

GENERAL INFORMATION

Occurrence:	2008107
Classification:	Accident
Date, time ¹ of occurrence:	14 september 2008, 12:47 hrs
Place of occurrence:	Markermeer, near Hoorn, The Netherlands
Aircraft registration:	PH-4B6
Aircraft model:	Zenair Zodiac CH601 XL
Type of aircraft:	Micro Light Aeroplane
Type of flight:	Recreational flight
Phase of operation:	En route
Damage to Aircraft:	Destroyed
Number of crew:	One
Number of passengers:	One
Injuries:	Both occupants fatal
Other damage:	None
Lighting conditions:	Daylight

SYNOPSIS

In the course of a straight and level flight at approximately 1,000 ft the right hand wing folded back. The aircraft subsequently crashed into the water.

FACTUAL INFORMATION

Flight History

On 14 September 2008, at approximately 12.30, the PH-4B6, a micro light aeroplane of the design and type, Zenair Zodiac CH601 XL, took off from the airfield of Middenmeer (in North Holland, The Netherlands). Two persons were on board: the owner/pilot and a passenger. After the take off from runway 05 the PH-4B6 proceeded in a north easterly direction. Near the village of Kreileroord a turn of approximately 270 degrees was made and the aircraft subsequently proceeded in a southerly direction towards Medemblik. Over Medemblik a turn of 360 degrees was made. During this part of the flight, the altitude of the aircraft varied between 1,100 and 1,300 feet. From Medemblik the PH-4B6 proceeded in a southerly direction towards Hoorn. It subsequently overflew Hoorn towards the Markermeer. It then had an altitude of approximately 1,000 feet. Witnesses in that vicinity on the ground observed the right hand wing of the aircraft folding up into the air and the aircraft subsequently crashing into the water of the Markermeer at approximately 12.47. Both occupants lost their lives.

INVESTIGATION

An investigator of the Safety Board visited the accident site and, after recovery of the wreckage, conducted a preliminary investigation. At a later stage an extensive technical investigation was performed with the assistance of a ground engineer. During this investigation part of the right wing main spar and the right hand rear spar attachment to the fuselage was removed for further

¹ All times are Local Time unless indicated otherwise

examination as well as the GPS unit and the airspeed indicator. The flight data as mentioned in this report are derived from the GPS-unit. Statements from witnesses were provided by the Aviation Police.

The PH-4B6 is a Zenair CH601XL. The aircraft has been developed in the United States out of the earlier versions of the Zodiac CH601. The CH601 XL can be acquired as an assembly 'kit' to the owner for subsequent assembly of the prefabricated parts or in a 'ready to fly' state, by which the aircraft has been assembled and is delivered by the aircraft manufacturer. In the United States this aircraft is categorised as "Light Sport Aircraft". As a consequence the aircraft is not required to be subjected to the certification procedures according to the international airworthiness requirements. The manufacturer declares the design to be in accordance with the requirements that are promulgated with regard to this category of aircraft and that construction of the aircraft has been accomplished according to an approved manufacturing process. Maximum take off mass for this aircraft in the United States is 595 kg.

As from the beginning of 2005 until the end of 2006 this same type of aircraft has been manufactured under licence in the Czech Republic, in particular for the European market. In compliance with the European criteria with regard to "Micro Light Aeroplanes" (MLA) some modifications were applied to the model in order to enable the aircraft to comply with the requirement of having a maximum take off mass of 450 kg. The accident PH-4B6 was a model that had been prefabricated in the Czech Republic.

The model that was prefabricated in the Czech Republic was certified by the "Deutsche Aero club" where after a so called "Gerätekenblad" was issued indicating that the aircraft complies with the German airworthiness requirements for MLA's. In The Netherlands this Gerätekenblad forms, amongst other things, the basis for the issuance of a "special certificate of airworthiness" by the Inspectorate of Transport and Public Works (IVW).

The same aircraft model also can be registered in The Netherlands as a "Home built" aircraft. In that case the aircraft should comply with the requirements for amateur build aircraft, and consequently the legal requirement of a maximum take off mass of 450 kg ceases to apply.

The results of the preliminary investigation are summarised below:

- In The Netherlands 12 aircraft of the CH601 XL type are enlisted in the Aviation Register including 8 as being registered as MLA and 4 as a 'home build' aircraft.
- The aircraft PH-4B6 was provided with a valid 'special certificate of airworthiness'.
- From calculations that were made it was found that the mass of the aircraft at take off was probably at or slightly higher than the maximum certified take off mass of 450 kg.
- After read out of the GPS unit it appeared that the aircraft did not execute any extreme flight manoeuvre and, shortly before the instance of the accident, conducted a straight and level flight.
- The right hand wing folded up and backwards in flight, whereby the upper lining of the wing hit the upper side of the fuselage, behind the canopy.
- The right hand wing did not break.

- The upper reinforcement of the right hand wing main spar had been buckled and twisted, slightly forward of the wing-fuselage attachment.
- The lower reinforcement of the right wing main spar had been twisted just in front of the wing-fuselage attachment.
- The actual wing load was well below the maximum allowable wing load.
- Information provided by the KNMI established that the wind at 1000 ft was 070 degrees at 11 knots. The visibility was more than 10 kilometers. No turbulence was reported.
- As from 2006 until now **at least seven accidents** with different types of Zenair Zodiacs CH601's have occurred caused by the collapse of one or both wings as a result of wing overload. These accidents have occurred in int. al. the United States, the United Kingdom and Spain. Some investigations of these accidents revealed that the overload of the wings had different probable causes, for instance flutter in one or both wings.
- From a global examination of the drawings of the American design it appeared that the results of the calculations of strength conducted by the designer might have been too optimistic.

PRELIMINARY CONCLUSION

The investigation conducted by the Dutch Safety Board into the cause of this accident is ongoing. Nevertheless the Board, with regard to the seven similar accidents elsewhere in the world, and in anticipation of the definitive outcome of its investigation of this accident, holds the opinion that it is appropriate to warn all those who are directly or indirectly involved in the operation of this type of aircraft for the apparent risks in doing so.