BHPA
8 Merus Court
Meridian Business Park
Leicester
LE19 1RJ
Tel: 0116 289 4316
www.bhpa.co.uk

BHPA Incident Report: GBR-2017-4591

INCIDENT

Aircraft Type:	Ozone Element 2 (medium 75-105kg)
Certification:	EN - A
Manufacture Date:	Believed to be 2015
Location:	City Airport, Barton, Manchester.
Date and Time:	21.5.2017 at approx. 8am
Type of Flight:	Paraglider local flight with vehicle tow.
Persons Involved:	Pilot A, who is a BHPA Pilot rated pilot.
Injuries:	Seriously injured. Multiple injuries
Nature of Damage:	Harness damaged by paramedics, otherwise none.
Pilot's Rating/Licence:	BHPA Pilot rated in paragliding hill and tow environments.
Pilot's Age:	DoB 4.1.1962 55 years old.
Pilot's Experience:	Pilot A joined the BHPA in May 2007. He initially learned on the tow and was awarded his Paragliding Club Pilot (tow environment) in May 2010. He then added the 'hill' environment in October 2010. Pilot A passed his BHPA Pilot exam on 28th March 2013. Pilot A is also registered as a BHPA Club Coach and Tow Coach. The Bollington tow manifest shows that this was Pilot A's first tow flight of the year and that he had three tow flights in 2016. Pilot A had flown in Nepal in January 2017 on a two-week hill paragliding holiday and had flown several times since then at UK hill sites. Pilot A estimates that he has approximately 110 hours airtime in total.
Information Sources:	Interview with the club CFI, test report carried out by Manchester University, video evidence of the incident, BHPA incident report forms submitted and report on the glider carried out by Aerofix.

Synopsis

On the morning of Sunday 21st May 2017 fourteen members of the Bollington Paragliding Club met at Barton airfield with the intention of paragliding. Flying began shortly after 6:30am and there were fifteen tows prior to the incident. At approximately 8am Pilot A began his first tow. During this flight at approximately 30m AGL the weak link activated. At this point Pilot A lost control of the paraglider and was unable to regain control resulting in a heavy impact with the ground. Pilot A suffered serious injuries as a result of the crash.

History of the flight

On the morning of Sunday 21st May 2017 fourteen members of the Bollington Paragliding Club met at Barton airfield with the intention of paragliding. Flying began shortly after 6:30am and the group undertook approximately 15 towed flights that morning prior to the incident flight. During this period there were two weak link activations, managed without incident by the pilots being towed.

The weather on the day was bright but overcast with a thin layer of stratus cloud at approximately 2500ft. Witnesses statements from the pilots vary slightly giving the wind speed as being either 5-10km/h or 10-15kph. There was a band of stronger wind at approximately 30m and above. The pilots were aware of the increased wind speed at 30m, as was the tow vehicle driver who was towing in a manner that took this increase into account. Wind shear is a common feature at the site.

Pilot A began his tow launch at approximately 8am. The tow began well though the pilot and glider were a little off line to the right to begin with. This was corrected by a combination of Pilot A applying left control (brake) and also by the tow vehicle driver coming off the throttle slightly. At approximately 19 seconds into the tow, with the pilot at approximately 15m above the ground, the pilot, glider and towline appear in alignment. The pilot was ascending with a small amount of control applied, which would be expected.

At 30 seconds into the flight, and at approximately 30m above the ground, the glider rocked back slightly indicating it had entered the level where the wind was stronger.

It is impossible to accurately gauge the angle to which the glider had rocked back from vertical however, it is estimated from the video evidence to be approximately 30 degrees. This represents a deviation of approximately 20 degrees from the normal towing angle of approximately 10 degrees from the vertical.

At 32 seconds the weak link activates. At this point it can be seen from the video that Pilot A's hands are still high with only minimal control applied. Between 32 and 33 seconds the pilot lowered the controls to approximately seat level causing the glider to enter a parachutal stall. The pilot's right hand was slightly lower than his left and this causes the glider to rotate to the right 70 -90 degrees. In his subsequent attempts to recover the glider Pilot A did not fully release the controls and at 38 seconds the glider dropped back behind the pilot in a stalled state.

At 39 seconds the pilot appears to release the controls fully at a height of approximately 10m and while the glider is behind him. This causes the glider to dive rapidly forwards and the impact occurs 3 seconds later.

Additional Information:

The Landrover tow vehicle was examined by Greater Manchester Police. The Landrover was found to have a minor fault on the suspension and a brake fluid leak. While requiring attention, neither fault would be considered a factor in this incident.

The tensiometer (a measuring device used to monitor the tension in the towing line) and Berkley Swivel weak links (used to limit towing forces) were tested by Manchester

University at the request of Greater Manchester Police. The tensiometer was shown to be displaying accurate readings when the load was increased. The tensiometer displayed slightly high readings when the load was decreased. Overall the tensiometer operated as expected and is not considered a factor in this incident.
A selection of old and new swivels was tested. The new swivels activated over a range of tensions with a mean of 103daN. The used swivels operated over a range of tensions with a mean of 100daN. Both old and new swivels activated at a mean slightly below the advertised breaking strength of 250lbf, equivalent to 111daN. The BHPA approved maximum weak link value is 125daN for paragliders with an all up weight of up to 125kg when using a calibrated weak link. This value is reduced by 20% for non-calibrated weak links such as the Berkley swivels, giving an approved maximum of 100daN. The mean activation values as tested by Manchester University were at or around 100daN. The results of the tests carried out by Manchester University are consistent with the experiences of the Bollington club who have been using the Berkley swivels for over 20 years. The Berkley swivel weak link is not considered to be a factor in this incident.

The Ozone Element 2 glider is certified at EN-A in the medium size. EN-A gliders exhibit the maximum available level of passive safety.
The glider was sent to Aerofix to be independently tested against the manufacturers specification. The glider was found to be in "excellent flying condition" with all main flying lines within specification. The control lines were slightly shorter than specification being approximately 2cm shorter than specification. This would not be considered significant.
Throughout the incident the video and witness evidence indicates that the glider behaves normally and exactly as would be expected given the control inputs from the pilot.
The glider is not considered to be a factor in this incident.

The Investigation considered the actions of the pilot immediately after the weak link activated. When a weak link activates the pilot will naturally pendulum back underneath the glider causing it to surge forward and in front of the pilot, before settling back above the pilot's head. Depending on the degree and speed of the surge it may be necessary for the pilot to damp it by appropriate application of the controls. It is important that any corrective control inputs are carried out once the glider is above or in front of the pilot. If a control input is made when the glider is behind the pilot, and at a high angle of attack, it is possible to bring about a stall.
In this particular incident, Pilot A immediately applied both controls almost fully while the glider was still well behind him and at a high angle of attack causing the glider to enter a stall. Over the next five seconds it appears from the video evidence that Pilot A attempted to regain normal flight by applying control inputs. However, he did not fully release the controls until at a height of only ten metres above the ground causing the glider to dive forwards resulting in a heavy impact.
The Investigation considers the actions of the pilot in response to the weak link activating to be the 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 caused it to stall immediately after the weak link activated and then being unable to regain control before the impact occurred.
All other aspects of the tow launch were as normal.

Recommendations

None.