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BHPA Incident Report: GBR-2019-10144

INCIDENT

Aircraft Type:	Gradient Bright 5 paraglider, size 26. Serial number G38261811144. Ozone Oxygen reversible airbag harness. Skywalk Pepper Cross Light 90, front mounted emergency parachute.
Certification:	EN-A
Manufacture Date:	Unknown.
Location:	Broughton Heights, Peebles, Scotland.
Date and Time:	Saturday 20th April 2019. 14:40
Type of Flight:	Ridge soaring.
Persons Involved:	Paraglider pilot, Pilot A.
Injuries:	Fatal, chest injuries.
Nature of Damage:	Some paraglider lines cut to aid access to casualty, otherwise none.
Pilot's Rating/Licence:	Pilot did not hold any ratings.
Pilot's Age:	35
Pilot's Experience:	Pilot A was a member of the BHPA, having joined in January 2019. He held no flying ratings. Pilot A completed an eight day Elementary paragliding course with BHPA school, Zero Gravity, in Spain in January 2019.
Information Sources:	BHPA database, witness statements, BHPA student training record book, AAIB weather report, Lanarkshire and Lothian Club Sites Guide, Aerofix glider inspection report, the Gradient Bright 5 user manual and the DHV EN paraglider test report for the Gradient Bright 5, size 26.

1.0 Synopsis

On Saturday 20th April 2019, shortly after 2pm, Pilot A took off from Broughton Heights, near Peebles. He flew for approximately 30 minutes but was then seen to lose control of his glider resulting in a rapid spiral descent. Pilot A deployed his emergency parachute but impacted the hillside heavily where he sustained fatal injuries.

2.0 History of the flight

On Saturday 20th April 2019, at approximately 1pm, four friends, two of them paraglider pilots, met at Broughton Heights near Peebles in Scotland, with the intention of paragliding. There were already seven other pilots at the site, some of whom had been flying, others who had recently arrived.

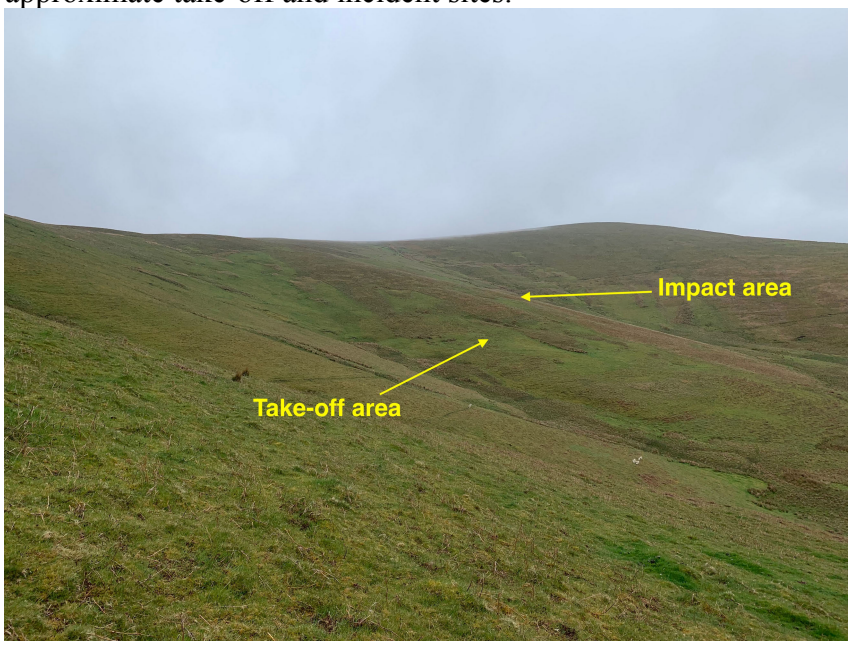
On the walk up to take-off Pilot B briefed Pilot A on various aspects of the site, Pilot B having flown there on two previous occasions. The brief included the hazards associated with the site, these being the spine back ridge and the requirement to stay well in front, and also being aware of the numerous knolls and gullies that naturally formed the slope of the hill. The brief also included information about the front mounted parachute and how it deployed. The two pilots discussed the weather conditions on the walk up and agreed that the conditions looked flyable with a moderate wind and good visibility.

At approximately 2pm Pilot A checked his equipment then ground handled his glider for approximately 10 minutes. He then took off and flew. After a further 15 minutes Pilot B also took off. Pilot B gained height and practiced some flying manoeuvres. He also top landed on two occasions. During this time Pilot B noted that Pilot A appeared to be flying well and enjoying himself.

At approximately 2.40pm and at a height above the ground of approximately 150m and 50-100m out from the ridge, Pilot A's glider was observed by his friend, Witness A, to suffer an asymmetric collapse. This led directly into a spiral descent from which Pilot A did not recover. During the descent Pilot A deployed his emergency parachute, but it was unable to slow his descent sufficiently before he impacted the slope.

Pilot A was attended quickly by Witness A who attempted to secure the emergency parachute. Pilot B landed and was at the scene within five minutes. Both Witness A and Pilot B are doctors and they carried out CPR and further medical procedures in an attempt to resuscitate Pilot A. The emergency services had been called and the air ambulance arrived after a further 45 minutes. Pilot A was taken to hospital but efforts to resuscitate him were unsuccessful.

The photo below shows a view of Broughton Heights from the north west, giving the approximate take-off and incident sites.



3.0 Focus

Based on the information available, the Investigation considered the Broughton Heights flying area, the weather on the day, Pilot A's training, his experience and his paragliding equipment.

3.1 Broughton Heights flying site.

Broughton Heights is an area of high ground approximately 30km south southeast of Edinburgh in the Scottish borders. The site is formed by a north to south ridge rising up to a height of 570m giving flying on the west facing slopes in west and southwesterly winds. There are a series of ridges and bowls along the 6km length of the high ground. The land upwind is generally much lower with the odd hill at approximately 350m in height, but nothing of note that would give rise to turbulent airflow. The Lanarkshire and Lothian Soaring Club sites guide describes the site as their main westerly site and being good for both paragliding and hang gliding as it is possible to drive to within a short walk of take-off. In terms of potential hazards, the guide mentions the spine back nature of the ridge and the fact that northwesterly winds can cause rotor turbulence in the bowl areas. It also mentions the need to be aware of RAF activity during the week. Apart from that the site is generally friendly and would be considered an ideal site for hang gliding and paragliding.
The Investigation does not consider the site to have been a significant factor in this incident.

3.2 Pilot A's training and experience

Towards the end of 2018 Pilot A carried out some informal ground handling with friends while he was working in Kenya. In his statement, Pilot B described how Pilot A had sent a Whatsapp picture of him ground handling and also said that he had ordered a new paraglider. From 10th to 17th January 2019 Pilot A completed a BHPA Elementary Pilot (EP) course with BHPA school "Zero Gravity" based in Algodonales in southern Spain. The school records show that all the required practical flying tasks for EP were signed off successfully. In addition to the EP tasks the records show that Pilot A was also able to start some of the exercises from the BHPA Club Pilot course including three soaring flights with top landings. The following is an extract from the statement of the Zero Gravity Chief Flying Instructor;

> *"He was a very good student, with good abilities to fly: during the first interview he didn't mention he had previous experience in paragliding, but I think that he probably had some experience, maybe self-teaching. In any case, he demonstrated a very good level of competence during the practice, on ground handling and flying. He was better than the average of students.*
>
> *He finished quickly all the tasks of the EP course and even he started to do some exercises of the next level of the course, but he didn't finish the CP level. He didn't obtain the Club Pilot rating with us."*

Clearly Pilot A was an able student who picked the sport up quickly. However, in not enrolling on a BHPA Club Pilot (CP) course, there would have been significant gaps in his knowledge and practical experience. The CP course leads to a BHPA Club Pilot (novice) rating and is the level that a student must achieve in order to fly unsupervised outside the BHPA school environment. The CP course includes exercises designed to give the pilot the tools to fly safely while they develop and improve. As well as time in the air, there are also very important exercises relating to canopy control and recovery, in particular BHPA training program "Phase 9: Instability and emergencies". Phase 9 covers four exercises, themselves broken down into smaller elements. These elements include, amongst other things; understanding the recovery techniques for collapses and spirals, emergency parachute systems and their use, active flying and coping with turbulence and practical experience at dealing with an asymmetric collapse.

The Investigation considered the amount of training undertaken by Pilot A to have been insufficient to have equipped him with sufficient skills to cope with the conditions encountered on the day of the incident. Pilot A's friends, Pilot B and Witness A were unaware that he had not attended a BHPA CP course and did not hold a BHPA CP rating. The Investigation considered the training and experience of Pilot A to have been a significant factor in this incident.

3.3 Pilot A's paragliding equipment

The Gradient Bright 5 paraglider was found to be in excellent condition with all suspension lines within the manufacturer's tolerances. The brake lines were 26mm shorter than trim, but this would not have had an impact on the handling of the glider. The Bright 5 is rated as EN-A meaning it is suitable for basic training and as a first time buy paraglider, having the highest level of passive safety available in terms of recovery from unstable flight situations. It was therefore of a suitable type for Pilot A.

The Ozone Oxygen reversible harness and Skywalk Pepper Cross emergency parachute were loaned to Pilot A by Pilot B for the day as Pilot A had not yet received his own harness. Both the harness and parachute were found to be in excellent condition. The harness has a maximum possible chest strap setting of 45cm. This is within the Gradient Bright recommend setting of 44-48cm While Pilot A would have been unfamiliar with the harness and front mounted parachute, they are both typical in their nature and set-up and so would not have been a problem for Pilot A and were therefore considered of a suitable type.

The Investigation considered the effectiveness of the Skywalk Pepper Cross emergency parachute. There is no clear evidence as to exactly when, or at what height above the ground Pilot A was when he deployed his parachute. However, it is clear from the witness statements that it was not deployed immediately. Witness D described how Pilot A was below her when she saw the parachute deploy. From her vantage point on the hill she could not see Pilot A himself, as he had dropped below the line of the hill. This would Pilot A at somewhere between 15 and 30m above the ground when he deployed the chute. An emergency parachute requires time and space and a clear airflow in order to deploy and take the weight of the pilot. This can take anywhere between three and six seconds and sometimes considerably longer depending on exactly how and in what direction the parachute is thrown. Given the limited ground clearance and the rate of descent, the parachute was deployed too low for it to be effective.

The Investigation considered the reaction of the glider in suffering the asymmetric collapse, which then developed into a spiral dive. Under test conditions in stable air and with the test pilot sitting in a neutral position in the harness, it would be expected that an EN-A rated glider would self-recover from an asymmetric collapse. However, when the collapse is caused by turbulent air in "real" situations, recovery without pilot input can take longer and involve a considerable amount of height loss. It is noted in the EN test report for the Gradient Bright 5 glider, that steeply banked turns can generate sink rates of up to 12m/s and in spiral dives over 14m/s. It is further noted that the Gradient Bright 5 user manual contains a caution, warning that recovery from a spiral dive may be delayed if the pilot is not sitting in a neutral harness position.

Having suffered an asymmetric collapse it is possible that Pilot A may have fallen towards the collapsed side of the wing thus making his position in the harness asymmetric. This would not only make the glider more likely to enter a spiral dive but would also mean recovery would require significantly more height and involve direct corrective action by the pilot. Given Pilot A's lack of training, specifically the recovery from an asymmetric collapse, dealing with turbulence and recovery from a spiral, it is unlikely he would have known the correct procedure in order to effect a recovery once the glider had entered the spiral dive.

3.4 Weather conditions

The Met Office aftercast states that the weather on the day was light winds, in the region of 10-12kts (11-14mph) and in a west to south westerly direction, with clear skies and good visibility. This general forecast is in line with the weather conditions experienced by the pilots present.

Witness B described how he checked various weather forecasting tools including RASP (Regional Atmospheric Soaring Prediction) in order to establish that Broughton Heights was the best place to fly that day. Witness B describes how he took off at 1.40pm and found the conditions to be more turbulent than expected with strong pockets of lifting and sinking air. Witness B continued flying for 20 minutes then decided to land because of what he described as "rough and disorganised" conditions.

Witness C described how he found the conditions to be rougher the closer he got to the ridge. He stated that an area some 50-100m laterally out from the hill was noticeably rougher than further out.

In contrast Pilot B described the conditions as "quite comfortable".

What is clear is that there was some degree of turbulent air movement. This will naturally occur due to the undulating nature of the terrain and is to be expected. It is also worth noting that the ground was unusually dry for the time of year. This would have a tendency to make the thermals stronger than usual and would explain why some of the pilots described the thermals as being small and uncoordinated while close to the hill.

There is nothing inherently dangerous in the conditions as described, though they would require the pilot to be aware of the potential for pockets of turbulence, and to fly accordingly.

The Investigation considered the weather conditions to have been a factor in this incident in that Pilot A did not possess the necessary level of practical skill, or the theoretical knowledge required to handle an unforeseen event caused by turbulent air.

4.0 Findings

The Investigation found that the incident occurred as a result of Pilot A losing control of his paraglider while in close proximity to the hillside and being unable to regain control before impacting the slope. Pilot A's lack of suitable training and experience were found to be significant contributing factors, given the prevailing weather conditions.

5.0 Recommendations

The Investigation makes the following recommendations:

1. The BHPA should remind its members, through its magazine Skywings, of the importance of completing the whole of the Elementary and Club Pilot training programs before attempting to fly unsupervised outside the school environment.
2. The BHPA should remind its members, through its magazine Skywings, that when in an uncontrolled rotation with limited ground clearance that the pilot should deploy their emergency parachute without hesitation.