ACCIDENT REPORT

REPORT DATE
25 November 2009

AUTHOR
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DATE OF ACCIDENT
16 November 2009

LOCATION OF ACCIDENT
Approximately 30km north of Gulgong Airstrip

EQUIPMENT

- Skyline *Zero drag* harness 2008
- Airborne 13.5 *Rev*
- *High Energy* rescue parachute
- *9 Point 9* High Speed downhill open-faced ski helmet

DESCRIPTION

Launch was from Gulgong airstrip at approximately 13.30hrs. With four other pilots (David May, Chris Jones, Phil Schroeder and Oliver Barthelmes) we were positioning for a competition start gate 10km north of Gulgong airstrip. The flying conditions during the flight had been stable with semi coherent thermals of varying strength between 100'/min and 500'/min. The air quality was marginally smooth and turbulence was mild to moderate. Mild inversion layering was observed during the initial climb out.

5 minutes before the accident took place Chris Jones was approximately 100' higher in altitude and 300m further downwind from my position. The other three pilots were below and spread out. All five of us were 'on glide' at roughly 6500' ASL. I observed Chris slow down and bank to the left and complete two full turns in what appeared to be solid lift. I changed course and intended to intersect with Chris' position in order to access the same lift. I noticed the other three pilots below me also eventually alter course apparently to close on Chris' position.

Prior to arriving at Chris' exact position I observed him straighten up and appear to reengage in a search pattern.

We all eventually converged on the same area but failed to locate consolidated lift and all of us continued a search pattern within a 100m area. I decided to search to the NE and felt the presence of more coherent and 'lifty' air the further I flew in this direction.

From the previous minutes of searching for lift I already had the VG setting at ‘low’, or ‘off’, with approximately one arms length of VG tension remaining ‘on’. As the presence of some lift became apparent and to my left I commenced a shallow left hand bank. The vario confirmed over a number of seconds an altitude gain of marginal strength, approximately 200’/min. The climb ‘felt’ and was expected to be short-lived. The core being centered was not rough nor was it excessively turbulent. Airspeed was typical thermaling speed, approximately 40-50kph. Bar position was slightly faster than best glide position.

Not more than a quarter into the first circle I felt the bar pressure become progressively light and coincidently observed the nose commence a pitch down rotation. As the change in bar position moved through the initial stage it was expected to soon end with a ‘wire slap’ before the glider resuming normal flight. The nose continued to pitch over and was accompanied with a progressive loss of ‘G’. I braced in a body-forward position to maintain pitch control but within half a second I was weightless with my body moving away from ‘hang position’ and toward the undersurface of the glider.

I attempted to maintain hang position by holding the body to the basebar through grip strength intending to achieve a bar position consistent with best pitch recovery, however the ‘G’ progressed to a significant negative value and despite attempts it was not possible to maintain contact with the basebar let alone achieve a best recovery hang position.

The glider proceeded to complete a full, nose forward, tumble without making any contact to harness or body. After completing the first tumble the glider seemed to slow its pitch-over rotation slightly and a significant ‘jolt’ was felt as my weight loaded back through the hang straps and harness, however the glider still possessed significant momentum and it quickly accelerated in the same pitch-over direction and entered into a second tumble.

When the second tumble rotation completed another ‘jolt’ was experienced however it was of much less duration than at the end of the previous tumble. A moment of total weightlessness followed with a sensation of dropping some meters before regaining moderate tension in the hangstraps and harness again. Immediately I was aware of being subjected to a rotational motion in the horizontal plane (sycamore motion).

The airspeed, ‘G’, and rotation all continued to increase smoothly but very rapidly. I attempted to locate the parachute handle but by the 2nd rotation the ‘G’ made it impossible to retract my arms which had been forced into full extension away from the body and harness. The ‘G’ force and rotation speed increased rapidly and to extreme values. Rotation 5 and 6 (720 degrees) were competed in less than a second and it was apparent such increasing ‘G’ forces would soon either subject me to serious injury and or begin to destroy the equipment.

At the end of the 6^{th} rotation the ‘G’ force instantaneously went to zero. This was accompanied by an (audible) rapid increase in airspeed. It was obvious I had separated

from the glider and after initially traveling horizontally with significant velocity my trajectory quickly developed into a freefall descent. Absence of ‘G allowed me to reach for the parachute handle which I located immediately however the parachute offered significant resistance and refused to leave the harness. It took approximately another 7 seconds and use of both the right and left arms to eventually free the parachute. During this period I was aware I had stabilized in a vertical position, boot-first/head-up freefall. Maximum, i.e. terminal speed, ‘sounded’ like it had been achieved after approximately 5-6 seconds.

As the parachute came free it took less than a second before it inflated, and did so, violently, and with unbelievable force (rapid/instantaneous deceleration). The descent rate had stabilized immediately and the remaining 2000’ of altitude took some minutes before a very soft touch down in a farmer’s field approximately 40km from Gulgong. No injuries of any sort were experienced during the touchdown.

SEQUENCE OF EVENTS

- pitch over
- first tumble
- second tumble
- side wire failure
- sycamore rotation
- harness back plate failure
- freefall acceleration to terminal velocity
- parachute deployment
- touchdown

INJURIES

- Flail fracture of the chest (RHS)
- 6 broken ribs
- Fractured sternum
- Punctured right lung
- Spontaneous pneumothorax (Collapsed right lung)
- Bruising under the armpits
- Very minor grazing to right cheek
- Haematoma of the eyes

All injuries were sustained during the extreme deceleration of parachute deployment. The harness chest strap compressed the torso causing all significant injuries to the chest cavity, and left bruising under the armpits. No other bruising, abrasions or marks were present to suggest the leg loops absorbed any of or significant load during the deployment.

No other injuries including bruising, cuts or abrasions took place on any other part of the body.

Haematoma of the eyes is believed to have occurred during the high 'G' force of 'sycamore' rotation. Load in this plane was transverse and tended to pool and compress blood ventrally (front of body, face etc). Minor, superficial scratches to the right cheek occurred when getting out of the harness and on to my feet.

EYE WITNESS ACCOUNTS

- All four pilot in the vicinity witnessed variously the latter stages of the incident. None witnessed the initial stage involving the two tumbles
- Dave May was the first witness, observing the moment of sidewire failure
- Chris Jones, Phil Schroeder and Oliver Barthelmes were later observers all initially witnessing the sycamore rotation
- All witnesses observed the freefall
- All four pilots descended and landed safely to offer invaluable moral support. They liaised with the ambulance staff and remained on site until evacuation took place via the Westpac Rescue Helicopter some hours later

EQUIPMENT CONFIGURATION

- Glider recently passed certification (DHV) and was configured within the limits of these settings
- A very thorough preflight check had been completed of the glider
- *High Energy, 330,* parachute was fixed to harness, not to the hang strap carabiner
- Parachute bridle was configured to connect to harness via internal carabiner
- Other than installing the internal carabiner no modifications had been made to any equipment

SIDEWIRE FAILURE AND PREFLIGHT INSPECTION

- Side wire failure definitely took place after completion of the second tumble.
- A very thorough preflight of the glider post set-up was conducted and had confirmed the glider was configured correctly.
- The preflight started at the basebar then continued to the sidewire-tang/sidewire connections. Neither sidewire was kinked at the time of preflight inspection.
- As per usual a hand was dragged along the sidewire to feel for fraying and bending. I have a clear recollection of conducting this part of the pre flight inspection and made a mental note of the newly modified neoprene access port where the sidewire enters the undersurface to join the LE.

- I confirming excess bolt thread where the sidewire attaches to the LE inside the sail.
- Nose battens were located correctly
- The undersurface was unzipped to visually inspect the X-bar, keel and LE. All was normal
- All battens and sprogs were checked
- Pull-back and keel attachments were as normal
- All zippers were closed

PILOT'S IMPRESSIONS

Approximately 18 months ago during the annual January competition at Forbes that I witnessed a very similar incident to the one described above.

An Austrian team pilot sustained two tumbles and then departed from his glider and entered a freefall. His incident did not include the *sycamore rotation* and therefore he was able to immediately deploy his parachute. Unfortunately his rescue chute was not certified for freefall/terminal velocity deployment. His parachute 'candled' for approximately2 seconds before opening violently and failed catastrophically.

Immediately after this event I sourced information on equipment that would successfully sustain terminal parachute deployments, despite the unlikely and rare incidence of this type of occurrence. Two parachute manufacturers, Metamorphose, and High Energy were considered the only (?) and the best equipment available. High Energy was selected for two reasons: they come from an experienced skydiving background, and their parachutes offer the best performance (slowest descent rate and highest construction integrity).

The Skyline harness Zero Drag was selected as it had recently received a major upgrade in design being very well built and strong, but without any significant weight penalty.

The purchase of these two pieces of equipment played a significant role in the successful outcome of the incident which took place at Gulgong on 16 November 2009.

It cannot be overstated that witnessing the incident at Forbes also provided critical mental preparation for such an event. Some months were required to come to terms with witnessing such a traumatic fatality. In hindsight these months of 'reliving' the event actually allowed me to carry out my own accident calmly and without panic.

Separation from our glider and entering a freefall is perhaps our worst case emergency. Most of us are not in the possession of equipment that will sustain such a situation. The take home message is such an incident is not a death sentence, it is survivable and should be considered as such with the correct equipment.