

## FINAL REPORT

**AAIU Synoptic Report No: 2007-008**

**AAIU File No: 2006/0062**

**Published: 27/04/07**

**In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 7 August 2006, appointed Mr Frank Russell as the Investigator-in-Charge to carry out a Field Investigation into this Accident and prepare a Synoptic Report.**

<b>Aircraft Type and Registration:</b>	Pilatus B4 Glider, EI-121
<b>No. and Type of Engines:</b>	Not Applicable
<b>Aircraft Serial Number:</b>	199
<b>Year of Manufacture:</b>	1976
<b>Date and Time (UTC):</b>	7 August 2006 @ approx 16.35 hrs (UTC) <sup>1</sup>
<b>Location:</b>	Kilkenny Airfield
<b>Type of Flight:</b>	Private
<b>Persons on Board:</b>	Crew - 1
<b>Injuries:</b>	Crew - 1 (Fatal)
<b>Nature of Damage:</b>	Aircraft destroyed
<b>Commander's Licence:</b>	See Section 1.3
<b>Commander's Details:</b>	Male, aged 78 years
<b>Commander's Flying Experience:</b>	4,200 hours, of which approximately 400 hours were on Gliders
<b>Information Source:</b>	AAIU Field Investigation

### **SYNOPSIS**

The weather in the Kilkenny area was good, with unrestricted visibility and little cloud. The Pilot of EI-121, who was very experienced on both powered aircraft and gliders had earlier that afternoon flown an MS 893 RALLYE aircraft, the local Gliding Club's towing aircraft. This was a routine towing flight. On his return, he had arranged to fly the Pilatus B4, a single seat glider, himself. Following an uneventful local area flight the Pilot returned to land at Kilkenny Airfield. Here, on base leg to Runway (RWY) 09, he was observed by witnesses as he passed the airfield boundary when, unexpectedly, the aircraft adopted a sudden nose down attitude with wings level, and continued down to impact the ground. The Pilot was found fatally injured in the cockpit by the Kilkenny Fire Services. The glider was destroyed.

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<sup>1</sup> Unless specified, all times in this report are in local time, (UTC + 1 hr).

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### 1. FACTUAL INFORMATION

#### 1.1 History of the Flight

The Pilot arose early on the day of the accident, as was his habit, and carried out a number of gardening chores throughout the morning. In the afternoon, he went to Kilkenny Airfield to commence flying. Weather conditions were good over the general area. At 15.00 hrs (Local) the Pilot took off (as Pilot-in-Command) in the Club's towing aircraft, an MS 893 RALLYE, on a routine glider towing detail. He landed back at 15.15 hrs. The Pilatus B4 glider, which the Pilot was about to fly on his second detail, had been hangared since 7 August 2005 at the airfield and had recently received its valid Temporary Certificate of Airworthiness from the Irish Gliding and Soaring Association (IGSA), following that layoff. The Investigation was informed that the Pilot and a club colleague carried out a Daily Inspection (DI) prior to flying, although this was not signed for in the DI book. This colleague also helped the Pilot to strap in securely. The same tow aircraft was used and after the customary briefing between the tow and glider pilot, take-off was achieved at approximately 17.00 hrs, with tow release at 2,000 feet, as pre-briefed. Air to air and air to ground communications were via airband VHF transceivers. The tow pilot recalls advising the Pilot of strong thermal currents in the environs of the airfield. It is probable that the Pilot was aware of these thermals from his own earlier flight. After some general maneuvering the Pilot flew in the direction of his home on the outskirts of Kilkenny City. At 17.33 hrs he made a short mobile call to his wife in which he was clearly happy to be back flying the glider again. He ended the call by saying that he was returning to the airfield. Here, he was seen by two reliable witnesses, one in the Control Tower and one near RWY 09. He was observed on base leg to RWY 09 at approximately 400 feet. However, the Pilot flew through the runway centerline and continued in a straight line past the airfield boundary. Immediately thereafter, the glider was seen to pitch nose down and descend toward the ground with wings level. It disappeared from the view of the witnesses behind a line of trees and hedges and impacted the ground in a large open grass field immediately adjacent Kilkenny Airfield (See **Appendix A**). Both the witnesses and others alerted the Gardaí and the local emergency services and they, and members of the Club, quickly attended the scene. However, the Pilot was found fatally injured in the cockpit. The Gardaí sealed off the accident site pending the arrival of the AAIU Inspectors.

#### 1.2 Meteorological Information

##### 1.2.1 General

The Aviation Services Division of Met Éireann provided the following weather report for Kilkenny Airfield at 16.30 hrs (UTC), 7<sup>th</sup> August 2006, as follows:

##### **General Situation:**

A large area of high pressure, centered just off the northwest coast, maintained a northeast flow over the area.

<b>Wind Surface:</b>	360/05-08 kt
<b>2,000 ft:</b>	040/15 kt
<b>Weather:</b>	Nil
<b>Visibility:</b>	10 + Km
<b>Cloud:</b>	Few 020 – 030
<b>Temp/Dew Point:</b>	20°/09°C
<b>MSL Pressure:</b>	1027 h Pa

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**1.2.2** The Met Éireann Tephigram analysis shows that, in stability terms, the atmosphere was neutral up to about 900 hPa (approximately 3,000 feet). This layer was bounded by a sharp subsidence inversion. There was a shallow superadiabatic layer just above the surface.

The structure of the atmosphere suggests that there would have been significant up draughts in the area at the time. The existence and intensity of these updraughts would have varied over space and time due to horizontal variability in the heat capacity of the surface. These updraughts would have been generally capped at the level of the inversion.

### **1.3 Personnel Licensing Information**

**1.3.1** Annex 1 to the Convention on International Civil Aviation Organization (ICAO) sets out the International Standards and Recommended Practices for Personnel Licensing. In Paragraph 2.12 of Annex 1, the requirements for “*Glider Pilot Licence*” are set out in some detail.

On a National level, SI No. 333 of 2000, Irish Aviation Authority (IAA) Personnel Licensing Order, 2000, sets out the requirements for various aviation related Licences, including Pilot Licences. It is a lengthy detailed document of 159 pages. Part VIII Glider Pilot Licence Requirements, sets out (7) requirements for which holding an “International” (sic) Glider Pilot Licence, includes sub para (6) Medical Fitness, “*The applicant shall meet the medical requirements specified on Article 39 of this Order*”. This Article specifies a Class 2 Medical assessment.

**1.3.2** National glider pilot licensing is not regulated by the IAA Order, S.I. No 333 of 2000. The sports umbrella organization, the IGSA, fulfills an overseeing function, in part. The IGSA issued “Operational Regulations” in 2003, of which Para G-6, sub Para 6.3 states: “*Solo pilots are required to furnish their CFI (Chief Flying Instructor) with a declaration of their medical fitness to fly on reaching the age of 45, and at 5 yearly intervals thereafter until reaching the age of 70, when annual declarations will be required. The declarations may be self declarations unless the CFI requests endorsement from a GP or aviation medical expert*”.

In response to a series of questions from the Investigation on the IGSA Regulations, the IGSA confirmed that the Pilot had the role of ‘CFI of Glider Operations’ with the Kilkenny Flying and Gliding Club. In addition, the Pilot had been the holder of an IGSA Instructor Rating with CFI endorsement and, provided the medical and flying requirements for renewal were fulfilled, this would still be valid. However, confirming renewal requirements is done by the club CFI (in this case, the Pilot himself), but the IGSA Council had not been notified of any such renewal. Normally, the CFI would inform the IGSA Council of the names of those whose ratings had been renewed, but this was not strictly required by their Regulations. Also, while the requirement for an annual review of CFI’s by the IGSA examiners was introduced in the 2003 draft of the IGSA Regulations, the practical details of this have not yet been implemented, so that no such reviews have yet taken place.

**1.3.3** The Pilot’s powered aircraft licence, his Private Pilots Licence, PPL (A), issued by the IAA, expired when his Class 2 Medical Certificate expired on 2 April 2002 (See Section 1.4.1).

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### 1.4 Medical and Pathological Information

#### 1.4.1 **Medical History**

Following an air medical on the 2 April 2002, the Aeronautical Medical Examiner (AME) did not deem the Pilot fit to fly and referred him to the Air Medical Clinic (AMC) in the Mater Private Hospital for cardiological evaluation. As a result, the Pilot had a consultation with the Head of the AMC, who advised him to consider the cardiological evaluation required for him to be certified fit. The Pilot decided that he would think about this advice but he never subsequently reverted to the AMC. Subsequently, and of significance, the Investigation learned that the Pilot had an episode of atrial fibrillation in May 2002. This is a spontaneous condition that caused abnormally rapid beating of his heart, which was spontaneously converted back to normal rhythm with prescribed medication. Symptoms include, as well as the above-mentioned, shortness of breath, especially during physical activity or emotional stress, weakness, fatigue, dizziness, confusion, light-headedness or fainting and chest pain (angina). The Pilot was then 74 years of age. Also, from 2002 onwards the Pilot was on prescribed medication for the treatment of high blood pressure and a pre-existing kidney condition called glomerulonephritis. However, Kilkenny Flying Club records show that the Pilot continued to fly powered aircraft after the expiry of his State licence in April 2002, up to and including the day of the accident.

#### 1.4.2 **Pathology**

A post mortem examination confirmed that the Pilot's death was due to multiple traumatic injuries, these injuries being consistent with those sustained in an air accident. The results of a toxicology test were negative for the tests performed.

### 1.5 Wreckage and Impact Information

#### 1.5.1 **Site inspection.**

The glider struck the ground in a steep nose down attitude, with virtually zero horizontal velocity. There was insignificant forward movement after the initial impact. Neither the ground impact marks nor the wreckage gave any indication that the glider was spinning at the point of impact. The initial impact was sustained by the nose, which crumpled significantly. Both wings rotated forward about the main spar attachment point, causing both rear wing attachment points in the fuselage to fail. The right wing then made significant ground contact along the outer section of the leading edge. This caused the leading edge to crumple and the wing failed at the junction of the parallel section with the outer trapezoidal section. This junction is located at wing Station 6, which is at 60% of span. The fuselage also failed in the rear wing area. The rear fuselage and empennage were largely undamaged. The airbrakes were found in the closed position and the undercarriage was down and locked. The trim lever, which controls the spring-type elevator trim, was found in the 3<sup>rd</sup> rearmost of the 10 trim notches. The trim lever is spring loaded, so that it engages in an available slot. The elevator was noted to be in the full up (tail down) position. Witness marks on the elevator push rod in the area of the fuselage centre section were consistent with the observed elevator position.

However, a result of the partial collapse of the forward fuselage was to push back the control stick mount and the push-rod mechanism on the right side of the cockpit, which would cause the elevator to assume a full up position.

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Control continuity for the rudders, elevator, ailerons and airbrakes was checked and found to have been intact at the point of impact.

The cockpit was found to contain a total of 5 cushions and a foam-filled life jacket. One of these was the standard Pilatus seat cushion. The other 4 were small domestic type cushions. There was not evidence that the pilot was wearing a parachute.

When the Investigation team arrived on scene, the Pilot had been removed from the scene by the local emergency service. This necessitated the removal of cockpit harness and cutting and displacement of elements of the glider's nose and cockpit area. Thus it was not possible for the Investigation to determine the disposition of the cushions, the pilot's mobile phone or the 4-point harness at impact.

### 1.5.2 Off-Site Inspection

The glider was moved, on the day following the accident, to the AAIU's test facility at Gormanston, Co. Meath, where a further detailed inspection was carried out. Three items of pre-existing damage were found. The first was a repair to the righthand wing leading edge, just outboard of the junction of the parallel and trapezoidal sections. The Investigation understands that a vehicle had collided with the wing many years ago. The repair appeared to have been completed in accordance with the glider's maintenance manual. However, the glider's logbook contained no reference to this repair. Previous minor damage was also found on the casing of the wheel well. It was noted that the remains of a locally made undercarriage warning system, (activated by airbrake deployment when the undercarriage was up) was found. This system was defunct at the time of the accident. Inspection of the pitot-static system found several fractures in the piping of this system. Most of these fractures were of recent origin, consistent with impact damage or the efforts of the emergency services to remove the pilot. However, examination of a plastic Tee junction found dirt deposits on the fracture face indicating that the component was broken some time ago. This meant that the static system was reading cockpit static pressure instead of the correct atmospheric static pressure as measured on the static ports on the side of the glider. It was further noted that the plastic tubing leading into this Tee junction was blocked with what appeared to be grease. The plastic rubbing was found to have cracked on the other side of this grease blockage about 33 mm from the fracture point. In the immediate area of this crack, a black carbon-type gel deposit was found. No other damage or defects, which were of any significance in this accident, were found.

It was noted that the limitations placard in the cockpit had been changed, to reduce the permitted aerobatic manoeuvres. This change was dated 17/8/2003 and signed by an IGSA Inspector. There is no supporting documentation in the glider's logbook. The Inspector informed the Investigation that during the C of A Inspection of 2003, he noted damage to the paint on rivets on the top of both wings, over the main spar, close to the wing roots. He discussed the matter with the glider's owner (the accident pilot). The owner indicated that the paint distress was most likely due to the glider having been rather aggressively flown in the past. The Inspector stated that the aircraft maintenance and repair manual referred to the condition of paint stress around rivets. Comparing the manual notes to the condition of the rivets as found and based on the general condition of the glider, the Inspector's judgment was that the glider was basically sound but that any further wear would be minimized by restricting the allowable range of aerobatic manoeuvres.

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The Investigation noted that the paint on the rivets on the main spar, in an area extending from the wing root rib (No.1) for a distance of approximately 30 cm spanwise on the top and bottom surfaces of both wings had been touched up. The area of the paint-damaged rivets was examined subsequent to the accident. It was noted that none of these rivets had failed or become loose. There were indications of corrosion on these rivets, particularly on the wing top surface. The Investigation confirmed that the glider's manufacturer was not consulted regarding the damaged rivets or the alteration of the cockpit placard.

### 1.6 Test and Research

The cockpit was found to contain a total of 5 cushions and a foam-filled life jacket. One of these was the standard Pilatus seat cushion. The other 4 were small domestic type cushions. There was no evidence that the Pilot was wearing a parachute. These five cushions were sent to Pilatus in Switzerland where, on the 15 January 2007 under the supervision of their Air Safety Investigator and Technical Staff, a number of scenarios were tested. These included arranging the five cushions in various positions in the cockpit of an identical glider with a pilot of similar stature and weight to the deceased. The purpose of this exercise was to ascertain if one or more of the cushions might have moved in flight and impaired the pilot's controllability of the aircraft. The result of this exercise proved that this was most unlikely to have happened.

### 1.7 Aircraft Information

The Pilatus B4 is a single seat all metal sailplane (glider), of moderate performance. While the glider is fully aerobatic, being certified from +6.32 G to -4.32 G, it has benign handling characteristics. For spin training purposes, ballast can be added to the tail, thereby moving the centre of gravity further aft and reducing the glider's stability. Such ballast was not carried on the accident flight.

The general layout is a shoulder-mounted wing and a conventional T-tail. The flight controls consist of a standard floor-mounted control stick, controlling the aileron and elevator by means of push rods, and the rudder is controlled by bar type pedals located underneath the instrument panel. The forward section of the rudder control circuit is cable operated, while the aft section is push rod operated. The elevator is trimmed by a spring counter-balance system, controlled by a lever on the right hand side (RHS) of the cockpit. The trim lever position is controlled by a total of ten notches, ranging from full forward to full aft trim. The airbrake control lever is located on the upper left hand side (LHS) of the fuselage, and this also has a wheel brake lever mounted on it. The glider is fitted with a manually operated undercarriage that consists of a single wheel under the fuselage centre section. The undercarriage-operating lever is located below the airbrake lever on the LHS side of the cockpit. To lower the undercarriage the lever has to be rotated approximately 45° from its vertical stowed position, to unlock the undercarriage. The lever is then pushed forward approximately 30 cm to lower the undercarriage and the lever is then rotated back into the vertical to lock the wheel in the down position.

The pilot sits in a reclined position. The base of the seat consists of a shape cushion provided by the glider manufacturer. The backrest consists of a fibreglass moulding, which features a shaped depression to receive the pilot's parachute. When a parachute is not worn, the manufacturer provides a cushion (p/n 112.60.11.007) to fill the parachute depression. This cushion was not found in the wreckage of EI-121 after the accident. The pilot's feet are located on the rudder pedals, which are under the instrument panel.

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There is relatively little clearance between the pilot's feet and the instruments, or between the pilot's feet and the pitot and static tubing leading to the rear of the appropriate instruments.

The stall characteristics of the Pilatus B4 are benign and vice-less. Altitude loss during a normal stall is minimal. Recovery to normal flying speed is automatic if the stick is not maintained in a rearward position.

### 1.8 Centre of Gravity

Given the weight and build of the Pilot, and the absence of a parachute, it is estimated that the glider was being operated within the permissible Centre of Gravity (C of G) limits, but towards the aft end of these limits. This would have slowed a recovery from a stall situation, but not to a major extent. Precise calculation of the C of G position was hampered, as the glider had not been "weight and balanced" since manufacture in 1976.

### 1.9 Other information

The IGSA Inspector who certified the last C of A on this glider informed the Investigation that no leak or other tests were conducted on the pitot-static system during the last C of A renewal inspection.

The glider's logbook contained no weight and balance check since the glider was manufactured in 1976.

The Swiss Federal Office for Civil Aviation (FOCA) has issued a total of three Airworthiness Directives (AD's)<sup>2</sup> that were applicable to EI-121. The glider manufacturer had issued corresponding Service Bulletins (SB's). The details are:

Swiss FOCA AD #	Pilatus SB #	Notes
HB 86-041	SB 1004	Related to sheared rivets in the airbrake control. <i>Issued in 1985, it was signed up as completed in the logbook.</i>
HB 2003-1999R1	SB1005 Rev 1	Relates to cracks in the control column mounting. Failure of this component would lead to a loss of control. It was issued in 2003. <i>Compliance with this AD was required before further flight after 4 April 2003. No record of the accomplishment of this AD on EI-121 was found.</i>
HB 2004-491	SB 1005 Rev 2	This again relates to cracks in the pilot's control column mounting, and replaces HB 2003-199RI, and introduces an annual repetitive inspection requirement. It was issued in 2004. <i>Compliance with this AD was required before further flight after 4 April 2003. No record of the accomplishment of this AD on EI-121 was found.</i>

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<sup>2</sup> An Airworthiness Directive is a repair, modification or inspection that the State of Certification of an aircraft (Switzerland in this case) issues, the accomplishment of which is considered mandatory to ensure the continued airworthiness of the aircraft.

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The control column mounting, which was the subject of the unaccomplished AD, was inspected after the accident and was found to be defect free.

The C of A renewal inspection forms used by the IGSA Inspector consisted of a checklist of required items. One item (#53 on the most recent version of the form) covers *Mandatory Mods/Inspections*. It was initialed on all inspections (2003, 2004 and 2006) since the AD was initially issued. It was also noted that the *Date of Last Weighing* box (which appears on inspection report forms from 1998 onwards) was left blank in all cases.

The Investigation contacted the manufacturers regarding the distribution of AD's and SB's. The manufacturer stated that they did not maintain a register of aircraft owners. Consequently there was no system whereby the owners of a glider were notified of the issue of an AD by the manufacturer. The manufacturer further stated "*In case of Airworthiness Directives issued by the Swiss FOCA we must rely on the process by which they inform other national authorities, and the respective national processes for dissemination of the information.*"

It was noted from inspection of the glider's logbook that it had flown in each of the years 1992 through to 1999, and again in May and June of 2001. According to the logbook, there is no record of the glider having a valid C of A from 12 April 1992 until 1 July 2001. Records from the IGSA indicate that the glider had no C of A from 20 April 1992 until 1 July 2001, except for the period from 11 August 1998 until 10 August 1999.

The Investigation noted that the IGSA does not have any laid-down procedure detailing the conduct of post C of A flights or the scope of tests to be carried out for such flights.

## 2. ANALYSIS

### 2.1 Technical

A detailed technical analysis of the glider determined the following:

- The repair to the wing leading edge and the minor damage to the wheel-well were not factors in this accident.
- The damage to the static system plumbing, causing the instruments to read cockpit rather than correct static pressure, would cause only minor errors in the airspeed, altimeter and variometer instruments at low airspeed. The defects observed in the pitot static system are not considered to have been significant factors in this accident. However, it is poor practice for a glider to be returned to service, immediately after a C of A inspection, with such defects present.
- No technical defects were found to account for a sudden loss of control.

The position of the elevator trim, towards the aft of the available range, is consistent with thermalling flight, particularly in weak conditions, where the objective would be to fly the glider as slowly as possible. Normally the trim would be moved forward in the pre-landing checks.

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The standard pre-landing checklist is WUFSSSTALL:

Letter	Item	Check action	Comment
W	Water	Any water ballast should be dumped	Not applicable to EI-121
U	Undercarriage	Down and locked	Completed
F	Flaps	Set for landing	Not applicable to EI-121
S	Straps (Security)	Straps and cabin secure - no loose objects	
S	Speed	Approach speed set appropriate for the wind conditions	
T	Trim	Set to maintain approach speed	
A	Airbrakes	Hand on the lever (check if they work if in doubt e.g. due to earlier icing)	
L	Lookout (Landing)	Lookout to check the intended flight circuit is clear and select a landing area (reference point) or decide upon a contingency landing area	

The fact that the undercarriage had been lowered indicated that the pre-landing checklist had been initiated. The fact that the trim was found in an aft-trim condition could indicate that the accident occurred during the accomplishment of this checklist. It should be noted that the point of the flight, where the glider was observed to enter the final nosedive, would have been a normal altitude for the pilot to be in the process of completing the pre-landing checks

The plastic tubing used in the pitot-static system was a tight fit on the connectors including those on the Tee piece. The grease and the other carbon lubricant (possibly engine oil) were likely used as lubricants to ease the sliding out the tube onto the fittings during some maintenance operation, at an indeterminable point in time. It is known that hydrocarbon oil causes embrittlement of plastic tubing. The fact that the oil deposit was found in the immediate area of the crack indicated that such embrittlement occurred.

The non-compliance with two AD's was not a factor in this accident. However, it is a matter of concern to the Investigation that the two subsequent C of A renewal's of July 2004 and July 2006 were accomplished without incorporation of these AD's.

There is no evidence that the pilot attempted to carry out a full test flight, which would have been appropriate for a glider on its first post C of A renewal flight. The non-wearing of a parachute, the relatively low height of the launch flight and the absence of any ground observations of the types of manoeuvres normally associated with a full test flight indicate that the flight was of a benign and routine nature, rather than the full testing of the glider, which would have been appropriate. In particular this is no evidence that stall and spin recovery was tested, or that the handling of the glider in the high-speed area of the flight envelope was explored. The Investigation considers that such tests, conducted at a suitable altitude, should form an integral part of a post C of A test flight. The Investigation found that the IGSA has not laid down guidelines or requirements of the conduct of post C of A test flights.

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The removal of the Pilot from the wreckage prior to the arrival of the Investigation team, the associated displacement of items in the cockpit and the partial destruction of the cockpit area in order to remove the Pilot, impeded the Investigation, by virtue of the destruction of evidence. The Investigation therefore considers that there was no urgent necessity that required removal of the Pilot before the Investigation arrived on scene. The Investigation notes that the AAIU previously issued guidelines for the guidance of the emergency services at aircraft accidents sites. The Investigation understands that the local fire service was not aware of the existence of this guidance material at the time of the accident.

### 2.2 Operational

The Pilot of EI-121 was the Chief Flying Instructor (CFI) of Kilkenny Gliding Club and one of the founder members of the long established Kilkenny Flying and Gliding Club. He had over fifty years experience of flying both powered aircraft and gliders. As an Instructor on both types there were few in Ireland to equal him in terms of experience and longevity. Implicit in this experience would have been an ongoing knowledge of aviation Regulations.

EI-121 had been grounded for a year due to the high cost of insurance cover for what was a limited pool of qualified glider pilots in the Club. However, this problem was resolved and the glider was cleared to fly by the IGSA in advance of the day of the accident. The Pilot, as CFI, scheduled himself for this solo flight, which he undertook after completing the towing flight earlier that afternoon. His previous glider flight was in the Club's dual control glider on 5 June 2006. The conditions were ideal for flying in the general area. Following take-off and tow release at 2,000 ft, the Pilot spent some time in the area before routing towards his house on the outskirts of Kilkenny City. From overhead he made the upbeat mobile phone call to his wife before heading back towards the airfield to land. This was his last call. There were no further calls of any nature on his VHF radio.

He was observed on base leg for RWY 09 and the next action to be reasonably expected for such an experienced pilot would have been to turn left 90° onto finals RWY 09, in good time for a line up and landing. However, this routine action did not occur and, inexplicably, he maintained his base leg heading, passing through the runway centreline and the airfield boundary hedge itself. That he did not turn onto 'finals,' as he must have done in hundreds of previous landings, was not the predictable action of such an experienced pilot.

### 2.2 Medical

In Ireland, pilots flying powered aircraft are required by Regulation to hold a valid pilot's licence with a current medical certificate. For glider flight, pilots are required under IGSA Regulation to provide a signature of self declaration of their medical fitness. Where a pilot is unable to provide such a signature, the pilot is obliged to obtain a signature of medical fitness from his/her GP or from an IAA approved AME. This is required on an annual basis over the age of 70 years. With respect to the accident Pilot, no such declaration was found.

The Investigation did, however, find that following an air medical on the 2 April 2002, the Pilot was deemed medically unfit to fly by an approved AME. Subsequent to this date, in May 2002, the Pilot suffered an episode of atrial fibrillation. From then onwards the Pilot was on prescribed medication until the day of the accident.

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### 2.4 Regulation/Oversight

The Investigation understands that Part VIII of the IAA Order refers to International Glider Pilot requirements, in compliance with the requirements of ICAO Annex 1. However, if the intention of Part VIII is to comply with ICAO Annex 1 then the word “International” should appear in the text of Part VIII. Presently it does not. A clear anomaly is evident in that the earlier Part II of the Order appears to negate the requirements as set out in Part VIII.

Part II of the Order, specifically Paragraph 5, is entitled “General Flight Crew Members to be licenced”. Its contents are self-explanatory. However, the final section, sub Para (13) states, *“This Article shall not apply to a person acting as a pilot of a glider which is being flown as a private aircraft”* Clearly, Part II, Paragraph 5, subpara 13 of the Order contradicts the requirement’s set out in Part VIII of the Order, as written.

In practice, the Irish Gliding and Soaring Association (IGSA) regulates the activities of gliding clubs in Ireland through the IGSA “Operational Regulations”, dated May 2003. Two clubs operate under the IGSA Regulations, Kilkenny and Dublin Gliding Clubs. Certificates of Airworthiness of glider aircraft are normally issued by the IGSA.

There is no reference in the IAA Order of 2000 to the IGSA or to its later Operational Regulations of May 2003. Clearly the IAA Order pre-dates the IGSA Regulations by a number of years and, as the Order has not been since amended, there is *de facto* if not *de jure* recognition by the IAA of the IGSA Operational Regulations. Conversely, there is no reference in Paragraph G - 8 of the IGSA Operational Regulations to the IAA document, SI No. 333 of 2000 (Personnel Licensing).

The responsibility for the Regulation of air operations in Ireland rests solely with the IAA. The IGSA Regulations were approved by the IGSA Council, but not yet effected in full and, while they are comprehensive for the most part, the lack of input or approval by the IAA into these Regulations needs to be addressed in relation to the IAA’s own Order and to ICAO Annex 1 requirements.

### 2.5 Summary

In the absence of a technical malfunction or a weather related causal factor, and bearing in mind the Pilot’s overall experience, his failure to turn onto final approach and the sudden nose down attitude adopted by the glider immediately beyond the airfield boundary (as observed by reliable witnesses), leads the Investigation to conclude that some sudden and serious distraction occurred to the Pilot while on the base leg. This distraction was probably of a medical nature, diverting his attention from flying the aircraft and led to the stall and subsequent ground impact.

## 3. CONCLUSIONS

### (a) Findings

- 3.1 This was the first fatal accident in the sport of gliding in the Republic of Ireland.
- 3.2 The glider was, in spite of some observed defects, capable of normal operation at the lower end of the speed spectrum and no defect was found which would inhibit such operation.

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- 3.3 There was no evidence found of foreign objects damage (FOD) or that the glider was influenced by an external force.
- 3.4 The Pilot's medical history since April 2002, his significant aviation experience, and his inexplicable loss of control, leads the Investigation to conclude that the Pilot was most likely incapacitated or partly incapacitated during his normal preparation for landing.
- 3.5 SI No. 333 of 2000 does not require that glider pilots be licenced when operating within Irish Airspace. However, the IGSA Regulations do lay down specific medical requirements; "*Solo pilots are required to furnish their CFI with a declaration of their medical fitness to fly on reaching the age of 45, and at 5 yearly intervals thereafter until reaching the age of 70, when annual declarations will be required. The declarations may be self declarations unless the CFI requests endorsement from a GP or aviation medical expert*". No such declaration was found by the Investigation in respect of the Pilot.
- 3.6 In his capacity as CFI of Glider Operations of the Kilkenny Flying and Gliding Club, the Pilot was entrusted to maintain the correct standards for himself and club members. He was responsible, under the IGSA Regulations, for providing medical declarations of fitness for himself and retaining those of Gliding Club members who did not have current powered aircraft licences. This meant, in practice, that the Pilot was effectively reporting to himself.
- 3.7 The Pilot's Private Pilot's Licence (Airplanes) expired when his Class 2 Medical Certificate expired on 2 April 2002, on medical grounds. He did not subsequently renew this licence. Thus, by continuing to fly powered aircraft up to the day of the accident, the Pilot was contravening the requirements of S.I. No. 333 of 2000, Part 11.

### **(b) Cause**

The probable cause of this accident was the Pilot's loss of control during flight as a result of a serious incapacitation of a medical nature - possibly a recurrence of an episode of atrial fibrillation - that caused the Pilot to loose control of his glider with subsequent ground impact.

## **4. SAFETY RECOMMENDATIONS**

### **It is recommended that:**

1. The Irish Aviation Authority and the Irish Gliding and Soaring Association urgently review and amend SI No. 333 of 2000, IAA (Personnel Licensing) Order, 2000 and IGSA Operational Regulations 2003, respectively, in order to streamline medical, reporting, operational and maintenance requirements, in line with modern aviation practices.

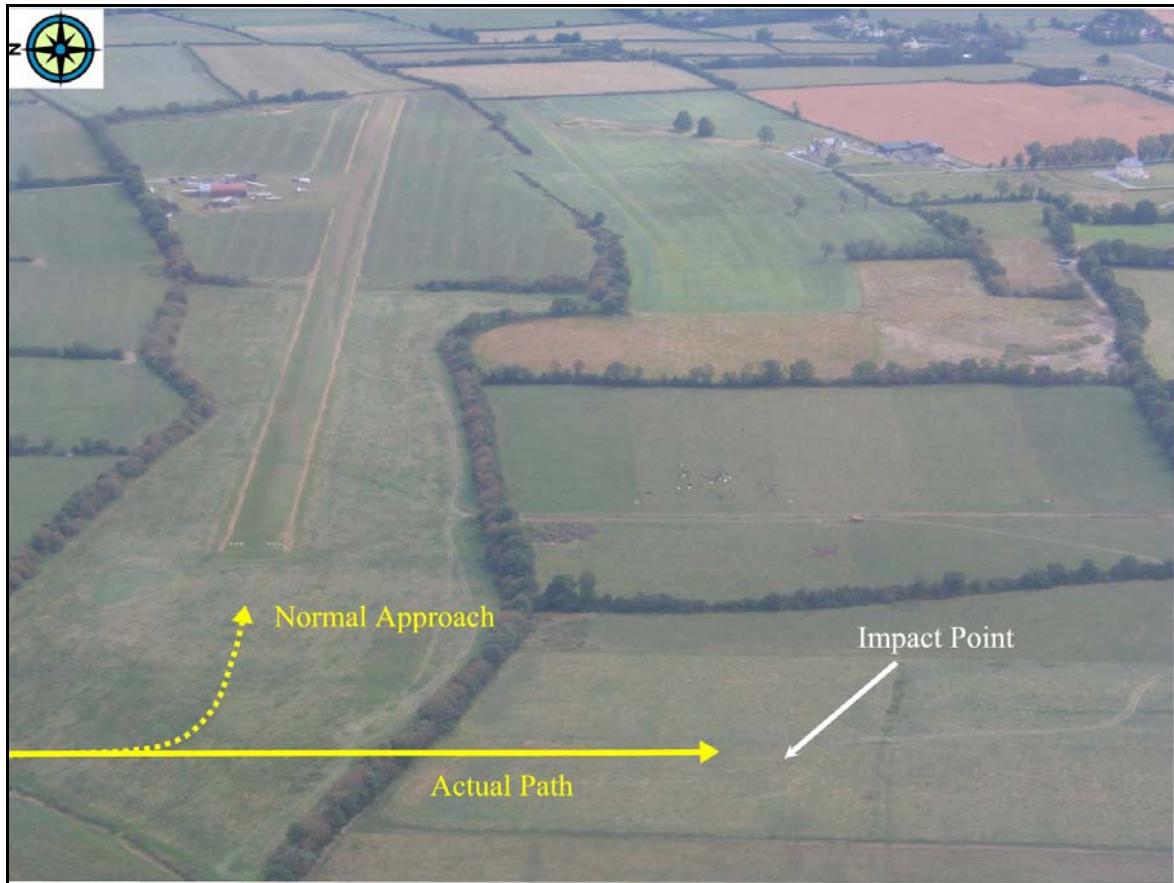
### **(SR 08 of 2007)**

### **IAA Response:**

*"The Authority accepts the recommendation that the provisions regarding the licensing of glider pilots contained in the IAA (Personnel Licensing) Order, 2000 (SI No 333 of 2000) be reviewed in consultation with the Irish Gliding and Soaring Association. To this end, it is proposed to establish a Glider Pilot Licensing Working Group as soon as feasible."*

# FINAL REPORT

## Appendix A



**Aerial view of Kilkenny Airfield/Impact Point**

**- END -**