

FINAL REPORT ON THE ACCIDENT TO AN ULTRALIGHT AIRCRAFT ON 2 MAY 2009 IN LOKEREN

**Ref. AAIU-2009- 6
Issue date: 4 December 2009
Status: Final**

AAIU-2009- 6/ Final/ Lokeren

4 December 2009

Table of Content.

Foreword.....	2
Synopsis.....	3
1. Factual information.....	4
1.1. Chronology of the events.....	4
1.2. Injuries to persons.....	7
1.3. Damage to aircraft.....	7
1.4. Other damage.....	8
1.5. Personnel information.....	8
1.6. Aircraft information.....	9
1.7. Meteorological information.....	11
1.8. Aids to Navigation.....	11
1.9. Communication.....	11
1.10. Airport information.....	12
1.11. Flight Recorders.....	12
1.12. Wreckage and Impact information.....	12
1.13. Medical and Pathological information.....	12
1.14. Fire.....	12
1.15. Survival Aspects.....	12
1.16. Test and Research.....	12
2. Analysis.....	13
3. Conclusions.....	15
4. Safety recommendations.....	15

FOREWORD

This report is a technical document that reflects the views of the investigation team on the circumstances that led to the accident,

In accordance with Annex 13 of the Convention on International Civil Aviation, it is not the purpose of aircraft accident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the determination of the causes, and define recommendations in order to prevent future accidents and incidents.

In particular, Article 13 of the King's Decree of 9 December 1998 stipulates that the safety recommendations made in this report do not constitute any suspicion of guilt or responsibility in the accident.

Unless otherwise indicated, recommendations in this report are addressed to the Regulatory Authorities of the State having responsibility for the matters with which the recommendation is concerned. It is for those Authorities to decide what action is taken.

The investigation was conducted by L. Blendeman, Chief Investigator and D. Wintershoven, Investigator.

NOTE: For the purpose of this report, time will be indicated in UTC, unless otherwise specified.

Synopsis

Date and hour of the accident

Saturday 2 May 2009 at 13:23 UTC.

Aircraft

Type: Self-designed weight-shift controlled ultra-light aircraft.
Referred further to "DPM" – Delta Plane Motorized - in the text.

Registration: None

Accident Location:

In a tree-bordered field in Lokeren at N51°07.334 E3°58.438.

Aircraft Owner

The pilot

Type of flight

Private

Persons on board

1

Abstract.

The pilot had constructed a DPM, based on an existing wing on which he attached a self-designed trike; a three wheeled carriage carrying the engine and a seat. The pilot himself had followed some piloting courses in the past, but never held an Ultra-light pilot authorization.

He flew with the aircraft occasionally for nearly ten years, mostly in the neighbourhood of his home.

On 2 May 2009, he decided to perform the first flight of the year, and took off with the DPM from a field close to his house. He was seen flying at a very low altitude and slow speed.

Witnesses saw him making turns above an open field, waving at them. This flight lasted around 15 minutes.

Witnesses saw the aircraft in a tight right turn, at the height of the High Voltage line in the neighbourhood

The aircraft dove below the High Voltage Line. The aircraft went down at an angle of 30-45° in an area bordered by trees. When levelling off, the LH Landing gear impacted the ground, and the aircraft crashed 5m further.

The pilot died at impact.

1. Factual Information

1.1. Chronology of the events

The pilot took off with his DPM from a field close to his house, and flew at a very low altitude and slow speed.

Witnesses saw him making turns above an open field, waving at them. This flight lasted around 15 minutes.

They further saw the aircraft flying at a height lower than the tip of trees.

Witnesses saw the aircraft in a tight right turn, at the height of the High Voltage line in the neighbourhood.

The aircraft dove below the High Voltage Line. The aircraft went down at an angle of 30-45° in an area bordered by trees. When levelling off, the LH Landing gear impacted the ground, and the aircraft crashed 5m further.

The pilot died upon impact.





1.2. Injuries to persons

Injuries	Pilot	Passenger	Others	Total
Fatal	1	0	0	1
Serious	0	0	0	0
Minor	0	0	0	0
None	0	0	0	0
Total	1	0	0	1

1.3. Damage to aircraft

The aircraft was totally destroyed.

The structure of the kite was heavily damaged;

- the forward beam was severed from the main structure;
- the RH landing gear leg was ruptured in 2 points and severed from the main structure;
- the LH landing gear was bent.
- the roll bar (attachment of the seat) was ruptured.
- the wing attachment bar was ruptured

The structure of the wing was intact, but the connection to the basebar was ruptured.

The propeller was broken upon impact





1.4. Other damage

None.

1.5. Personnel information

Pilot.

Sex: Male

Age: 53

Nationality: Belgian

License: Training license issued on 3 August 1989, not renewed
(2y-interval)

Medical: none

The pilot kept no log book. Reportedly, he flew with the aircraft a couple of times per year, when the weather was good. This was his first flight in 2009.

1.6. Aircraft information

The DPM is a one -seat, weight shift controlled flexwing microlight aircraft.
It is constituted by;

- an Air Création FUN 14 wing and
- a self- designed, self-manufactured trike.
- It is powered by a Citroen AM2 (serial 0483511835) engine equipped with
- a Poncelet propeller manufactured in end 2002.
 - o serial number: 021244
 - o Type 30
 - o Diameter 140 cm
 - o pitch:100.

The trike itself is made of a metallic structure on which the engine and its equipment, the fuel tank, the seat and the landing gear are attached.

The trike is attached to the wing on a hanging bracket by means of a front strut and a rocking mast.

The wing structure consists of a keel, leading edge and cross bars, over which the sail is stretched. The sail is stiffened by a series of battens. Above the wing is a kingpost through which the luff lines are attached.

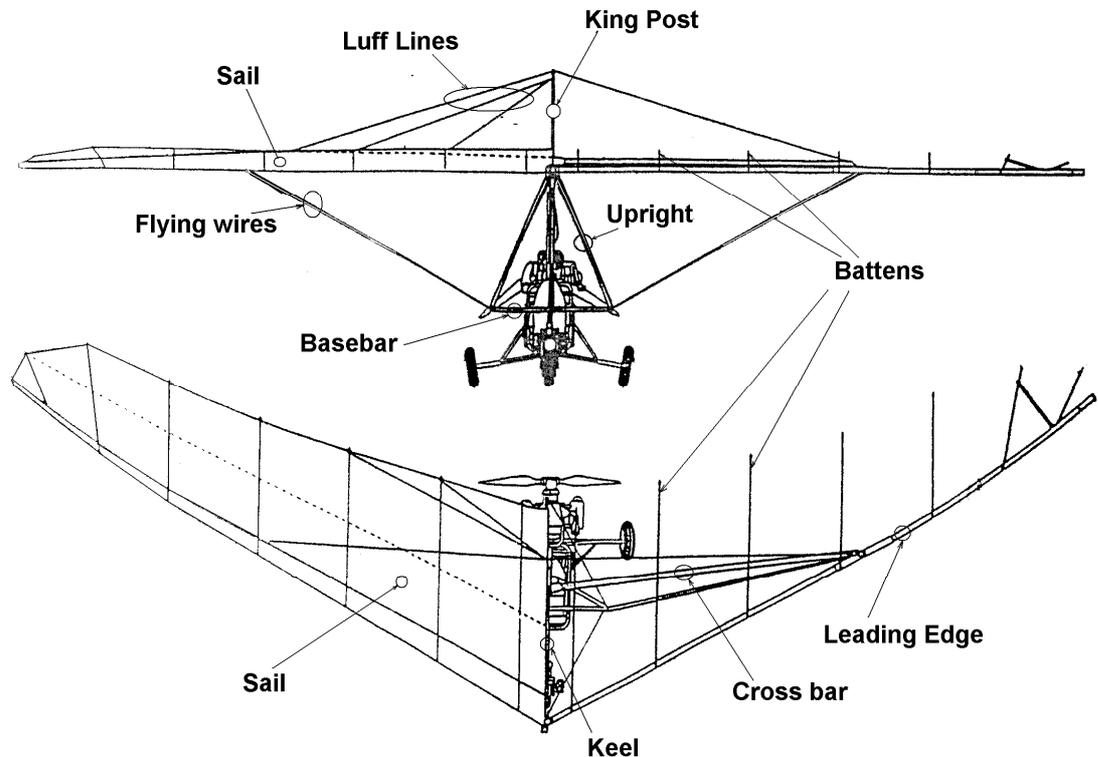
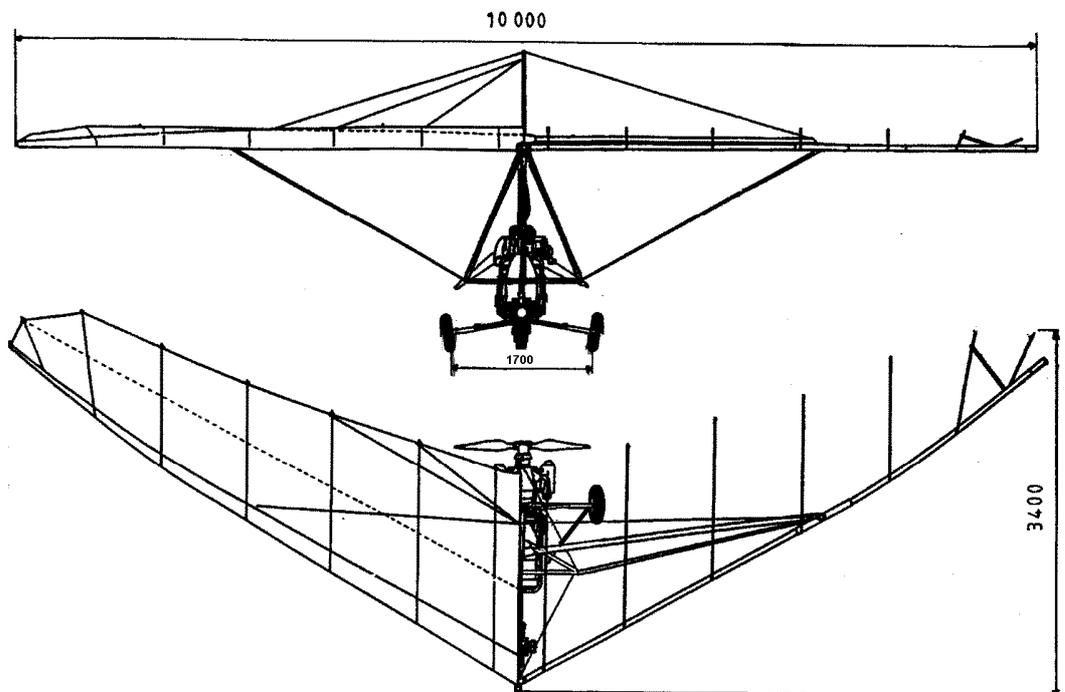
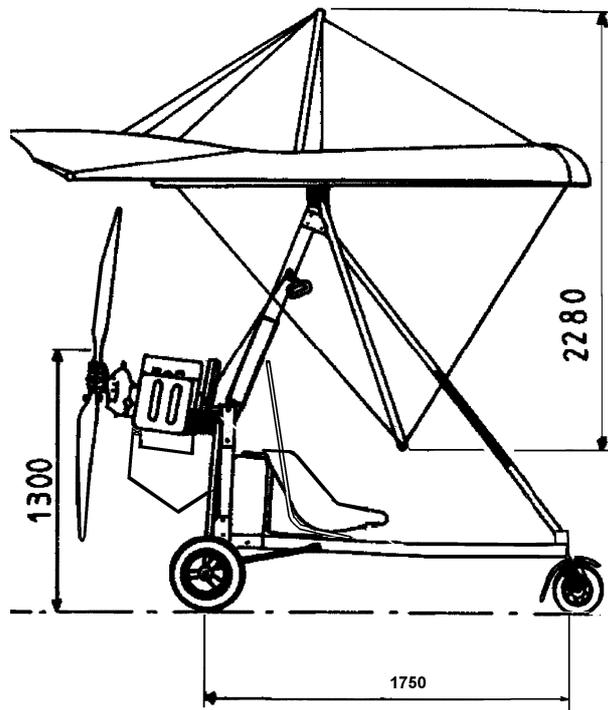
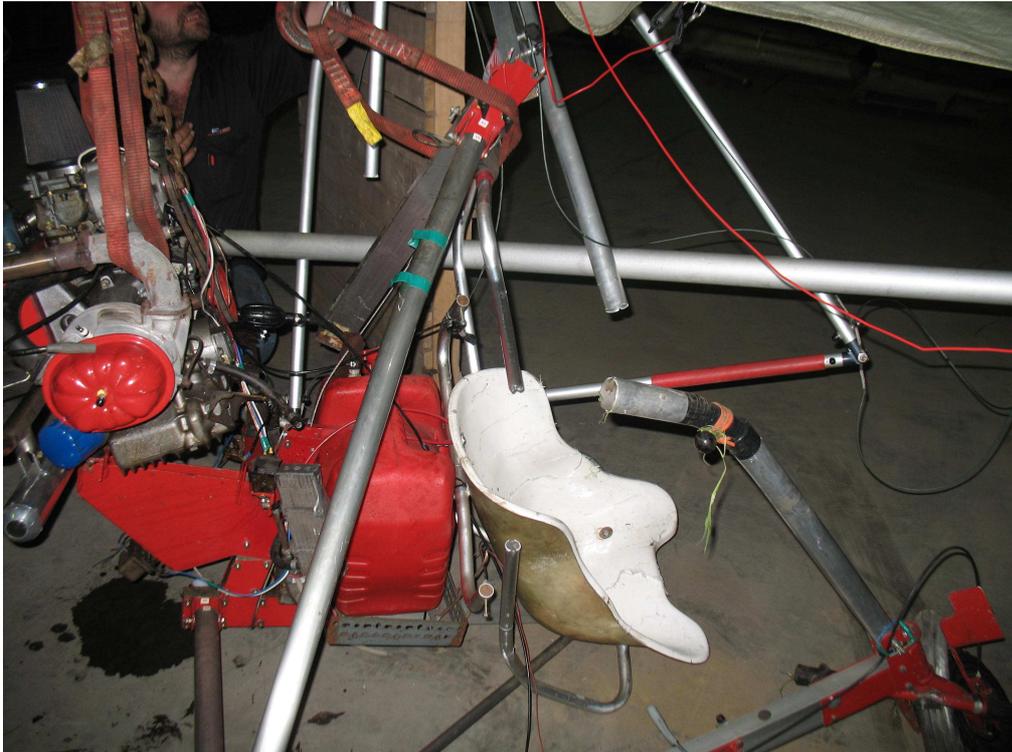


Fig. Typical Ultra-light with terminology





Owner

The pilot was the owner of the DPM.

1.7. Meteorological information

Conditions in Brussels (EBBR) at 13:20 (45km SE of the crash site)

Wind Direction: Variable between 200° and 360°

Wind Speed: 4 knots

Visibility: more than 10 Nautical Miles.

Clouds: few at 2400 ft, scattered at 3000 ft

Pressure: 1029.2 mb

Temperature: 16°C

Conditions in Deurne (EBAW) at 13:20 (36km ENE of the crash site)

Wind Direction: Variable between 240° and 310°

Wind Speed: 4 knots

Visibility: more than 10 Nautical Miles.

Clouds: few at 2300 ft, scattered at 2800 ft

Pressure: 1029.0 mb

Temperature: 16°C

The meteorological conditions were adequate for a flight with a DPM, and (besides local conditions impossible to verify) seem not to have influenced the accident..

1.8. Aids to Navigation

Not applicable.

1.9. Communication

Not applicable

1.10. Airport information

Not Applicable.

1.11. Flight Recorders

Not applicable

1.12. Wreckage and Impact information

The impact with the ground was quite brutal. The LH Landing Gear hit the ground first, and ruptured. The first impact trace is 5 meters away from the main wreckage.

1.13. Medical and Pathological information

Not Applicable.

1.14. Fire

There was no fire

1.15. Survival Aspects

The pilot was not wearing a helmet, which he left at home.

The DPM was not equipped with a safety belt.

1.16. Test and Research

The engine was started. It ran without problem, and there was still fuel in the tank.

2. Analysis.

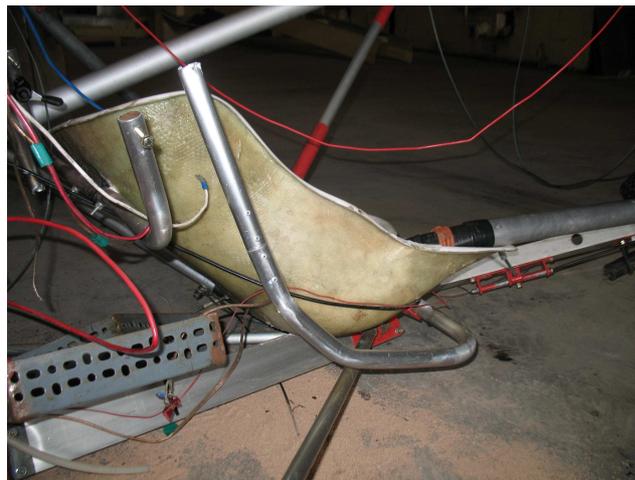
2.1. Design and Regulation.

The manufacture of the trike, as designed by the pilot, was not made (nor was it required to, per regulation) to be impact-resistant.

When comparing the design with a similar DPM, one major difference we found concerned the roll bar. In the comparison DPM, it is designed to absorb the energy of impact. It is an essential element for the safety of the pilot, and reportedly, in high energy impact, this element bends but does not break.



The tubing used on the accident DPM for the roll bar is not of the material, thickness and construction adequate for the primal function of crashworthiness. It seemed to be designed primarily to hold the seat in position.



The Belgian regulation applicable to Ultra Light Aircraft (KB/AR 25 May 1999) defines a series of requirements pertaining to the safety. Among other, a DPM is required (art.24) to be equipped with instruments, and a safety belt. Also, the flight characteristics needs to be determined (Stall speed, Never to exceed speed, maximum cross wind speed).

The DPM was not complying with the regulation.

2.2. The flight.

The pilot was familiar with the surroundings, at it was quite close to his home, and the place where most of the previous flights took place.

Witnesses report the aircraft was flying at an altitude lower than the tips of the surrounding trees, while the Regulation (art.74 AR/KB 15 September 1994) requires a minimum height of 500 ft (150m) above fixed obstacles (such as trees or high Voltage Line).

Diving to the crash scene might have been the consequence of a conscious decision of the pilot, or the consequence of a reaction to an abnormal situation.

In the latter case, the pilot's attention might have been drawn away from the flight direction for a while; he might have lost situational awareness when coming closer to the high voltage line. Surprised by the sudden presence of the HV line, he would have initiated an emergency collision avoidance manoeuvre. Diving under the line, between the row of trees, and coming towards the electrical pole gave few escape possibilities.

In addition, the speed and direction of the wind in that area – the two rows of trees form a corridor - might have been different than above the open field he was flying, adding a supplemental difficulty.

3. Conclusions.

3.1. Findings

- The meteorological conditions were adequate for a flight with DPM.
- The pilot did not hold a valid DPM Pilot authorization licence. His experience was not recorded, but this flight was the first of the year.
- The DPM was self-designed, and was not complying with the applicable Belgian regulation.
- The pilot was not attached to a safety belt and did not wear a helmet.

3.2. Causes.

The accident was due to a loss of situational awareness of the pilot, leading him to dive under the high voltage line, and the collision with the terrain as a consequence..

4. Safety recommendations.

There is no safety recommendation issued.