

ACCIDENT

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| Aircraft Type and Registration: | FreeX Arcane, no registration | |
| No & Type of Engines: | None | |
| Year of Manufacture: | Not known | |
| Date & Time (UTC): | 2 September 2007 at about 1048 hrs (all other times in this report are local times) | |
| Location: | Near Woldingham, Surrey | |
| Type of Flight: | Private | |
| Persons on Board: | Crew - 1 | Passengers - None |
| Injuries: | Crew - 1 (Fatal) | Passengers - N/A |
| Nature of Damage: | None | |
| Commander's Licence: | BHPA Pilot (Hill and Tow) Rated | |
| Commander's Age: | 47 years | |
| Commander's Flying Experience: | Approx 140 hours (hours on type not known) Last 90 days - Approx 15 hours Last 28 days - Approx 9 hours | |
| Information Source: | AAIB Field Investigation | |

Synopsis

The paraglider was seen to suffer an asymmetric collapse of its canopy when at a height of about 70 ft. It descended rapidly and the pilot was unable to recover to normal flight or deploy the emergency parachute before impacting the ground. He landed heavily, chest first, which resulted in fatal injuries.

History of the flight

On the morning of the accident, the pilot arrived at the launch site where other qualified paraglider pilots were already flying. A group of student pilots were flying under instruction from the Chief Instructor of a flying school which operated from the site. The wind had been light early in the morning but had increased in speed,

as forecast, so that by about 1030 hrs it was between 16-18 mph. The Chief Instructor assessed that these conditions were unsuitable for the students to continue and had therefore ceased instructing.

The students prepared to leave, and spent about an hour packing up their equipment, whilst the qualified pilots continued to fly from the hill. At one point, one of these pilots suffered a symmetric collapse of his canopy whilst at a height of about 200 ft, but he was able to recover the situation quickly with only minimal height loss. The weather conditions continued to become increasingly difficult for flying and some of the less experienced pilots decided to land. Other pilots, however, remained airborne.

Witnesses describe seeing one of these pilots, at a height of about 70 ft directly above the launch point at the top of the hill, facing into the wind and away from the slope. They estimated he had been airborne for only a minute or two when approximately 60-70% of the left side of his canopy was seen to fold back with the folded back section remaining rigid. The whole canopy turned rapidly to the left, rotating the pilot with it, and began to descend quickly. The pilot, who had now been rotated through about 180° so that he faced the slope, struck the ground just below the top of hill. He was then lifted again a short distance, coming to rest on the hilltop where the canopy collapsed.

First aid was quickly administered to the pilot by those on the site until the arrival of the first paramedic at 1155 hrs. Further treatment was rendered at the scene, before he was transferred to hospital by air ambulance. He later died from his injuries.

Weather

Witnesses at the launch site reported that the weather during the morning had initially been good. The wind was westerly and, early in the morning, had been light to moderate in strength, between 8-12 mph, although from about 1030 hrs, it had started to increase to about 16-18 mph. The airflow was initially smooth but, as the morning progressed, cumulus cloud started to build, indicating a measure of thermal activity, which would have potentially given rise to more turbulent conditions.

Recorded information

A Garmin GPSmap 76C GPS receiver and a Digifly VL100 Flyer Unit variometer were recovered from the accident site.

GPSmap 76C GPS Receiver

The GPS receiver had recorded the GPS position and altitude for two tracks, both on 2 September 2007, the total time span of which was from 1153 hrs to 1157 hrs. These were separated by a seven second period, indicating that they were two parts of the same track and that the unit had either lost GPS signals or that the track had been manually stopped and restarted. The sporadic nature of the GPS positions recorded, within short spaces of time, indicates that the receiver was not generating accurate position or altitude fixes. Accordingly, no reliable analysis could be drawn from this data.

Digifly VL100 Flyer Variometer

The date set on this unit was correct but the time set was 8 minutes behind local time (established on 25 September 2007). The unit recorded two flights on 2 September 2007. The first flight recorded started at 1051 hrs local (corrected time) and lasted approximately 3 minutes, the second started at 1112 hrs (corrected time) and lasted for approximately two minutes.

The times of the flights recorded on both the GPS receiver and variometer could not be correlated with the time of the accident, as recorded on the emergency services log. It has, therefore, not been possible to ascertain whether any of the information recorded relates to the accident flight or to previous flights that were conducted that morning.

Launch site description

The launch site being used that day was called the West Bowl, and was a slope of moderate incline forming, as the name implies, one side of a bowl, the top of which was about 200 ft above the local terrain. The slope used was on the Bowl's northern edge and allowed paragliders to be launched up its entire slope, with the more experienced pilots launching from the ridge on top.

The flying school's site guide describes the best wind directions for operating as south-west and west. Under a section entitled '*Flying History*' the guide states:

'it can be rough, please obey the rules!'

The Chief Instructor at the school stated that this comment related to turbulence and the importance of applying the usual principles in assessing the suitability of the weather for flying. He also stated that the worst wind direction for the site was from the south-southwest, with turbulence likely due to the topography on the opposite side of the bowl.

Another section in the site guide entitled '*Hazards*' warns pilots to keep a good lookout for horses that are sometimes ridden in the area; it does not list any other hazards.

Paraglider description

The pilot was flying a FreeX Arcane. This type of paraglider has been assessed under the German classification system and classed as a DHV2 paraglider. The British Hang Gliding and Paragliding Association (BHPA) Pilot Handbook describes this class of paraglider as:

'Paragliders with demanding characteristics and potentially dynamic reactions to turbulence and pilot errors. For pilots who fly regularly. (Recommended minimum: BHPA Pilot rating)'

Paraglider examination

The paraglider was inspected after the accident and the canopy was found to be undamaged. The rigging lines had all been cut in order to free the pilot after the accident, but they otherwise appeared to be in a satisfactory condition with no signs of fraying or knots

having come undone. The straps forming the harness also appeared in good condition but, because they too had been cut after the accident, it was not possible to ascertain whether they had been correctly adjusted to fit the pilot.

An emergency parachute was fitted to the paraglider but there was no evidence of the pilot having made any attempt to use it.

Pilot's flying experience

The pilot started paragliding in 1997, and qualified as a BHPA Elementary Pilot in May 1998, a Club Pilot in October 1998 and as a Pilot (Hill) in June 2004. He had embarked on training to become an instructor and had also flown in various competitions. He flew regularly and was considered suitably experienced and capable to be flying a DHV2 category paraglider.

BHPA training at all levels includes the assessment of weather conditions, including turbulence, in respect of its suitability for flying, as well as the recovery from such unstable conditions as an asymmetric collapse of the paraglider's canopy.

Other accidents

Prior to this accident, there had been only two other accidents involving the flying school at the site over the twenty years the school had been in operation. Neither of these accidents was particularly serious in nature. However, a serious accident did occur on 5 November 2007 on the same site and under very similar circumstances. On this occasion, the site was affected by a south-southwesterly wind of approximately 18 mph, resulting in some rotary turbulence. This was sufficiently strong to cause a partial collapse of a pilot's canopy and, unable to recover in time, he struck the ground near the top of the slope close to the scene of the

subject accident. On this occasion, the pilot impacted the ground feet first and survived the accident, but having sustained serious leg injuries.

Asymmetric canopy collapse

This phenomenon arises when airflow over part of the canopy is disrupted, causing that part of the wing to stall and collapse. An asymmetric collapse normally results in the canopy turning towards the collapsed side. Higher performance paragliders are more susceptible to collapse due to their less stable design and should, therefore, only be operated by pilots of suitable experience.

It is possible to recover the situation by maintaining directional control and, if necessary, pumping smoothly on the controls on the collapsed side, taking care not to stall the remaining canopy.

The BHPA Pilot Handbook warns that collapses are best avoided by the linked strategy of steering clear of turbulence and flying actively, ie, exercising constant accurate pitch and keeping the canopy directly above the pilot's head. The Pilot Handbook further warns that recovery from the worst situations often requires a great deal of height, with highly experienced test pilots having been known to fall thousands of feet attempting to recover from instability situations. It advises that pilots should monitor their height and, if necessary, deploy their emergency parachute. It has not been possible to determine accurately the minimum height for deploying such an emergency parachute, but it would require, at least, a few seconds for it to be deployed and become effective.

Analysis

The pilot involved in the fatal accident was experienced and had flown at the site regularly. He should, therefore, have been in a good position to assess the

weather conditions and note how they changed during his time there that morning. The evidence presented is of conditions that were marginal for flying, even for such an experienced pilot. That he and other less experienced pilots were still airborne demonstrates that they either incorrectly assessed the conditions or that they chose to accept the additional risks posed by them, in order to continue flying.

The eyewitness descriptions suggest that the paraglider entered an area of turbulence, probably thermal in nature, which caused a large part of the left side of the canopy to collapse. The canopy then turned the pilot towards the collapsed side whilst descending rapidly. He then had insufficient height either to recover the collapsed canopy or to release his emergency parachute before hitting the ground.

The low accident rate experienced by the paragliding school is in large part due to the care exercised by the instructors in determining if weather conditions are suitable for students to be flying, and ceasing flying, as on this day, when they were assessed as unsuitable. Those flying from the site who were not doing so as part of the school, were reliant on their own judgement to assess the suitability of the flying conditions for their own level of experience and type of equipment used.

The site is prone to turbulence depending on wind speed and direction. Thus, whilst the site guide described the most favourable wind direction as south-westerly, a change in direction of only some 20 degrees to the south could result in the airflow becoming turbulent. Whilst this was alluded to in the site guide, the layout and terminology used did not highlight this fact clearly.

Safety action

The school's Chief Instructor will be writing to all those using the site to highlight the risks posed by turbulence and describe those weather conditions most likely to adversely affect the site. He will also review the site

guide in conjunction with the BHPA, to ensure that this information is included in a clear, unambiguous manner and that the guide is prominently displayed to all those flying from the site.