
BHPA Incident Report: GBR-2018-8207

INCIDENT

Aircraft Type:	Paramania GTX 22 paramotor wing. Size Medium (22sqm). Serial number C07GTX22RD560. Parajet Zenith/Moster 185 paramotor. Sky 'Spare Light' emergency parachute. Certified maximum take-off load 135kg. All equipment appeared to be in very good condition.
Certification:	Uncertified. Load test only.
Manufacture Date:	Paramania GTX - 2018
Location:	New Road, East Knoyle, Milton, Wiltshire, England, nearest post code SP3 6BQ. OS Grid. ST882323.
Date and Time:	Friday 31 st August. Approximately 7.30pm
Type of Flight:	Paraglider powered (paramotor) flight.
Persons Involved:	Paramotor Pilot A.
Injuries:	Fatal. Internal injuries consistent with a heavy impact.
Nature of Damage:	The paramotor frame and cage suffered extensive damaged consistent with a heavy impact. The paramotor wing suffered burn damage due to contact with overhead power cables.
Pilot's Rating/Licence:	Pilot A held no ratings or licence.
Pilot's Age:	25
Pilot's Experience:	Pilot A started his paramotor training with SkySchool based in Mere, Wiltshire on the 21 st July 2017. SkySchool stated that Pilot A signed on their six day "Adventure Pilot" course and during that time completed basic theory and four successful take-off and landings involving simple circuits. At the time of the incident Pilot A's paramotor companions estimated that he had approximately 50 hours airspace.
Information Source:	Witness statements, site visit, equipment inspection, AAIB aftercast and relevant glider manuals.

Synopsis

At approximately 7.15pm on Friday 31st August 2018, Pilot A took off from a field near East Knoyle in Wiltshire. After flying around the immediate area for approximately ten minutes Pilot A approached the take-off field at a height of approximately 150 - 300m above ground level. He was then seen to enter a series of tight turns before entering a spiral dive. The spiral dive increased in speed and Pilot A lost height rapidly. Pilot A crashed into maize crop at the edge of the field, colliding with low voltage distribution power lines just prior to impact with the ground. Pilot A was attended immediately by the other pilots who called the emergency services and began CPR. Paramedics arrived after approximately 20 minutes. Pilot A was pronounced dead at the scene.

History of the flight

On the evening of Friday 31st August 2018, a group consisting of approximately seven paramotor pilots and friends arranged to meet at a field 1.5km north of East Knoyle in Wiltshire with the intention of flying their paramotors. Pilot A arrived at the field at approximately 6.30pm. Some of the other pilots were already at the field and had been flying for around 30 - 45 minutes. Pilot A took off on his Paramania Revo 26 glider at approximately 6.45pm and flew for 15 - 20 minutes. Pilot A was then offered the chance to have a flight on a Paramania GTX 22 glider owned by one of the other pilots, which he accepted. Pilot A took off without incident at approximately 7.15pm. He flew around the fields surrounding the take-off field for approximately 10 minutes before heading back. On approaching the perimeter of the take-off field, Pilot A reduced power and at a height above ground level of approximately 150 - 300m was seen to enter a series of alternating banked turns. The turns resulted in the glider picking up speed and entering a spiral dive. The spiral dive increased in speed and was described by one of the witnesses as "nose down". The glider lost height rapidly and Pilot A crashed into maize crop at the edge of the field, colliding with low voltage distribution power lines just prior to impact with the ground. The emergency services were called immediately, and Pilot A was quickly attended by the other pilots who administered CPR. The paramedics arrived after approximately 20 minutes and took over. Pilot A was pronounced dead at the scene.

Additional information

Weather conditions

The weather that evening was warm with a light south-easterly breeze. The Met Office aftercast describes the weather for the region as follows:

The weather conditions at East Knoyle at the time of interest would have been benign, with light southerly winds, visibility in excess of 10 KM, with no significant weather and no significant cloud below 5000 feet.

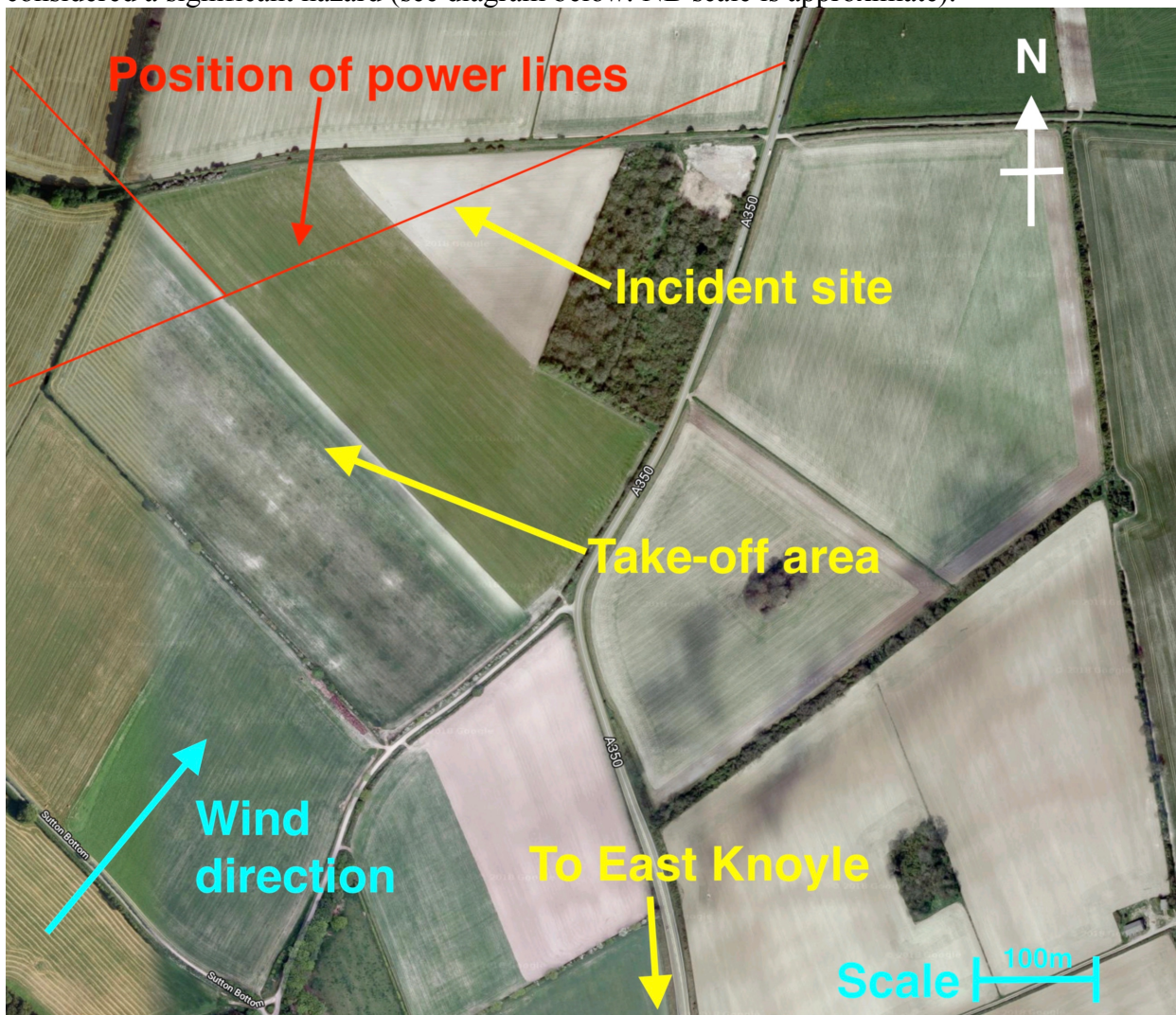
The most likely air temperature 18 degrees Celsius, wind speed and direction for 1,000 ft (agl) 080 degrees 05 knots wind speed and direction at airfield elevation between 160-190 degrees, between 05-10 knots.

The Met Office aftercast is in accordance with the statements from the other pilots present. The conditions would be considered ideal for paramotoring.

Incident site

The incident occurred in an area of open farm land approximately 1.5km due north of East Knoyle in Wiltshire. The take-off field was large and situated on high ground giving a relatively uninterrupted view of the surrounding countryside. There was a crop of mature maize growing in

the north and east of the field and a low voltage distribution power line running across the northern most edge of the field. Given the size of the field, neither the crop or the powerlines would be considered a significant hazard (see diagram below. NB scale is approximate).



The site and surrounding area would be considered ideal for paramotoring.

Paramania GTX Paraglider

The glider and motor appeared on inspection to be in very good condition. Due to the nature of the damage sustained in the incident, it was not possible to have the equipment flight tested or checked against the manufacturer's specifications. However, there is no evidence to suggest either the glider or paramotor were not airworthy.

The wing is designed to be fast and highly manoeuvrable and is aimed at slalom racers and experienced pilots. The glider manual states the following:

*“With a relatively low aspect ratio, the large wingtip area adds new meaning to roll rate. Once banked in a turn and with intuitive use of both brakes, direction and turn radius can be sharp, snappy and fun!
In the hands of experienced pilots this is the perfect wing for slalom.”*

The dynamic nature of the wing is also affected by the wing loading. In general, the higher the wing loading the more dynamic the glider will be in response to control inputs. The Paramania GTX 22 has a stated, all-up, weight range of 60 – 160kg for powered flight. At the time of the incident Pilot A had a body weight of 101kg giving an all-up weight (pilot, all clothing and

equipment including glider and motor) of around 150kg. This is towards the upper end of the weight range giving correspondingly higher levels of response to control input.

By way of comparison Pilot A's own glider, the Paramania Revolution 2 (Medium 26sqm), is aimed at beginners and low airtime pilots. The glider manual states the following:

"The Revolution 2 is super easy to launch and fun to fly! Its forgiving nature makes it perfect for schools and training. Like its predecessor (the Revolution classic) it has a surprising level of safe performance. It enables its pilots to explore the sky and gain experience for those vital first years. It is the perfect entry level wing that you won't get bored of."

This type of wing will have more forgiving handling in that, for a given wing loading, the glider will be less dynamic in response to pilot control inputs. At 26 square metres, the difference in wing loading compared to the GTX 22, will add to the forgiving nature of the Revolution 2 handling.

The dynamic handling of the GTX 22 means that induced manoeuvres and departures from normal flight can also be dynamic and potentially demanding for the pilot in terms of recovery to normal flight. As well as requiring a high level of skill, recovery may also require a substantial amount of ground clearance. A significant loss of control at low level will almost certainly result in the pilot hitting the ground.

In this instance, given the height at which the incident occurred, the Investigation finds that the Paramania GTX glider was a factor in the incident.

Pilot A experience and currency

Witnesses who knew Pilot A as both a work colleague and fellow paramotor pilot stated that he had approximately 50 hours airtime and that he was an active and regular flyer.

Witness A stated that Pilot A had *"...recently been flying my and a friends Revo 23; this is something that he enjoyed and was very confident with. The smaller wing was more responsive and much easier to launch and control than his own wing."*

The Paramania Revolution 2 (size small 23sqm) is aimed at the same target market as the medium though, being 3 square metres smaller in surface area, will feel more responsive than the 26 if flown by a pilot of the same weight. However, this increase in responsiveness will not be to the same degree as would be experienced if flying the GTX 22 at the same weight, due to the very different target market of the two glider types.

Witness A also stated that both he and Pilot A practised wing-overs and spiral dives on a regular basis, having built up their experience with the manoeuvres gradually.

The evidence from the witness statements is unclear as to whether Pilot A intentionally put the glider into a spiral dive, or whether the spiral dive was a direct result of excessive control input on the turns immediately preceding the spiral. It is possible however, that Pilot A was taken by surprise by the speed and dynamic nature of the spiral, rendering him unable to effect a recovery in the limited time and ground clearance available. Witnesses commented that they did not see Pilot A make any movements to attempt a recovery from the spiral. A nose-down spiral will result in a rapid increase of the G-force experienced by the pilot. The manoeuvre can be very disorientating and can affect the pilot's vision and ability to react, and can lead to loss of consciousness.

The Investigation considered that, though Pilot A was current and had some experience with the spiral dive manoeuvre, his lack of familiarity with the handling characteristics of the Paramania GTX 22 paraglider was a significant factor in this incident.

Findings

The Investigation found that the incident occurred as a result of the pilot losing control of the glider, having initiated a series of turns, that resulted in a spiral dive from which the pilot was unable to

recover. The pilot's lack of familiarity with the Paramania GTX glider was considered to be a significant contributing factor.

Recommendations

None