SUMMARY of AIRCRAFT ACCIDENT REPORT No 2/2005

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REPORT ON THE ACCIDENT TO PEGASUS QUIK, G-STYX at EASTCHURCH, ISLE OF SHEPPEY, KENT on 21 AUGUST 2004

Registered Owner and Operator:	Privately owned
Aircraft Type:	Pegasus Quik
Nationality:	British
Registration:	G-STYX
File Reference:	EW/C2004/08/03
Place of Accident:	Eastchurch, Isle of Sheppey, Kent
Date and Time:	21 August 2004 at 1341 hrs All times in this report are local (UTC +1)

Synopsis

The Pegasus Quik microlight, with an instructor and passenger on board, departed Rochester Airfield for a trial lesson. Thirty five minutes into the flight, as it was flying at 500 ft along the north coast of the Isle of Sheppey, it pitched up steeply to the near vertical and entered a series of tumbling manoeuvres. As the microlight tumbled the trike unit, containing the two occupants, separated from the wing and descended vertically to the ground. Neither the pilot nor his passenger survived the impact. The initiation of the pitching moment and subsequent entry into the tumbling sequence was brought about by the failure of the right upright upper fitting, which caused full nose-up trim to be suddenly applied.

Some time previously the microlight's uprights upper fittings had been modified to comply with Service Bulletin 116 requiring the fitting of additional rivets. The additional rivets were not only fitted incorrectly, and without reference to the Service Bulletin, but two of them did not match the specification of those rivets supplied by the manufacturer in the modification kit. Additionally, no duplicate independent inspection was carried out on the correct embodiment of the modification.

The investigation identified the following causal factors:

(i) Failure of the right upright upper fitting caused the microlight to enter a tumble manoeuvre from which it was not possible to recover.

(ii) Service Bulletin 116, which introduced additional rivets in the upper fitting, was not correctly embodied.

Findings

1 With the exception of the 'A' frame uprights the engine, trike and wing were serviceable prior to the aircraft entering the tumble.

2 Whilst flying at approximately 100 mph, the microlight entered a series of tumbling manoeuvres, which resulted in the failure of the monopole and front strut allowing the trike to separate from the wing.

3 The accident was not survivable.

4 Failure of the right upper fitting resulted in the tightening of the trim cable, which increased the wing reflex causing the microlight to exceed the pitch limit and enter the tumble.

5 The upper fitting failed because the additional rivets, introduced by Service Bulletin 116, were fitted in the wrong place.

6 An independent duplicate inspection was not carried out following the embodiment of Service Bulletin 116.

7 The BMAA inspector who undertook the modification on G-STYX did not refer to the Service Bulletin.

8 Where individuals referred to the Service Bulletin the modification was correctly embodied.

9 The aircraft did not appear to have been maintained in accordance with the manufacturer's recommend maintenance schedule.

10 There was no record that the 100 hour inspection, due at 300 hours, and wing overhaul had been carried out, thus the opportunity to discover the incorrect fitment of the Avdel rivets was missed.

11 The BMAA inspector who signed as having inspected the modification did not have the minimum engineering qualifications and experience specified by the BMAA.

12 The BMAA inspector did not understand how the upright was constructed, the different type of rivets available and the airworthiness issues resulting from incorrectly fitting fasteners in primary structure.

13 The BMAA Guidelines for the Inspection and Maintenance of Microlight Aircraft made no reference to the different types of rivets available and the locations where they should or should not be used.

14 The BMAA specify the minimum engineering qualifications and experience required of an inspector.

15 The BMAA's policy for the waiving of the minimum engineering qualifications and experience for inspectors is not objectively based.

16 Continuation training for BMAA inspectors is not compulsory and not a requirement for revalidation.

17 The records held by the BMAA on inspectors were incomplete.

18 The CAA audit of the BMAA did not identify all the shortcomings in the BMAA's inspectorate.

Safety Recommendations

Eleven safety recommendations have been made as a result of the investigation.

The following safety recommendations were made on 16 September 2004:

Safety Recommendation 2004-080: It is recommended that the British Microlight Aircraft Association, take the necessary immediate steps to ensure the continued safe operation of the Pegasus Quik microlight aircraft with regard to the application of Service Bulletin 116.

Response to recommendation:
Mandatory Permit Directive 2004-009 R2, requiring Service Bulletin 116 Issue 2 to be undertaken before the next flight, was issued by the CAA on 29 September 2004.

Safety Recommendation 2004-081: It is recommended that the British Microlight Aircraft Association consider reviewing its policy, procedures and standards with regard the implementation and inspection of 'field fitted' modifications and service bulletins.

Response to recommendation:
The BMAA advised the AAIB on the 21 October 2004 that they would consult widely and produce a Code of Practice, which would be published as a BMAA Technical Information Leaflet.

The following additional Safety Recommendations are made:

Safety Recommendation 2005-082: It is recommended that the Civil Aviation Authority review its policy on the use of crash helmets and shoulder harnesses on microlight aircraft.

Safety Recommendation 2005-083: It is recommended that the Civil Aviation Authority conduct a review of the British Microlight Aircraft Association (BMAA) policy on the selection, training and revalidation of inspectors with a view to establishing; the minimum engineering skills and knowledge; appeal procedures and the individuals within the BMAA who should authorise a reduction in the minimum engineering standards.

Safety Recommendation 2005-084: It is recommended that the Civil Aviation Authority review their audit procedures of the British Microlight Aircraft Association.

Safety Recommendation 2005-085: It is recommended that the Civil Aviation Authority ensure that Service Bulletins involving work conducted on primary aircraft structure include a statement that duplicate independent inspections are required, and that both inspections are to be recorded in the aircraft logbook.

Safety Recommendation 2005-086: It is recommended that the Civil Aviation Authority and Mainair Sports Limited take appropriate action to ensure that Pegasus Quik uprights that have been modified by owners are replaced with factory modified items.

Safety Recommendation 2005-087: It is recommended that the British Microlight Aircraft Association (BMAA) liaise with industry to ensure that advanced copies of Service Bulletins are passed to the BMAA so that comments can be made on their owner/members' and inspectors' ability to competently satisfy the instructions.

Safety Recommendation 2005-088: It is recommended that the British Microlight Aircraft Association (BMAA) ensure, through the issue of the Permit to Fly, that microlight aircraft are fitted with the correct placards and are maintained in accordance with either the manufacturer's or BMAA recommended maintenance schedule and that all maintenance is recorded in a Civil Aviation Authority approved log book.

Safety Recommendation 2005-089: It is recommended that the British Microlight Aircraft Association review and regularly update their document entitled '*Guidelines for the Inspection and Maintenance of Microlight Aircraft*'.

Safety Recommendation 2005-090: It is recommended that Mainair Sports Ltd takes action to ensure that the limitation placard on the Pegasus Quik is protected, or relocated, so that the data remains clearly visible to the pilot.