 piston engine
Year of Manufacture:	1994
Date & Time (UTC):	4 August 1996 at 0935 hrs
Location:	Wyke Champflower, Somerset
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - N/A
Injuries:	Crew - 1 fatal - Passengers - N/A
Nature of Damage:	Aircraft destroyed
Commander's Licence:	Private Pilot's Licence
Commander's Age:	44 years
Commander's Flying Experience:	149 hours (of which 19 were on type)
	Last 90 days - 9 hours
	Last 28 days - 4 hours
Information Source:	AAIB Field Investigation

Pilot's flying experience

In April 1975, the pilot started flying training at Biggin HillAirport; he was awarded a PPL, Group 'A', in March 1976. By April 1985, he had recorded a total of 113 hours; no furtherflying was recorded until October 1994 when he started trainingon Spectrum microlight aircraft at Wombleton. In May 1995 hewas awarded a PPL, Microlight Aeroplanes, and on 30 May 1995,he first flew the Sorcerer G-MYGS. His last flight before theaccident flight was 35 minutes on the previous day. He had atotal of 35 hours on microlight aircraft.

History of flight

The pilot planned to take off from Sandy at 0730 hrs for a flightto the Cheddar, Somerset area. The weather was fine and the visibilitywas good. The pilot was seen to refuel the aircraft from a

jerrican;after the accident, the jerrican was found to be half full ofcommercial 4 star mogas. As the planned destination was about105 nm from Sandy, there was no reason to assume other than thathe had topped up the tank to its maximum capacity of about 30litres.

An eye witness at the airfield saw the aircraft take off shortlyafter 0730 hrs. A primary contact from Debden radar was recordedat 0735:51 hrs, about 1.9 nm south west of the airfield, and wasmaintained until 0758 hrs; the average track was about 238°(M)and the ground speed was about 53 kt. The position, time, trackand ground speed imply a high probability that the contact wasG-MYGS and that it left the airfield at about 0734 hrs. No furtherradar contact was identified and it was not reported again untilit was seen approaching the village of Wyke Champflower.

When the aircraft was first seen in the vicinity of the village,it was quite low but the engine appeared to the witnesses to berunning normally. As the aircraft descended toward a field tothe south west of the village, the engine stopped suddenly. Theaircraft appeared to be attempting to land in the field but asit turned south east, into wind, the right wing struck a powercable. The aircraft caught fire shortly after impact. An interruptionof the power to the line was logged at 0935 hrs.

The accident site

The area in which aircraft crashed comprised a large field ofopen pasture, bounded on its northern and eastern sides by publicroads and transected by a pair of 11 kV high tension electricitysupply cables on 6.5 metres high wooden poles running parallelwith the eastern edge of the field, approximately 100 metresfrom the boundary. A set of telephone cables on wooden polesran down the eastern edge of the field, at the boundary with theroad. The north-eastern corner of the field was fenced off intowhat was effectively a small paddock area, in which several horsesgrazed.

The right wing of the aircraft had become entangled with the western-mostof the pair of high tension cables, at a location approximately200 metres to the south of the paddock area at the north easterncorner of the field. When the emergency services first arrivedat the scene, the remains of the aircraft were still hanging byits right wing, partially suspended from the electricity cablewhich had become trapped in an aileron pulley bracket at the junctionof the main spar and lift strut. The electricity cable was heavilystretched but still intact, and it was evident that during theperiod immediately following impact, prior to the electrical supplyfault detectors finally disconnecting the supply, current hadpassed through the aircraft structure to earth at those pointswhere the nose and tail of the aircraft contacted the ground. The resulting discharge of current to earth had ignited the tailplaneand fuselage pod, and a fierce post impact fire destroyed mostof these areas; not only the fabric and plastic parts of the aircraft,but also parts of the aluminium frame. There was no evidenceof arcing or fire at the point where the left outer wing contactedthe ground, almost certainly because the metal structure was insulatedfrom the ground at this point by the surrounding non-metallicwing skins and tip fairing.

Examination of wreckage

The aircraft was largely destroyed in the post impact fire. However,sufficient remained to allow the pre-crash integrity of the flyingcontrols and the principal structural elements to be confirmed. The engine throttle cables were present and still connected tothe carburettor throttle slide, though the bulk of the carburettoritself was destroyed by the post impact fire. There was no damageon the remains of the propeller indicative of engine power atimpact. However, it is possible that the propeller did not contactthe ground until a relatively late stage in the accident sequence,after the

aircraft had engaged the wires; consequently, the conditionof the propeller, alone, cannot be taken as positive evidencethat the engine had stopped prior to impact. The fuel tank andfuel supply pipes were destroyed by the post impact fire, whichalso consumed all other flammable materials in and around thefuselage pod, and it was not possible to determine whether fuelwas present in the tank at the time of the accident.

The engine was subsequently examined at AAIB Farnborough. Thecrankshaft turned freely, and subsequent dismantling of the engineshowed it to be in excellent condition mechanically. The appearanceof the front spark plug suggested that the front cylinder mayhave been running slightly richer than the rear; however, bothplugs were of normal appearance, and there was no suggestion ofan abnormally rich mixture. The engine casing had suffered heatingin the post impact fire, resulting in partial melting of ignitionsystem low tension cables at points of contact with it, and bothhigh tension ignition coils were destroyed by the fire. The ignitiongenerator coil was disconnected from the heat damaged cables andits resistance checked and found to be within limits. The ignitiontiming and contact breaker points were also checked and foundset within limits.

Each of the carburettor jets was of the correct type. The throttlebarrel was burned away by the fire, but the main jet needle wasrecovered with the attachment circlip still in place at 'position3', *ie* one position off the richest setting; a normal setting.

Aircraft performance

The Pilot's Operating Handbook recommends that the aircraft beflown in the cruise at "trim speed" which is factoryset at 58 kt and is achieved with a power setting of 5,800 RPM. It also contains a section headed RANGE; this states that theSorcerer "uses approximately 12 litres of fuel per hour atnormal power settings" and quotes the zero wind range asapproximately 145 nm. It does not define "normal power settings",however, the range and fuel consumption quoted would imply anrpm of 5,500 and an airspeed of 55 kt. Had the aircraft beenflown at the trim speed power setting of 5,800 RPM the fuel consumptionwould have been about 14.5 litres per hour. The accident sitewas about 238°(M)/105 nm from Sandy and the flight time wasabout 2:01 hrs; the aftercast wind at 2,000 feet was 130°/12to 15 kt.