



# Air Accident Investigation Unit Ireland

**FACTUAL REPORT**

**ACCIDENT**

**Parajet 130 Thor, Unregistered  
Near Camp, Co. Kerry**

**27 May 2020**



**An Roinn Iompair**  
Department of Transport

## 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 13<sup>1</sup> to the Convention on International Civil Aviation, Regulation (EU) No 996/2010<sup>2</sup> and Statutory Instrument No. 460 of 2009<sup>3</sup>, 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.

Extracts from this Report may be published providing that the source is acknowledged, the material is accurately reproduced and that it is not used in a derogatory or misleading context.

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

<sup>2</sup> **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.

<sup>3</sup> **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 No. 460 of 2009, the Chief Inspector of Air Accidents on 28 May 2020, appointed John Owens as the Investigator-in-Charge assisted by Kate Fitzgerald (Inspector of Air Accidents) to carry out an Investigation into this Accident and prepare a Report.

**Aircraft Type and Registration:** Parajet Thor 130 with Dudek Synthesis 27 Wing, unregistered

**No. and Type of Engines:** 1 x Polini Thor 130

**Aircraft Serial Number:** N/A

**Year of Manufacture:** Paramotor – 2018, Wing – 2011

**Date and Time (UTC)<sup>4</sup>:** 27 May 2020 @ 14.02 hrs

**Location:** Near Camp, Co. Kerry

**Type of Operation:** General Aviation

**Persons on Board:** Crew – 1 Passengers – Nil

**Injuries:** Crew – Minor

**Nature of Damage:** Canopy destroyed

**Commander's Licence:** No licence

**Commander's Age:** 59 years

**Commander's Flying Experience:** Approximately 700 hours

**Notification Source:** Irish Aviation Authority (IAA) and An Garda Síochána

**Information Source:** AAIU Field Investigation

<sup>4</sup> **UTC:** Co-ordinated Universal Time. All times in this report are quoted in UTC; local time was UTC +1 hour on the day of the accident.

## SYNOPSIS

On 27 May 2020, the paramotor carrying one Pilot departed Magharees, Co. Kerry. The Pilot's intention was to perform a short leisure flight in the local area. At approximately 12.00 hrs, the paramotor passed overhead a caravan park near the village of Camp and turned to return to the point of departure. The Pilot said that having executed the turn, he did not adjust the setting of the wing trims which resulted in a rapid loss of altitude. The Paramotor struck and became entangled in electrical transmission cables overhead the caravan park. The cables broke and the Pilot and paramotor fell to the ground. The Pilot sustained minor injuries.

## NOTIFICATION

The AAIU was initially notified of the accident by the IAA who had been informed of an occurrence at a location near Castlegregory in Co. Kerry. The AAIU Inspector-on-Call made enquiries with local Gardaí who were unaware of the accident. However, the Gardaí attended the location and confirmed to the AAIU that there had been an accident involving a paramotor. Two Inspectors of Air Accidents deployed to the accident site and initiated an investigation.

## 1. FACTUAL INFORMATION

### 1.1 History of the Flight

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The Pilot informed the Investigation that he departed Magharees, Co. Kerry with the intention of carrying out a short leisure flight along the coast on board his paramotor. The Pilot reported that at the time of the flight there was a steady wind of between 10 and 15 miles per hour (mph) with no gusts, and that he had the wing trims '*fully out*' to assist flying into the wind. At approximately 14.00 hrs, the paramotor passed overhead a caravan park near the village of Camp. Having passed over the caravan park, the Pilot turned the paramotor to return in the opposite direction. The Pilot reported that he did not adjust the setting of the wing trims to account for the altered flight conditions following the turn, and this resulted in a rapid loss of altitude. The Pilot said that he was unable to arrest the descent and did not notice the electrical transmission cables overhead the caravan park until it was too late to execute an avoidance manoeuvre. The paramotor struck the lines and became entangled in them. The cables broke and the Pilot and paramotor fell to the ground. The Pilot sustained minor injuries.

#### 1.1.1 Witness reports

The Investigation spoke with two witnesses at the accident site. The first witness said that the paramotor flew low over the electrical transmission cables at the caravan park when it flew over them for the first time. The paramotor was then seen to turn. The witness thought the Pilot may have been intending to fly the paramotor under the cables after he turned.

The second witness reported that the paramotor was high over the poles carrying the electricity transmission cables the first time it flew over, but that it lost height after it turned.



## 1.2 Paramotor Information

### 1.2.1 General

The paramotor was a Parajet Thor 130, weighing approximately 30 kilogrammes (kg) and the wing was a Dudek Synthesis 27, weighing approximately 7 kg. The Pilot informed the Investigation that the paramotor had been manufactured in 2018 and the wing in 2011.

The Pilot said that the paramotor was not registered and did not have a flight permit, and that he was of the understanding that in Ireland, paramotors were exempt from these requirements.

### 1.2.2 Trim Settings

The paramotor wing had a trim system which allows pilots to adjust the shape of the wing for different flight conditions by adjusting the length of the wing risers<sup>5</sup>. When the trims are fully in, the trailing edge of the wing is pulled downwards, optimising it for slower flight. When the trims are '*fully out*', the wing has a flatter shape, optimising it for faster flight and for flying into a headwind. The Pilot reported they were '*fully out*' at the time of the subject accident.

## 1.3 Damage to Paramotor

There was minor damage to the paramotor propeller. The wing was destroyed.

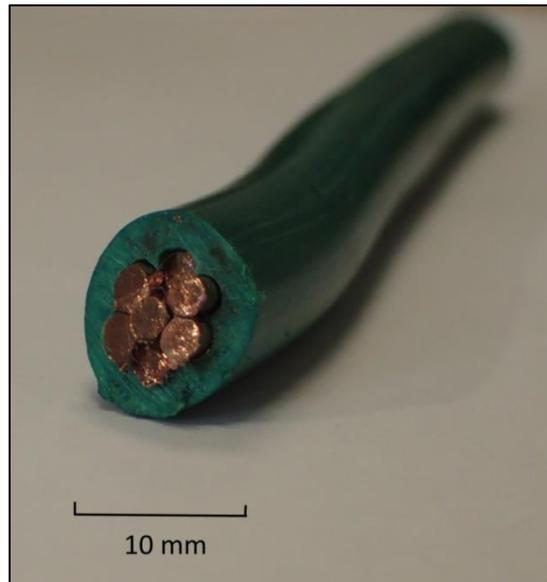
## 1.4 Third Party Damage

Two 20 kiloVolts (kV), 25 square mm insulated electricity transmission cables (a sample is shown in **Photo No. 1**) running through the caravan park at a height of 9.62 m broke as a result of the impact. The cable insulation was rated for 1,000 Volts. The grass below the transmission cables was scorched when the live ends of the transmission cables made contact with the ground.

The electricity network operator informed the Investigation that the circuit breaker system on that part of the network operated as it was intended. When the circuit breaker system detects a fault, it initially attempts to reset the system with an instantaneous trip and reclose. If the fault does not clear, the circuit breaker trips again to lock out, and the line is depowered. The network operator reported that in this case, from the initial pick-up (first clash of conductors in the air) until the lock-out tripping, the line remained live for 53 seconds and approximately 1,000 homes were affected by the subsequent power outage.

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<sup>5</sup> **Risers:** Webbing straps that join the wing (parachute) harness to the wing rigging lines.



**Photo No. 1:** Sample of Cable from Power Line

## 1.5 Injuries to Persons

The Pilot sustained cuts to his face requiring hospital treatment.

## 1.6 Personnel Information

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The Pilot informed the Investigation that he had previously been a member of the British Hang Gliding and Paragliding Association (BHPA) but that his membership had lapsed on 31 October 2009. The Pilot also held a BHPA Paragliding 'Club Pilot' rating, with 'Power'. In order to gain the BHPA club rating with power a pilot must complete theoretical and practical training at a BHPA-registered training school. Training is initially carried out on an unpowered paraglider, before moving on to training on a powered paraglider.

The Pilot did not hold a current medical certificate pertaining to a flight crew licence.

The Pilot informed the Investigation that he had approximately 700 hours flying experience, most of which were on paramotors.



## 1.7 Meteorological Information

Met Éireann, Aviation Services Division, provided the Investigation with an aftercast of the weather conditions at the time and location of the accident (**Table No. 1**).

<b>Meteorological Situation:</b>	An anticyclone of 1038 hectoPascals (hPa) is centred over Ireland giving a light to moderate variable airflow.	
<b>Wind:</b>	<b>Surface:</b>	Variable winds with local sea breezes, 2-5 kts <sup>6</sup>
	<b>2000 feet:</b>	Southerly 5 kts
	<b>Between surface and 300 ft:</b>	Variable 2-5 kts
<b>Visibility:</b>	20+ km	
<b>Weather:</b>	Dry, warm and sunny	
<b>Cloud:</b>	Few (1-2/Oktas <sup>7</sup> ) fair weather cumulus, with bases around 2,000-2,500 ft. Largely clear skies over Camp and Dingle Peninsula.	
<b>Surface Temp/Dew Pt:</b>	16/13 degrees Celsius – there would have been a large temperature contrast between coastal areas and inland. At 1400 UTC, Kerry Airport in Farranfore recorded an air temperature of 24 degrees.	
<b>MSL Pressure:</b>	1034 hPa	
<b>Freezing Level:</b>	11,000 feet	
<b>Other Comments:</b>	Nil	

**Table No. 1:** Aftercast of Weather Conditions at the time of the Accident

## 1.8 Regulatory Information

### 1.8.1 European Regulation

Annex I of Regulation (EU) 2018/1139 (also known as the ‘*Basic Regulation*’, which supersedes Regulation (EC) 216/2008) on the common rules in the field of civil aviation, lists the categories of aircraft that are exempt from the Regulation. These categories include powered parachutes having no more than two seats and a maximum take-off mass (MTOM) of no more than 300 kg (when fitted with a single-seat).

### 1.8.2 National Regulation and Guidance Material

#### 1.8.2.1 Introduction

The IAA is responsible for the safety regulation of Irish civil aviation. Revision 01 (dated 14 August 2019) of the IAA’s Airworthiness Advisory Memorandum (AAM) No. 6 ‘*Flight Permits and Maintenance of Annex I Aircraft (Homebuilt, Classic, Vintage and some Microlights)*’, was valid at the time of the accident. It stated that Annex I aircraft included ‘[...] *any other manned aircraft which has a maximum empty mass, including fuel, of no more than 70 kg [...]*’ and that when operated in Ireland are ‘*subject to Irish national legislation*’, rather than EU Regulation. The current Revision (02) contains the same statement.

<sup>6</sup> **kts:** Knot, 1 kt is equal to 1.15 mph.

<sup>7</sup> **Okta:** The World Meteorological Organisation unit of cloud cover. One okta covers 1/8<sup>th</sup> of the sky.

### 1.8.2.2 Aircraft Registration

The IAA's Aeronautical Notice, G.13 (Issue 2, dated 20 July 2016), regarding 'Powered Paragliders' states that:

*'The Irish Aviation Authority (Nationality and Registration of Aircraft) order, 2015 (SI No. 107 of 2015) requires that all manned aircraft operating within the state shall be properly registered either in this State or in an ICAO contracting state with the exception of the following:*

- *Kites;*
- *Captive balloons not used for carrying passenger;*
- *Piloted balloons used exclusively for meteorological purposes;*
- *Unmanned free balloons without a payload;*
- *Gliders with a maximum empty mass of 80 kilogrammes or less;'*

The Notice also states that:

*'Where an aircraft comprises a paraglider, parawing, parachute, foil, canopy or other lifting device, and is operated under power, it is not considered a glider and the requirements of the Order [SI No. 107 of 2015] apply'.*

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And that:

*'The assigned Nationality and Registration mark shall be affixed to the paraglider, parawing, parachute, foil, canopy or other lifting device [...]'.*

### 1.8.2.3 Airworthiness Certification

The AAM No. 6, states that 'An Annex I aircraft may not fly without a Certificate of Airworthiness or a Flight Permit<sup>8</sup>'.

The IAA's Aeronautical Notice A.112 (Issue 04, 06 September 2019), 'FLIGHT PERMIT FOR SINGLE SEAT AIRCRAFT' serves as a Flight Permit for certain aircraft, subject to the criteria specified in the Notice, including the following:

- a) *the aircraft is registered in the State and,*
- b) *the aircraft is designed to carry no more than one person and,*
- c) *the aircraft has a maximum take-off mass (MTOM) of;*
  - (i) *no more than 300 kg for an aeroplane, powered paraglider, parawing, parachute, foil, or canopy; or [...].*

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<sup>8</sup> **Flight Permit:** A Permit which allows an aircraft without a Certificate of Airworthiness to fly within the State. A Flight Permit may only be issued upon the receipt of a recommendation signed by an appropriately approved maintenance organisation, or other approved organisation.



The Permit is subject to the following conditions:

- a) *The Registered Owner(s) is responsible for the aircraft's proper maintenance.*
- b) *Prior to each flight, the pilot shall ensure that the aircraft is fit for flight. [...].*

In this accident, the subject paramotor was not registered and therefore the provisions of A.112 with respect to having a flight permit could not have been availed of.

AAM No. 6 has been revised since the subject accident. Revision 02, dated 22 June 2020, now includes a separate section on '*powered parachutes*' and states that '*Powered parachutes are required to be registered and hold a flight permit. For single seat aircraft, this may be the flight permit issued on IAA Aeronautical Notice A.112. Two-seater powered parachutes require a flight permit issued by the Irish Aviation Authority*'.

#### 1.8.2.4 Pilot Licensing

In Ireland, a paramotor pilot must hold a pilot licence issued by the IAA. A pilot licence issued by a foreign state may also be acceptable once it has been notified to, and validated by the IAA. The licensing requirements are set out in:

1. Statutory Instrument (S.I.) No. 333 of 2000 '*Irish Aviation Authority (Personnel Licensing) Order, 2000*', Article 5 (1) (Flight Crew Members to be Licensed) which states:

*'Subject to the provisions of this Order, a person shall not act as a flight crew member of an aircraft registered in the State unless that person is the holder of an appropriate licence issued or validated by the Authority [...].'*

2. The IAA's Aeronautical Notice, P.21 (Issue 3, 7 April 2017), titled '*ACCEPTANCE OF FLIGHT CREW LICENCES*' which states in Section 3:

*'The holder of an appropriate pilot licence or aviation qualification<sup>9</sup> issued by another ICAO signatory state or its national aviation authority or qualified entity, which permits or is accepted as being appropriate to enable the holder to act as pilot-in-command within that state of an aircraft described in Annex II<sup>10</sup> of EU Regulation No 216/2008 (as amended), shall be exempt within the territorial limits of the State from the requirements of Article 5 of the Order while acting as a member of the flight crew of an aircraft being operated as a private aircraft'.*

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<sup>9</sup> **Aviation Qualification:** According to Aeronautical Notice P. 21, this means a qualification, other than a pilot licence, which certifies or attests that a person has completed a course of flight and theoretical knowledge training according to a syllabus approved or accepted directly or indirectly by another ICAO signatory state according to national rules, and which purports that the holder thereof is deemed to be adequately trained to act as pilot of the relevant subject aircraft.

<sup>10</sup> Annex II of Regulation (EC) 216/2008 has been superseded by Annex I of Regulation (EU) 2018/1139. However, the basic regulation of Foot-Launched Powered Aircraft remains unchanged.

Section 4 of Aeronautical Notice, P.21 states:

*'This Direction shall apply only provided that the appropriate pilot licence or aviation qualification holder has:-*

- a) given prior notification to the Authority by submitting the appropriate details in the manner published by the Authority on its website;*
- b) [...];.*
- c) the valid medical certificate required by the state of issue, but in any case where no such certificate is required or where the certificate required is not an ICAO Class 2 or an EU Part-MED LAPL medical certificate, a minimum of an ICAO Class 2 medical certificate or an EU Part-MED [Commission Regulation (EU) 1178/2011] LAPL<sup>11</sup> medical certificate; [...]'*

The IAA is currently developing a licensing system specifically for pilots of Foot-Launched Powered Aircraft<sup>12</sup> and anticipates that the system will become available in the coming months. The Investigation notes that until the system is available, pilots of Foot-Launched Powered Aircraft may apply to the IAA for an exemption from the requirement to hold a pilot licence. This exemption is subject to the pilot holding an equivalent licence or qualification (deemed acceptable to the IAA) issued by another state, and an appropriate medical certificate.

#### 1.8.2.5 Guidance Material

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Following a previous AAIU Investigation (Report 2020-012<sup>13</sup>), the IAA published a new Operations Advisory Memorandum – OAM 15, Revision 01, dated 9 July 2020, on *'Powered Paragliding (Paramotoring) in Ireland'*<sup>14</sup>. This contains a summary of the applicable regulatory requirements, including those relating to registration, flight permits, pilot licensing and the rules of the air. Links to other applicable documents, including Aeronautical Notice P.21, are also included. In addition, the General Aviation *'Aircraft Categories'* section of the IAA website has been revised to include a new section on *'Powered Paragliders/Paramotors/Parachutes'*<sup>15</sup>, which also contains (or provides links to) the applicable legislative requirements.

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<sup>11</sup> **LAPL:** Light Aircraft Pilot Licence

<sup>12</sup> Irish Aviation Authority, 2020, Powered Paraglider Pilot Licensing Requirements, viewed 01 February 2021 <[https://www.iaa.ie/personnel-licensing/pilot-licences-\(eu-regulations\)/private-pilot-licence/requirement-to-hold-an-foot-launched-powered-aircraft-\(flpa\)-pilot-licence](https://www.iaa.ie/personnel-licensing/pilot-licences-(eu-regulations)/private-pilot-licence/requirement-to-hold-an-foot-launched-powered-aircraft-(flpa)-pilot-licence)>

<sup>13</sup> AAIU, 2020-012, Synoptic Report, accessed 01 February 2021 <<http://www.aaiu.ie/sites/default/files/report-attachments/Report%202020-012.pdf>>

<sup>14</sup> Irish Aviation Authority, 2020, Powered Paragliding (Paramotoring) in Ireland, viewed 01 February 2021, <[https://www.iaa.ie/docs/default-source/publications/advisory-memoranda/operations-advisory-memoranda-\(oam\)/powered-parachuting-\(paramotoring\)-in-ireland.pdf?sfvrsn=32f31af3\\_12](https://www.iaa.ie/docs/default-source/publications/advisory-memoranda/operations-advisory-memoranda-(oam)/powered-parachuting-(paramotoring)-in-ireland.pdf?sfvrsn=32f31af3_12)>

<sup>15</sup> Irish Aviation Authority, 2020, Flying a Powered Paraglider / Paramotor / Parachute in Ireland, viewed 01 February 2021, <<https://www.iaa.ie/general-aviation/aircraft-categories/powered-paragliders-paramotors-parachutes>>



## 1.9 Previous Occurrences involving Wire Strikes

The AAIU has investigated numerous wire/cable strike events including the subject accident. Pertinent information relating to the topic of wire strikes can be found in AAIU Report 2017-014<sup>16</sup>, which describes an occurrence involving a Robinson R44 helicopter that struck power lines during landing. In 2010, the IAA launched a wire strike awareness campaign following a Safety Recommendation from the AAIU (IRLD2010015) which arose from an Investigation<sup>17</sup> into a fatal wire strike accident, which occurred in 2009. In addition, the IAA has published a Safety Leaflet, IGA 6, entitled “Wire Strikes – The hazard to Aviation”<sup>18</sup>.

## 2. AAIU COMMENT

In this accident, the Pilot reported that after executing a turn, he did not adjust the wing trim settings to account for the altered flying conditions following the turn, and this led to an unexpected and rapid descent, which he was unable to arrest in the altitude remaining. The Pilot said that he did not observe electrical transmission cables traversing the caravan park below him until it was too late to avoid a collision. The aftercast provided by Met Éireann reported that the surface wind direction was variable and that the wind was also relatively light; the Investigation does not believe that the wind alone was a significant factor in this accident.

Wire and cable strikes have been the cause of numerous aviation accidents, often with fatal consequences. Electrical transmission cables are difficult to observe from the air due to both the camouflage effect of background scenery and the limitations of the human eye. The IAA-issued Safety Leaflet IGA 6 provides information for general aviation pilots on the hazards posed by electricity lines and strategies for reducing the risk.

Many of the rules, regulations and safety information which apply to aircraft also apply to Foot-Launched Powered Aircraft. These include regulations relating to registration, airworthiness, pilot licensing and reporting of accidents and serious incidents. In this case, the Pilot was not appropriately licensed and did not hold a medical certificate. Furthermore, the paramotor was not registered. The IAA recently published an Operations Advisory Memorandum OAM 15, ‘Powered Paragliding (Paramotoring) in Ireland’, which gives guidance on the legislative requirements that apply to flying Foot-Launched Powered Aircraft and includes links to other useful documents. In addition, the IAA is developing a Pilot licence specifically for FLPA flying. This will supersede existing requirements to hold a pilot licence.

## SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations.

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<sup>16</sup>AAIU, 2017, Factual Report, viewed 01 February 2021, <<http://www.aaiu.ie/sites/default/files/report-attachments/REPORT%202017-014.pdf>>

<sup>17</sup>AAIU, 2010, Formal Report, viewed 01 February 2021  
<[http://www.aaiu.ie/sites/default/files/upload/general/12603-REPORT\\_2010\\_009-0.PDF](http://www.aaiu.ie/sites/default/files/upload/general/12603-REPORT_2010_009-0.PDF)>

<sup>18</sup>Irish Aviation Authority, Wire Strikes – the hazard to aviation, viewed 01 February 2021, <[https://www.iaa.ie/docs/default-source/publications/corporate-publications/safety-leaflets/wire-strikes---the-hazard-to-aviation.pdf?sfvrsn=c2aa0df3\\_4](https://www.iaa.ie/docs/default-source/publications/corporate-publications/safety-leaflets/wire-strikes---the-hazard-to-aviation.pdf?sfvrsn=c2aa0df3_4)>

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

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