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BHPA Incident Report: GBR-2019-10927

INCIDENT

Aircraft Type:	Ozone Roadster 2 26 serial no. RD226-Q-23B-026 paraglider. Air Conception 130 paramotor unit. Ozone Sky Angel 140 parachute.
Certification:	Ozone Roadster 2 certified EN-B (80-100kg).
Manufacture Date:	June 2015.
Location:	Colhayes Farm, Gittisham, Honiton, Devon.
Date and Time:	Sat 22nd June 2019, approximately 7pm.
Type of Flight:	Cross country flight.
Persons Involved:	Paramotor pilot, Pilot A.
Injuries:	Internal injuries, fatal.
Nature of Damage:	There was some damage to the wing and power unit consistent with a heavy impact. Otherwise the equipment was found to be in good condition.
Pilot's Rating/Licence:	Pilot A held a BHPA Pilot rating for the hill, tow and power environments. Pilot A passed his Pilot power exam in May 2016 having first achieved his BHPA Club Pilot ratings for hill, tow and power, in the summer of 2015.
Pilot's Age:	57
Pilot's Experience:	Pilot A joined the BHPA in July 2013. His hours and experience are unknown. Pilot A had not attended an SIV course.
Information Sources:	Equipment inspection, witness statements, witness video evidence, Pilot A's Garmin Etrex30 GPS unit, Met Centre weather aftercast and Ozone Roadster 2 user manual.

1.0 Synopsis

At approximately 16:30 on Saturday 22nd June 2019 Pilot A took off on his paramotor on a leg of IcarusX paramotor competition. Pilot A flew in a north-easterly direction for approximately two and a half hours before attempting to land at Colhayes Farm, near Honiton in Devon. While on his final approach, having just flown round a copse of mature trees, Pilot A lost control of his paraglider at approximately 20-25m above the ground. He was unable to regain control before he impacted the ground where he sustained fatal injuries.

2.0 History of the flight

On Friday 21st June 2019, Pilot A and Pilot B met at Orchard Park Farm near Hornblotton in Devon to take part in the IcarusX paramotor competition. The competition, organised by The League of Adventurists International, involved flying round a predetermined course with check points, over two days. Competitors were required be self-sufficient and carry all necessary overnight equipment with them. Pilot A and B intended to fly as a team.

Pilot A and Pilot B attended the competition briefing at 2pm and then prepared their equipment. They took off at approximately 17:15 and flew two legs of the course before landing at 21:35 at Lynton on Exmoor, Devon.

On the morning of Saturday 22nd Pilot A and Pilot B completed two further legs of the course. On the second of the two legs they landed in different locations approximately 1km apart. With the aid of a local farmer they were able to meet up and agreed to take off from the farmer's field in Totness Cross, Devon.

Pilot A and Pilot B were dropped off at the farmer's field at 13:30 where they prepared for the next leg of the course. Pilot B noted that the wind was increasing and after a little ground handling, decided to arrange a lift back to the finish. Pilot A was comfortable with the conditions and continued in his launch preparation.

Pilot A attempted to take off at 14:00 but without success. He persevered and eventually took off at approximately 16:30, some two and a half hours later. Pilot A flew in a north-easterly direction for approximately two and a half hours before attempting to land at Colhayes Farm, near Honiton in Devon in order to refuel at a local petrol station. Pilot A made a pass over a large field and then returned and began his landing approach. On turning into wind, having just flown round a copse of mature trees, Pilot A lost control of his paraglider at approximately 20 - 25m above the ground. He was unable to regain control before he impacted the ground heavily. During the loss of control, Pilot A deployed his emergency parachute, which landed beside him still in its deployment bag. Pilot A was attended almost immediately by local farm workers who performed CPR under telephone guidance from the emergency services. An ambulance arrived approximately ten minutes later followed by the police and air ambulance. The emergency services were unable to resuscitate Pilot A.

3.0 Focus

Based on the information available, the Investigation considered Pilot A's paramotoring equipment, the weather conditions and the actions of Pilot A leading up to, and during the incident.

3.1 Flying equipment

Pilot A's paraglider, paramotor and parachute were all found to be in good condition.

The Air Conception 130 paramotor unit sustained some damage to the cage and bending of the suspension arms consistent with a heavy impact.

The Ozone Sky Angel parachute appeared to have deployed correctly. Video evidence suggested that deployment occurred at a height of less than 10m. At this height it would have been impossible for the parachute to deploy fully.

The Ozone Roadster 2 paraglider is designed for low airtime pilots as well as those with more experience. The following is an extract from the Ozone Roadster 2 user manual:

"The Roadster 2 has been designed for beginner and intermediate pilots alike. A dedicated paramotor wing developed from the successful Speedster, the Roadster 2 is an ideal wing for everyday flying, occasional pilots and intermediate pilots. It is fun, safe and easy to use, suitable not only for early flights and training but also for more experienced pilots. Due to high levels of efficiency, high top speed and Ozone's trademark handling, it is suitable for pilots who enjoy long XC adventures. The Roadster 2 is for any pilot who wants to progress safely with the reassurance of EN B certification.

Handling has been tuned to be easy, predictable and forgiving but at the same time very precise and responsive. It is intuitive to fly and very predictable and dependable. Special attention has been made to the launching characteristics, the inflation is smooth and constant in any wind speed, the wing comes up directly overhead without shooting or lagging behind. Due to its exceptional inflation behaviour it excels in nil wind conditions, with the trimmers set to the slow position the take-off speed is relatively low so it can launch and land in a short space."

The Roadster 2 size 26 has a manufacturer's weight range of 80-140kg. This weight range includes the pilot, the paraglider wing and power unit, and all other equipment carried. It is estimated that Pilot A, who weighed approximately 78kg, with all his equipment for the competition, was in the region of 125-135kg in total and therefore within the weight range for the glider.
Inspection of the glider showed that the trim system on the risers was set asymmetrically. The following photos show the risers as they were found:

The right-hand trimmer is set at what Ozone call the "neutral" position, which is the position to which the trimmers are set for EN certification and is the slowest setting. The left-hand trimmer was set at full speed. It is highly unlikely that Pilot A set the trimmers like this on purpose as it would have resulted in the glider being placed in a constant righthand turn. Equally, it is unlikely that this configuration was set accidentally as the resulting turn would have been noticeable. The most likely explanation is that Pilot A was in the act of re-trimming the risers when the incident occurred, in preparation for landing. In the user manual, Ozone recommend that the Roadster 2 is returned to the neutral trim position for landing. It is impossible to say what effect the asymmetric trimming of the risers had on the glider once it had departed from normal flight. The Investigation considered that, given the height at which the incident occurred, the asymmetric trimming of the risers would not have had a significant impact on the overall outcome.
The Investigation considered that the paraglider, paramotor and parachute were of a suitable type and size for Pilot A. The Investigation considered that the asymmetric trimming of the risers may have been a contributory factor in this incident.

3.2 Weather conditions

The forecast for the region was for light southeast to easterly winds with good visibility and limited cloud cover with the wind increasing during the day. The Met Office Airmet Forecast gave a warning of strong winds of up to 20mph with gusts between 20 and 30mph. The Met Office UK Low-Level Spot Wind Chart gives a forecast of between 11 and 22mph for the general region.
Actual wind readings from the area around Honiton close to the time of the incident were as follows:

Yeovilton	- 18:50 southeast at 11.5mph
Exeter	- 18:50 southeast at 8mph
Dunkeswell	- 19:00 southeast at 13mph

It is clear from the video footage that Pilot A encountered a strong headwind when he turned into wind for his final approach, as the glider is pitched backwards as if the pilot was applying excessive amounts of brake. Analysis of the GPS data shows that Pilot A's ground speed varied significantly while flying around the field at Colhayes Farm. Into wind legs showed ground speeds as low as 8kph, while downwind legs were as high as 60kph. Added to this, Pilot A's track over the ground while flying into wind was noticeably more erratic than when flying downwind. It is not possible to give an accurate wind speed from the GPS data as there is no way of knowing exactly how fast Pilot A was flying his paramotor at the time. It does however indicate that there was a significant breeze at the time of the incident.
The Investigation considered the weather, and in particular the wind speed, to have been a factor in this incident.

3.3 Actions of Pilot A leading up to, and during the incident.

On the leg involving the incident, Pilot B stated that it took Pilot A two and a half hours, involving multiple attempts, to get airborne. One of the unsuccessful attempts involved Pilot A being dragged on the ground though no damage was caused to his equipment. On the previous leg, some six hours earlier, Pilot A took eighteen launch attempts in order to get airborne. These attempts to launch over the two legs would have been physically demanding and would also have involved a certain amount of dehydration, given Pilot A was carrying equipment weighing around 30kg.
The Investigation considered it likely that Pilot A had undertaken this leg of the competition in a state of fatigue.

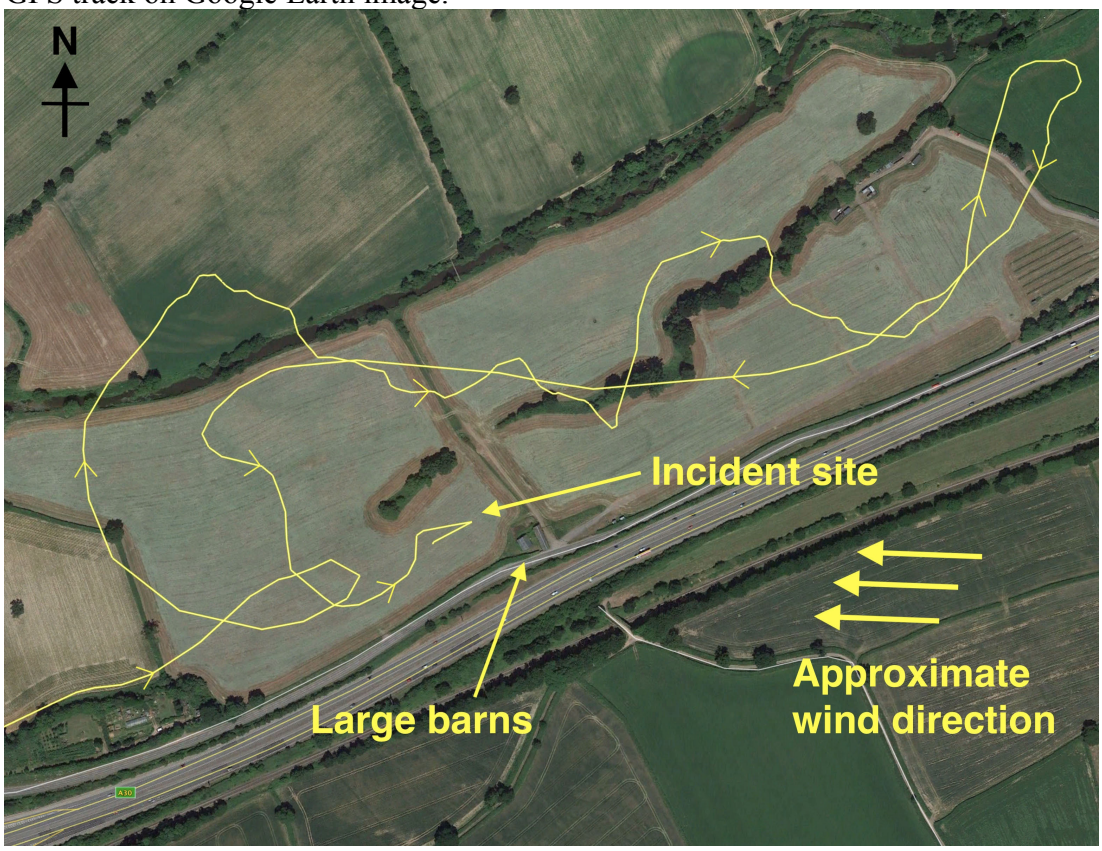
The field at Colhayes Farm is approximately 1000m long, running east to west, and 250m wide. The field has a line of mature trees running from the northeast corner down towards the southwest, that follow a step in the field. On the southern edge of the field there are two large barns that are approximately 75m upwind of the incident site. The following photo, looking in an easterly direction, shows the step in the field, the line of trees and the barns.

The Garmin Etrex GPS data shows that Pilot A flew the length of the field before circling back, gradually descending from a height of approximately 100m above the ground to approximately 30m above the ground, presumably with the intention of making a landing in order to refuel. The route planned by Pilot A on the Garmin GPS unit shows the local Honiton Tesco, a further 2.5km up the A30 to the east, pinpointed as a petrol station for the purpose of refuelling.

Looking at the field from above it would be obvious to a qualified pilot that both the trees and the barns were a source of potential turbulence in the conditions that were apparent on the day. The prevailing wind would have been coming directly over the barns and also over the trees at their eastern most edge. Pilot A had a good view of the field and would have had an unrestricted view of any potential hazards.

The following diagram shows Pilot A's GPS track dropped onto a Google Earth image of the site.

GPS track on Google Earth image.



Analysis of the video footage immediately before the crash shows the glider being pitched backwards by the turbulent airflow. GPS data puts Pilot A at a height above the ground of approximately 20-25m at this point. While in the back pitch the glider suffered a 50% asymmetric collapse on the right-hand side causing it to rotate first right then left, as it recovered and the pilot swung back underneath. As the glider began to pitch forward and recover airspeed, Pilot A applied a large amount of brake to both sides of the wing. This caused the wing to stall and rotate 180 degrees before diving forwards into the ground. The incident, from the point where the glider was initially pitched back, to the point where Pilot A hit the ground, took a total of seven seconds.
The Investigation found that the turbulent leeside conditions into which Pilot A flew were a significant factor in this incident. The Investigation also considered the incorrect application of the brakes by Pilot A to have been a significant contributing factor.

4.0 Findings

The Investigation found that the incident occurred as the result of the pilot losing control of his paramotor while on approach to landing and being unable to regain control before impacting the ground. The loss of control was a result of the pilot encountering leeside turbulence caused by barns 75m upwind of his approach. The decision to land in this area may have been affected by fatigue and further influenced by the pilot wishing to land close to a petrol station in order to refuel.

5.0 Recommendations

The Investigation recommends that the BHPA, through its members magazine Skywings, reminds pilots of the dangers of flying while fatigued.
The Investigation recommends that the BHPA, through its members magazine Skywings, reminds all pilots, including paramotor pilots, of the benefits of attending an SIV course in

order to become familiar with the correct recovery techniques in the event of a departure from normal flight.