



Air Accident Investigation Unit Ireland

FACTUAL REPORT

ACCIDENT

**Dominator Ultrawhite Gyroplane, EI-EZY
Near Athenry, Co. Galway
23 August 2014**



**An Roinn Iompair
Turasóireachta agus Spóirt**

Department of Transport,
Tourism and Sport

FINAL REPORT

Foreword

This safety investigation is exclusively of a technical nature and the Final Report reflects the determination of the AAIU regarding the circumstances of this occurrence and its probable causes.

In accordance with the provisions of Annex 13¹ to the Convention on International Civil Aviation, Regulation (EU) No 996/2010² and Statutory Instrument No. 460 of 2009³, safety investigations are in no case concerned with apportioning blame or liability. They are independent of, separate from and without prejudice to any judicial or administrative proceedings to apportion blame or liability. The sole objective of this safety investigation and Final Report is the prevention of accidents and incidents.

Accordingly, it is inappropriate that AAIU Reports should be used to assign fault or blame or determine liability, since neither the safety investigation nor the reporting process has been undertaken for that purpose.

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¹ **Annex 13:** International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.

² **Regulation (EU) No 996/2010** of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.

³ **Statutory Instrument (SI) No. 460 of 2009:** Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulations 2009.



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In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010 and the provisions of SI 460 of 2009, the Chief Inspector of Air Accidents on 26 August 2014, appointed Mr Thomas Moloney as the Investigator-in-Charge to carry out an Investigation into this Accident and prepare a Report.

Aircraft Type and Registration:	Dominator Ultrawhite Gyroplane, EI-EZY	
No. and Type of Engines:	1 x Rotax 582	
Aircraft Serial Number:	I132	
Year of Manufacture:	2013	
Date and Time (UTC)⁴:	23 August 2014 @ 19.45 hrs	
Location:	Near Athenry, Co. Galway, Ireland	
Type of Operation:	General Aviation	
Persons on Board:	Crew - 1	Passengers - Nil
Injuries:	Crew - Nil	Passengers - Nil
Nature of Damage:	Substantial	
Commander's Licence:	PPL (G)⁵ issued by the Irish Aviation Authority (IAA)	
Commander's Details:	Male, aged 53 years	
Commander's Flying Experience:	237 hours, of which 34 were on type	
Notification Source:	IAA	
Information Source:	AAIU Investigation, AAIU Report Form submitted by the Pilot	

⁴ **UTC:** Coordinated Universal Time. All timings in this report are quoted in UTC; to obtain the local time add one hour.

⁵ **PPL (G):** Private Pilot Licence (Gyroplane).

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SYNOPSIS

The Pilot departed from the garden at his residence for a one hour local flight. This site was where the gyroplane was based. At the end of the flight he made a normal approach to land back in the garden. On final approach at low height, the gyroplane experienced some sink. The Pilot applied power but the gyroplane landed somewhat heavily, the nosewheel leg fractured and the gyroplane toppled over sustaining substantial damage. The Pilot was uninjured.

NOTIFICATION

The accident was notified to the AAIU by the IAA on 26 August 2014, three days after the occurrence. Thereafter, the Investigation wrote to the registered owner of EI-EZY seeking information regarding the event, following which the Pilot made contact with the Investigation.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot stated that he had taken off from the garden adjoining his residence (a two-storey house) for a one hour local flight. The weather was fine and the Pilot reported that the flight was normal in all respects. On his return he overflowed the house to ensure that his intended landing area in the garden was clear of obstacles. He then made an approach in a westerly direction with the intention of landing in the garden alongside the house.

He recalled that, as he was on short finals at a height of about 16 feet, the gyroplane seemed to sink. He applied power to arrest some of the sink but he felt that he landed "*a little heavily*". He recalled that, as soon as the gyroplane touched the ground, it toppled and came to rest on its side. The top rotor blades struck the ground and came to a halt.

The Pilot was uninjured. He released himself from his 4-point harness and left the pilot's seat. He was carrying a camera and he took some photographs of the scene. He stated that he could smell petrol so he was anxious to get the gyroplane into an upright position. To facilitate this, it was necessary to undo a single bolt to release the top rotor. He did this, brought the gyroplane back into an upright position and moved it into a shed.

Photo No. 1 shows the final position of EI-EZY, with the side fence of the garden in the background.



Photo No. 1: Final Position of EI-EZY.

1.2 Interview with Pilot

The Investigation met the Pilot at his residence to view the damaged gyroplane and the landing site. Prior to the accident the gyroplane had been based at the residence. During the interview the Pilot stressed that the occurrence had happened very suddenly, “*within a fraction of a second*”. The nosewheel leg had fractured during the event and the nosewheel was found in the grass behind the final resting position of EI-EZY (referenced to its direction of travel). Due to the loss of the nosewheel, the gyroplane was unstable on the ground and hence it had toppled. The Pilot thought that the free castoring⁶ nosewheel may have been offset by 90° to the direction of travel when it contacted the ground and that this had caused the leg to fracture. He said that his airspeed had been about 40 mph during the approach, and he had then slowed to 20 mph or less at touchdown. The winds were light at the time of the event and, other than the sink he had experienced just prior to landing, everything else was normal. He believed that the first contact with the ground was on the two main wheels, although this contact may have been a little heavier than usual.

1.3 Aircraft Information

A gyroplane is a rotary wing aircraft in which a rotor provides lift. Unlike a helicopter, the rotor is not driven by an engine but rather it rotates due to aerodynamic forces, an effect known as autorotation. A gyroplane requires a source of propulsion and in the case of the single-seat Dominator Ultrawhite, this is provided by a composite 3-bladed fixed-pitch propeller driven by a Rotax engine. The Ultrawhite has a tricycle landing gear with a free castoring nosewheel. The rotor disc diameter is 23 ft (7.010 metres (m)).

⁶ **Castoring:** Free to swivel.

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The Pilot provided the Investigation with a copy of a Flight Manual and Operating Limitations publication for EI-EZY. This document includes the following performance figures (standard sea level):

<i>“Take-off speed</i>	<i>20-35 mph</i>
<i>Take-off roll</i>	<i>300 – 500 ft [91.44 m – 152.4 m]</i>
<i>Landing roll</i>	<i>0 –10 ft [0 – 3.048 m]</i>
<i>Rate of climb</i>	<i>650 ft/minute.”</i>

The document states that for a *“Normal Landing”*, the approach speed is 55-65 mph. It continues:

<i>“Touchdown</i>	<i>Flare tail wheel first to a full stop</i>
<i>Landing Roll</i>	<i>Lower nose wheel gently AFTER COMPLETE STOP</i>
<i>Braking</i>	<i>Minimum required.”</i>

1.4 Aircraft Damage

The gyroplane sustained substantial damage during the accident. The two rotor blades were destroyed by ground contact. One of the three composite propeller blades sheared off while a second blade exhibited impact witness marks. The tail assembly and the pre-rotator cable were also damaged. The nosewheel leg fractured and the nosewheel assembly separated from the airframe.

5 1.5 Take-off and Landing Site

The Pilot had been using a grass area of the garden alongside his house as a take-off and landing site, which was aligned along a magnetic bearing of 055°/235°. Given the prevailing westerly winds, a take-off and landing direction of 235° was normally used and this was the case on the day of the occurrence. The overall length of the site was 53.2 m and the available width between the house and a fixed side fence was 12.5 m. The easterly end of the site was bounded by a 1.5 m high garden wall running alongside a public road. The westerly end was bounded by a timber fence which was removed whenever the gyroplane was operating from the site. This fence was between the garden and an agricultural field.

Overhead electrical supply cables at a height of approximately 10 m also ran adjacent to this fence-line, perpendicular to the take-off/landing site orientation. The Pilot’s standard operating procedure was to take off in the direction of the agricultural field, pass underneath the electrical cables and then climb away. A divot in the grass associated with the accident was measured at 8.5 m from the westerly end of the garden and 7.2 m from the side fence. A general view of the take-off/landing site is shown in **Photo No. 2**.

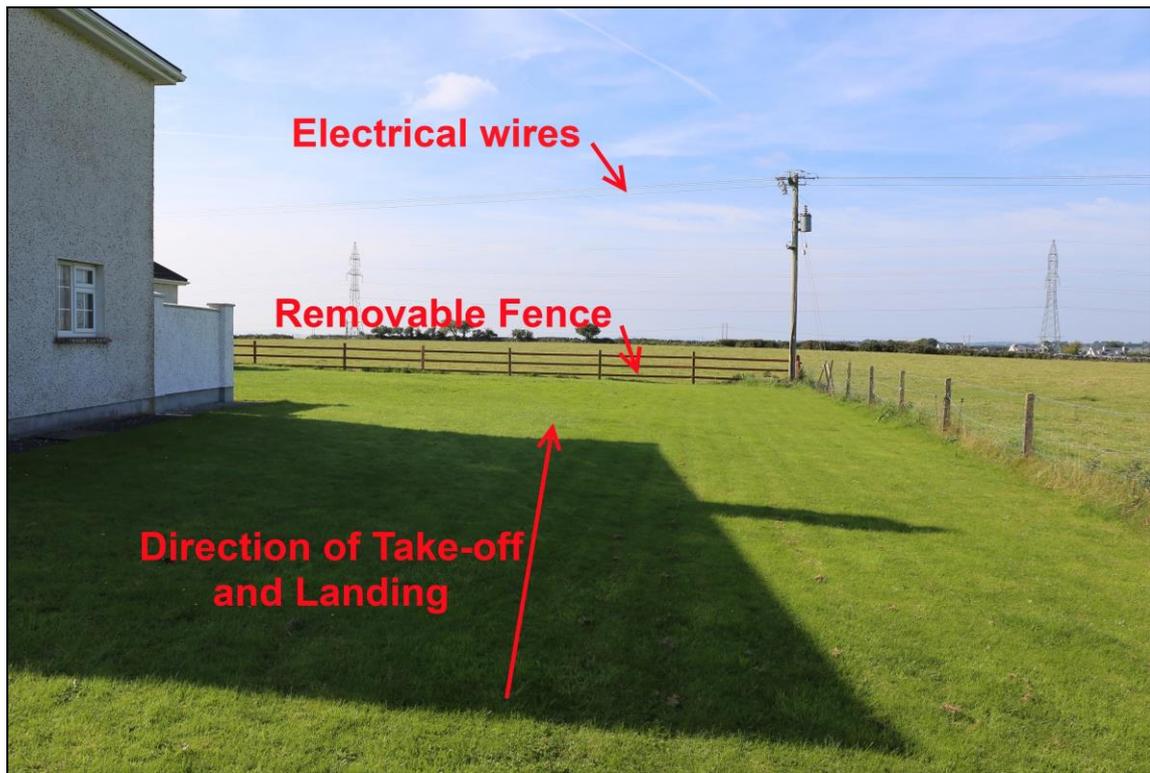


Photo No. 2: Take-off and Landing Site.

1.6 Aircraft Certification

An IAA Flight Permit for EI-EZY had been issued on 8 May 2013 and had effect until 7 May 2014. The aircraft log book recorded that EI-EZY had flown regularly up until 7 May 2014. The next recorded flight was on 18 June 2014 which the Pilot stated was a ferry flight to a maintenance facility to undergo an inspection for renewal of the Flight Permit.

On 16 August 2014 an Irish Light Aviation Society (ILAS) Inspector signed a Certificate of Fitness for Flight for EI-EZY following an inspection, on which was stated: *“This is valid for 14 days from the date of issue for renewal of Permits....”*. The Certificate also stated: *“This Certificate of Fitness for Flight is issued strictly for the purpose of maintenance, ferry flights or test flights and passengers must not be carried under any circumstances.”* Normal procedure is that, once the Certificate of Fitness for Flight has been issued by an Inspector, the aircraft owner submits an application for issue of a renewed Flight Permit to ILAS for onward forwarding to the IAA.

The aircraft log book recorded a flight test on the 17 August 2014, during which all applicable checks were marked as satisfactory. The next log book entry was a 25 minute flight on 22 August 2014 which the Pilot stated was a ferry flight from the maintenance facility back to his residence. The Investigation is aware of no evidence that a renewed Flight Permit had been issued by 23 August 2014, the date of the accident.

FINAL REPORT**2. AAIU COMMENT**

The Pilot reported that he had experienced some sink just prior to landing and that the gyroplane had landed somewhat heavily. It is possible that during the landing, the nosewheel made contact with the ground with sufficient force to fracture the leg and cause the nosewheel itself to separate from the airframe. Once the nosewheel had departed, the gyroplane was unstable and toppled over causing substantial damage.

Following the AAIU visit to view the gyroplane and the take-off/landing site at the Pilot's residence, the Investigation's opinion was that the site was unsuitable and inappropriate for gyroplane operations. Accordingly, the Investigation wrote to the Pilot concluding the letter with the following recommendation: *"Therefore, the AAIU would strongly recommend that you should not operate gyroplane aircraft from your garden and that you should re-locate the operation to a safer and more appropriate base."* The Pilot responded that he appreciated the advice and recommendations and planned to act on them immediately.

- END -

In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of this investigation is to prevent aviation accidents and serious incidents. It is not the purpose of any such investigation and the associated investigation report to apportion blame or liability.

A safety recommendation shall in no case create a presumption of blame or liability for an occurrence.

Produced by the Air Accident Investigation Unit

AAIU Reports are available on the Unit website at www.aaiu.ie



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