British Hang Gliding and Paragliding Association

REPORT

Investigation of a paragliding incident which occurred at Sierra del Buey, Murcia, Spain, on 10th October 2019 in which the pilot suffered fatal injuries.

Introduction

On 10th October 2019 the British Hang Gliding and Paragliding Association (BHPA) received reports of an air incident at Sierra del Buey, Murcia, Spain that resulted in the death of a pilot. The BHPA tasked Mark Shaw, BHPA Technical Officer, to investigate the incident and submit a report to the BHPA's Flying and Safety Committee (FSC) for ratification.

The objective of this investigation is to prevent future accidents and incidents. It does not seek to ascertain blame or apportion legal liability for claims that may arise.

BHPA investigation serial number: GBR-2019-12343

This document is confidential until ratified.

Date ratified by the BHPA Flying and Safety Committee: 21st August 2020.

THE STRUCTURE OF THE REPORT

The structure of this report conforms to that recommended in the BHPA Technical Manual and is intended to follow the principles of Air Accident Investigation Branch reports. It is comprised of the following sections:

Section 1 - Factual information

Section 2 - Analysis

Section 3 - Conclusions

Section 4 - Safety Recommendations

SECTION 1 - FACTUAL INFORMATION

1.1 History of the flight

Pilot A was an annual BHPA member enrolled on a Club Pilot (CP) hill course at a BHPA registered school ("the school"). He had previously attended the school for an Elementary Pilot course in September 2019.

On the morning of the incident day, Instructor B, three CP students (Pilots A, C, and D) and a low airtime qualified CP pilot (Pilot E) arrived at the site known as Sierra del Buey (referred to in the school's records as Sierra de Beau). Pilots A, C, D, and E all undertook a flight.

On the second flight of the day (the incident flight), Pilot A was seen to reverse launch at approximately 1300 UTC (1400 local time) and join the other pilots in the air. The conditions

were described as being light thermic with a 10-12mph wind from the south east. The other pilots landed, leaving Pilot A flying soaring beats.

Pilot A approached the take-off area with the hill on his left. At a height of approximately 60ft, his wing was seen to collapse on the left-hand side, and Pilot A was seen to react by applying the left-hand control. Instructor B (standing on take-off) instructed Pilot A to counter the turn. However, the wing turned sharply left into the hill and Pilot A impacted the ground close to the take-off area.

Pilot A was given first aid by Instructor B and Pilot D who had ascended the hill from the landing field. The emergency services attended the scene. However, Pilot A died from his injuries.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	1	-	-
Serious	-	-	-
Minor / None	-	-	-

1.3 Damage to the aircraft.

The wing was significantly damaged during the incident and subsequent rescue.

1.4 Other damage.

The harness sustained damage around the base and seat area.

1.5 Personnel information

Pilot A was male, and aged 46 at the time of the incident. He declared his bodyweight to be 85kg. Pilot A was reported to be fit and active, and in a good state of health. He had no previous experience of paragliding.

1.6 Medical and pathological information

Pilot A was attended to by the Spanish emergency services but died from his injuries.

1.7 Aircraft information

All the equipment used was provided by the school.

1.7.1 The paraglider used by Pilot A at the time of the incident was a Gin Bolero 5, size “Medium”, serial number BE01-K7000123D. Its manufacturer Gin states that the wing is suitable for school use. The wing has an “EN-A” classification in accordance with the Paragliding Equipment Flight Safety Characteristics Standard EN 926-2, with a certified total in-flight weight range of 85 to 105 kg for this model and size of paraglider.

1.7.2 The harness worn by Pilot A at the time of the incident was a Gin Basis harness with an under-seat foam impact pad, its serial number 0313-K0325.

1.7.3 The helmet worn by Pilot A at the time of the incident was a Lazer B-Cool helmet.

1.7.4 The radios used by Pilot A and Instructor B on the day were the school's Baofeng PMR radios.

1.8 Meteorological information

The weather was recorded on a weather log by Instructor B as wind from a southeasterly direction, minimum 7, maximum 10 with an average of 8 (no units given). The cloud cover was recorded at 30%, and thermic activity recorded as light.

Video footage of a flight made on the incident day by Pilot C indicates a day of little consistent lift and some thermic air.

Video footage made by Pilot E prior to the incident shows the wind turbine blades turning with reasonable speed, however these cannot give an indication of windspeed. The direction of the turbines points to a wind varying between on the hill and slightly off to the south.

1.9 Site Information

Sierra del Buey is a 14 km (approx.) length ridge on an approximate northeast – southwest line, starting 3km to the northeast of the town of Jumilla, in the Murcia region of Spain. The summit of the ridge varies in elevation along its length, but at its highest point it is approximately 3000ft above mean sea level.

The side of the ridge used during the incident flight faces in a southeasterly direction. Running up ridge's face are a number of rock features forming distinct undulations, bowls and valleys. The surface is bare earth, low scrub and occasional bushes with areas of exposed rock. On the crest is a line of wind turbines and an access track. The area of the ridge used by the pilots on the incident day is a section about 1km long, bounded at either end by a slight outcrop, forming a bowl.

At the foot of the ridge is farmed land that is essentially flat or gently sloping for approximately 4km to the next rock escarpment to the southeast. The field used for landing is approximately 1km straight line glide away from take-off, and the top to bottom height from take-off area to landing is approximately 900ft. Refer to Figures 1, 2, and 3 overleaf.

Sierra del Buey is known amongst the local flying community as being a site of "excellent thermal performance"[1]. On the incident day, the site was not being used by flyers other than those flying with the school.

1.10 Tests, research and evidence.

This report is based on the following evidence:

A statement from Instructor B, statements from Pilot C and Pilot D (paraglider Club Pilot trainees with the school), a statement from Pilot E (Club Pilot rated flyer attending the school for flight guiding); video footage recorded by Pilots C and E; a GPS track log from Pilot E; the wing inspection report by an independent expert; the school's records for Pilot A; the school's administration documents; photos of incident equipment provided by Instructor B.

[1] http://www.murciavuela.com/l.php?l=sections/znavuelo.php&zonaId=5&fromnomain=1

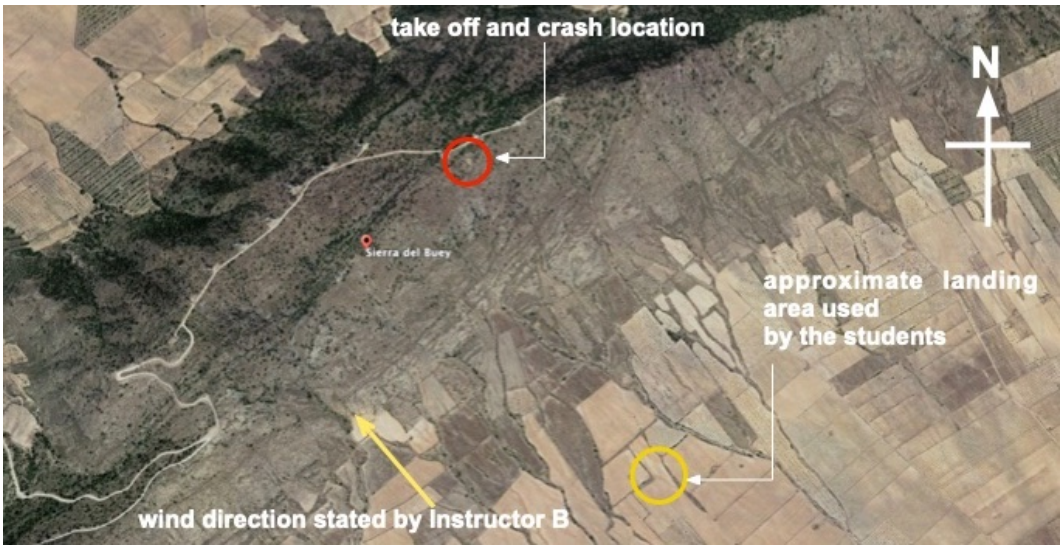

Fig. 1 (above): Site photograph (source: Google Maps).

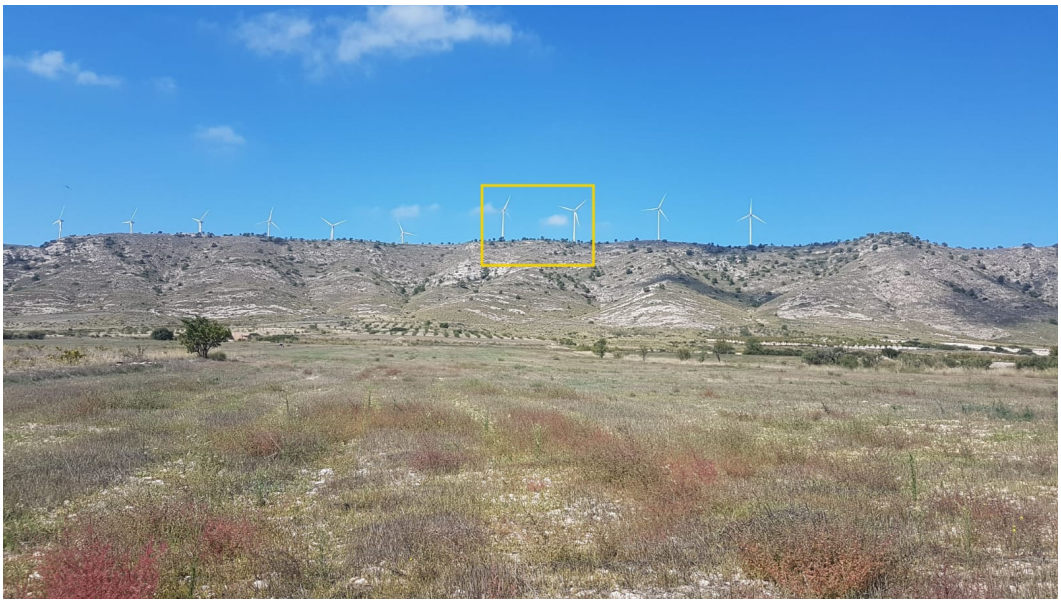

Fig. 2 (above): Site photograph. Yellow box indicates approximate location for Fig. 3.

Fig. 3 (above): Take off and approximate incident location shown.

SECTION 2 – ANALYSIS

2.1 Instructional personnel.

The Investigation considered the personnel involved in the training of Pilot A. Instructor B is the Chief Flying Instructor of the school. At the time of the incident he was a current BHPA member and a BHPA licensed Senior Instructor.

2.2 The equipment.

The Investigation considered the suitability and condition of the equipment used by Pilot A.

2.2.1 The paraglider.

The Investigation used the following calculation to determine whether Pilot A was within the certified weight range for the Bolero 5 size Medium (EN 926-2 certified weight range 85 – 105kg):

Glider	5.6kg
Harness	4.0kg
Approximate weight of ancillary equipment	5.0kg
Pilot A declared weight	85.0kg
Total weight in flight	99.6kg

The Gin Bolero 5 is classified EN-A in the flight safety characteristics standard EN 926-2 and is suitable for beginner training. The Investigation found that the paraglider model was of suitable size and type for teaching Pilot A.

The Investigation considered the airworthiness of the incident paraglider. The school's service record indicated that the paraglider had been inspected and test flown on 25th September 2019 and was noted as being "good and flies well".

An independent expert undertook a condition check of the wing following the incident. The expert's report noted that the wing had sustained severe damage to the canopy and that the lines on the right-hand side had all been cut. The measurement of the suspension lines on the left-hand side of the wing indicated that the wing was out of trim. The expert recorded that whilst this was not by a large margin, the overall effect would be to increase the tendency for the tips to collapse. The Investigation determined that whilst it could not rule out the possibility that the trim of the glider could have contributed to the incident, it was impossible to conclude on this point due to the extent of the damage to the rest of the wing and lines.

The main brake lines were recorded as being 30mm short overall, and the Investigation determined that this was not a contributory factor to the incident.

2.2.2 The harness.

A maintenance log for the particular harness used in the incident recorded that the harness was checked and found suitable for service on 10th July 2019. The Investigation found that the harness was of suitable type for teaching Pilot A.

2.2.3 The helmet.

The Investigation found the helmet given to Pilot A to be suitable for the purpose of training.

2.2.4 The radio.

The maintenance log for the radio provided to Pilot A recorded that it was checked on 20th February 2019. It is evident that Pilot A could hear radio messages as he was seen responding to radioed instructions.

2.3 The site.

The Investigation considered the site.

The school's site specific risk assessment was not available to the Investigation so it was not possible to evaluate the school's control measures for the risks associated with students performing particular exercises on the site.

The site's bare earth and rock surfaces and the numerous gullies would promote thermic activity. An instructor wishing to use the site to train students would need to exercise care in choosing the right flying conditions.

Pilot A had undertaken three flights on the site the day before the incident.

2.4 The weather conditions.

The Investigation considered the weather conditions.

Instructor B recorded on his weather conditions log that the conditions on the day were 7-10, average 8 south easterly (no units given) with light thermals and 30% cloud cover. In his statement he noted that the conditions were 10-12mph. He noted that no test flight was made. Evidence from video footage on the day shows mainly blue sky with some scattered light cloud.

Pilot E noted the conditions as being clear and sunny with some high-level scattered cloud, and temperature ranging from 28-32 deg. C. He described the conditions as light winds on take-off and punchy thermals coming through on his flight.

Pilot E provided a tracklog of his first flight of the day (take-off is 11:30am local time). The tracklog illustrates a flight of about 30 minutes. Although the height gains and losses are moderate and most of the soaring is limited to maintaining take-off height, there is one significant and quite rapid climb of almost 500ft at the end of one beat. This indicates the presence of thermic activity as well as ridge lift.

2.5 The training of Pilot A.

The Investigation considered the training given to Pilot A. All training was carried out by Instructor B.

2.5.1 The training on the Elementary Pilot Course (8th to 12th September 2019).

2.5.1.1 On 8th September, Pilot A undertook and signed off Phase 1 (ground training) in the STRB.

2.5.1.2 On 9th September, Pilot A undertook and signed off Phase 2 (ground handling) and Phase 3 (first hops) in the STRB. The number of first hops made by Pilot A is not stated.

2.5.1.3 On 10th September, Pilot A undertook and signed off exercises 10, 11 and 12 in the STRB, and he carried out four flights. These were recorded under exercises 13, 14, and 15 as four successful flights.

2.5.1.4 On 11th September, Pilot A undertook and signed off theory and the Elementary Pilot exam.

2.5.1.5 On 12th September, Pilot A carried out four flights. These were recorded under exercises 13, 14, and 15 as four successful flights, and Phase 4 was signed off as completed by Instructor B and Pilot A.

2.5.1.6 The Investigation determined from the evidence supplied that Pilot A had not undertaken the requisite number of flights to sign off the flight exercises phase of the Elementary Pilot section of the STRB.

2.5.2 The training on the Club Pilot Course (6th to 10th October). All training was carried out by Instructor B.

2.5.2.1 The training on 6th October (site: "La Paca Lump").

Pilot A undertook seven flights, attempting exercises 23 (planned approaches) and 24 (soaring). One flight was recorded as a successful soaring flight. Instructor B noted these flights were successful, and were to consolidate and refresh Pilot A's training.

The conditions were logged by Instructor B as being overcast with no thermals, wind strength 7-10, averaging 8 (no units given).

2.5.2.2 The training on 7th October.

No flying took place on this day. Pilot A undertook theoretical exercises and the Club Pilot and Hill Environment Exam. These were signed off by Instructor B and Pilot A.

2.5.2.3 The training on 8th October (site: "La Paca")

Pilot A undertook three flights in total, recorded by Instructor B as successful attempts on exercises 23 (planned approaches) and 24 (soaring). Pilot A also undertook exercises 27 (ground handling), 28 (exploring the speed range), 29 (accelerator systems), 31 (reverse launching), 32 (weight shift and pitch-roll co-ordination in turns), 35 (active flying), 36 (rapid descent techniques) and 37 (dealing with an asymmetric tuck). These exercises were all signed off in the STRB as completed (both by Pilot A and Instructor B).

The conditions were logged by Instructor B as being light thermals, wind strength 7-11 (southeasterly), averaging 9 (no units given). Instructor B noted that no test flight was made.

Video footage provided shows Pilot A performing a reverse launch and flying away from the hill with little control input. The wing can be seen rolling and pitching in what appears to be thermic conditions with no corrective action evident by the pilot.

2.5.2.4 The training on 9th October (site: "Sierra de Beau lower – Jumilla")

Pilot D stated that a planned exercise for this day was to undertake "flying with others" and this was rehearsed on the ground, but the "wind was too light to provide sufficient lift to keep the gliders airborne for long enough to practice passing each other along the ridge."

The conditions were logged by Instructor B as being light thermals, wind strength 6-10 (southeasterly), averaging 8 (no units given). Instructor B noted that no test flight was made.

Pilot A undertook three flights, stated by Instructor B as successful flights. These flights were recorded as successful attempts on exercises 23 (planned approaches) and 24 (soaring). Exercise 23 was signed off as complete by Instructor B (but not Pilot A). The STRB log section records soaring flights, one of twenty minutes, with "great take-off and landing".

2.5.2.5 The training on 10th October (site: “Sierra de Beau – Jumilla”)

The pilots were briefed to fly between two points on the ridge, to avoid a large gulley known to disturb the airflow. It is evident that the conditions were soarable, but Instructor B noted that the wind dropped off. Pilot C noted this flight was a “top to bottom with a little bit of soaring”. All of the four pilots were collected from the bottom landing and transported to take-off for a second flight at around 13:45 (local time).

2.5.2.6 The incident flight.

Instructor B noted that the windspeed had increased “with light thermals now coming on to the hill”. Pilots C and E launched and attempted soaring in conditions that required them to scratch for lift, close to the hill. Pilot C’s video of the flight illustrates small, sporadic areas of light lift and turbulence. He did not make any significant height gains or climb above take-off. Pilots C and E flew to the landing field.

Pilot D then launched, followed by Pilot A. Pilot D stated that he experienced “minor gusts and little if any thermic lift”, although he had no past experience with which to compare it, as this was his “first attempt at soaring on a ridge”. Instructor B stated that Pilot A was showing good control of his glider and looked quite relaxed. Video from Pilot E (in the landing field) shows Pilots A and D soaring at either ends of the ridge area used for the exercise. Pilot A appears to have gained good height above take-off. It is evident that one glider is pitching as if flying through rising and sinking air.

Pilot D lost altitude and was directed to the landing field, where he landed. Instructor B stated that Pilot A was losing height and was on his final beat before he would radio him to head to the landing field. As he approached the launch point Instructor B noted he was “approx. 60 feet high”. His wing suffered an asymmetric collapse on the left-hand side that Instructor B noted was “approx. 40 percent of the wing nearest the hill”, and he was seen to apply the left-hand control hard. Instructor B gave him an instruction over the radio to counter the turn, but the paraglider accelerated into the hillside and Pilot A struck the ground feet first.

The Investigation determined that Pilot A’s wing encountered turbulent air that brought about an asymmetric collapse and led to his wing turning towards the hill. Pilot A did not apply the correct action in response. His control input increased the rate of turn and his proximity to the ground led to his impact, where he sustained fatal injuries.

The evidence provided illustrates that Pilot A accumulated the majority of his flight experience in conditions that did not enable soaring. He had not gained sufficient experience and familiarity with thermodynamic soaring conditions to fly the wing actively and reduce the chance of departures from normal flight, or to apply the appropriate corrective action in the event of an asymmetric collapse.

SECTION 3 – CONCLUSIONS

The Investigation concluded that the incident occurred as Pilot A lost control of his paraglider whilst in close proximity to the hillside and was unable to regain control before impacting the hill. Pilot A’s lack of training and experience were found to be significant contributing factors, given the prevailing weather conditions.

SECTION 4 – SAFETY RECOMMENDATIONS

None.