FINAL REPORT

AAIU Synoptic Report No: 2007-005
AAIU File No: 2006/0086
Published: 19/02/2007

In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 6 December 2006, appointed Mr. Paddy Judge as the Investigator-in-Charge to carry out an Investigation into this Incident and prepare a Synoptic Report.

Aircraft Type and Registration:	Mainair Blade 582, Microlight, EI-DRH
No. and Type of Engines:	Rotax 582
Aircraft Serial Number:	1320-0402-7-W1115
Year of Manufacture:	2002
Date and Time (UTC):	5 November 2006 @ 15.30 hrs
Location:	Rathcoole Airfield, Co. Cork
Type of Flight:	Private
Persons on Board:	Crew – 1 Passengers - Nil
Injuries:	Crew - Nil Passengers - Nil
Nature of Damage:	Broken blade on propeller, radiator mounting damage
Commander's Licence:	NPPL(M), UK/NP/436930L/A
Commander's Details:	Male, aged 51 years
Commander's Flying Experience:	240 hours, of which 60 were on type
Information Source:	Airfield Owner and Pilot

SYNOPSIS

The microlight was taking off from the grass runway at Rathcoole Airfield, Mallow, Co. Cork. During the take off a spare pilot's helmet escaped from a ballast bag secured in the rear seat and was ingested into the propeller damaging it. The take off was abandoned. The Pilot was uninjured. No injuries or damage to third party property resulted.

FINAL REPORT

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot did an extended run-up of the engine prior to take off. During the take off run witnesses heard a loud bang and the engine stopped. The take off was abandoned, the aircraft came to a halt and the engine was shut down. A spare helmet, carried in a ballast bag in the unoccupied rear seat of the cockpit, had come loose and gone into the propeller resulting in the fracture and detachment of one of the 4 carbon propeller blades.

The microlight was pushed back to the hangar.

1.2 Aircraft Information

The Mainair Blade (See **Photo No. 1**) is a flex-wing, two seat pod unit with three wheels. This type of aircraft is commonly known as a trike. The engine is mounted behind the rear seat and coupled to a four bladed, carbon composite pusher propeller. Consequently, anything that comes loose in the cockpit or its vicinity will be sucked into the propeller, if the engine is under power.

The ballast bag is a generic type with a universal anchoring system that is advertised as suitable for flex-wing trikes. It was also advertised as suitable as a backpack. The bag has 2 vertical compartments; the lower a padded and sealed compartment that can accommodate a 20 litre fuel can, the upper is used for personal effects, in this case the spare helmet. The top compartment, from which the helmet escaped, has two securing systems; a tie cord at the neck and two straps. The cord was broken previously and, due to the stitched method used in manufacture, could not be replaced. The two straps, which are secured by plastic snap-on buckles, are attached over the top of the bag.

The Pilot stated that, while securing the bag, he may have been distracted and possibly did not pay sufficient attention to ensuring that the top of the ballast bag was properly closed.

The take off run was on the side of the runway over rougher ground because the Pilot wanted to ensure he gave adequate clearance from a taxiing aircraft.

2. ANALYSIS

It is fortunate this incident happened while the aircraft was still on the ground. The placement of the pusher propeller on a trike microlight is such that there can be damage to the trailing edge of the sail if a blade disintegrates. Consequently, the trailing edge of the Mainair is reinforced. The manufacturer states they have not had a total failure of the trailing edge to date but that if the trailing edge did fail handling, though seriously compromised, would be probably controllable. But it would depend on the extent of the damage.

Pusher propeller microlight aircraft are intrinsically liable, due to the location of the propeller behind the open cockpit, to Foreign Object Damage (FOD) emanating from the open cockpit or its vicinity. It should also be remembered that carbon composite propellers do not have the impact resistance of metal or wooden types. It is therefore vitally important that the pilot ensures that any objects carried in these cockpits are adequately secured and restrained. As these objects are in the rear seat behind the pilot they are out of his line of sight once he is strapped in.

FOD is also considered to be a possible factor in the fatal accident of the pusher propeller RANS S-12 microlight, (see **AAIU Report 1999/012**). In that event a loose petrol cap possibly precipitated the events which resulted in the demise of the pilot and his passenger.

The chain of events in this incident probably started when the pull string of the ballast bag broke, then the Pilot being distracted while securing the bag and finally conducting the take off run over a rough surface.

The Pilot subsequently contacted the supplier of the bag who has redesigned the bag so that the drawstring is now isolated from the stitching and can be easily replaced if it ever breaks.

3. CONCLUSIONS

The pilot attributed this incident to the fact that the ballast bag was not properly closed and the take off was over rough ground.

A contributing factor was the design of the tie cord of the bag.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations.

Photo No. 1: Mainair Blade - Photograph source manufacturer.

- END -