Reserve Deployments a

You're working hard to make the most of the small, punchy thermals. Slowly working your way up the mountain, you're already thinking of cloud base and your next glide, when BANG; a big asymmetric collapse turns quickly into a cravatted spiral dive. You check for altitude and decide to go for the reserve, and then…

I decided to write this article after hearing of multiple reserve deployment accidents this season (in Australia and Europe) and many discussions/ presentations to pilots of varied experience about down-planing and reserves.

BY ROGER STANFORD

After three years of running SIV courses with Jocky Sanderson, I have seen reserves of all shapes and sizes and witnessed many reserve deployments. I have also experienced the effects of a down-planing reserve and was shocked at how quickly it can happen, and the force of impact with the ground (I landed in water, had I descended on hard ground I would have suffered serious injury).

After leaving flight school, most pilots spend all their time learning and accumulating knowledge and experience on how to stay up and thermal efficiently, go XC and understand the weather and what the sky is doing around them. Other than buying a reserve and fitting it to the harness, often no more is thought about emergencies and reserves until the moment when the pilot needs it.

Visualisation is a tool used by sports psychologists and coaches to help athletes prepare before their event. It has been proven to cultivate not only a competitive edge, but also to create renewed mental awareness and a heightened sense of well-being and confidence. Pilots who make a "Visual Emergency Plan" react better in an emergency situation as they have already thought about and planned the sequence of events that would take place before and after a reserve deployment.

There are four vital stages when throwing your reserve:

Stage 1; The decision to throw the reserve

Altitude and circumstance are the key factors in your decision to throw your reserve. If you are at low altitude and suffer an uncontrollable collapse, then the reserve should be thrown immediately, thus giving the reserve more time to open into a controlled descent, as well as giving the pilot ample time to de-power and bring in the main (more on this during stage 3).

If you're high when your collapse occurs and you are attempting to recover the wing into a controlled flying configuration, then you must keep checking your altitude to ensure that you can deploy the reserve if you need to. Recognise what the wing is doing and the effect your brake inputs are having on the collapse/cascade. If your wing is in a cravatted spiral and accelerating, throw your reserve as the increasing G forces can cause you to black out very quickly.

Stage 2; Deployment Sequence

You have made the decision to throw the reserve and are reaching for your red handle. You must pull the handle and reserve in the same direction as it was put into the harness. If you pull the handle at 180 degrees across your lap then it can get trapped, and handles have been ripped off due to the force induced by a panicking pilot.

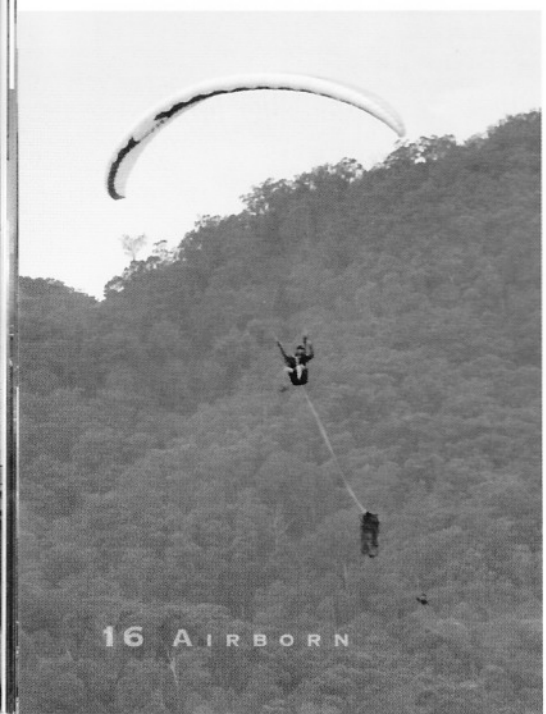
Jocky Sanderson teaches the "Look, Locate, Grasp, Pull and Throw" technique. He says "You pull the handle out the way you put the bag in, that's the critical piece. It comes out the way it slides in and then you give it a healthy throw behind you… away from you".

Stage 3; Depowering the Main

Whompf!! You feel the reserve open behind you and your canopy starts to dive forward and react to the reserve opening. Pull hard on the A risers to induce a massive symmetric tuck/ collapse, and then pull in all your lines quickly until you have the glider almost bundled up in your hands and non-reactive. It is VITAL that you de-power the main and stop it from flying; otherwise one of three things can happen:

- The wing could fly against the reserve, causing it to down-plane/fly to the ground, resulting in a descent rate much faster than under the reserve on its own. Jocky Sanderson and Allan Zoller (Air Turquiose testing house) tested the forces of down-planing and their instruments recorded over 14m/s descent rate!!!
- The wing begins to fly sideways and rotates around you and the reserve (can occur after riser twists and cravattes), significantly increasing the G-force and speed of descent.
- The wing begins to fly into the reserve, bashing it, and causing the reserve to collapse and twist into the main, resulting in you falling to the ground with two collapsed canopies above your head.

Jocky Sanderson: *"The most important thing to do is to get the main in, by whatever means. Get the main in and descend just under the reserve."*



LEFT; RESERVE THROWN
RIGHT; RESERVE OPENED

nd Down-Planing

ABOVE: RESERVE DOWN-PLANING, WITH RESCUE BOAT ON THE WAY

Stage 4; Landing

You are now descending under your reserve at a rate of 4.3-5.3m/s (average round parachute). Get into the hang position and brace for impact. Adopt the parachute PLF landing position to reduce the risk of injury on impact (feet strike the ground first, then immediately roll sideways to distribute the landing shock sequentially along five points of body contact with the ground). If there is high wind present, then the reserve must be de-powered/ cut away after landing to prevent dragging and further risk of injury.

If you will be landing in water, then release the paraglider and lines which are gathered in your arms just before impact to prevent being "engulfed". Unclip from your harness and quickly swim away from all lines and equipment. If you are landing in trees, then release the held paraglider and lines just before impact, ensuring all body parts are free from lines to prevent injury if/when lines snag on a tree. Brace/attach yourself to branches to prevent falling out of the tree, then call for help.

Knowledge, experience and familiarity with your equipment are the keys to safe flying. Get your equipment out and inspect your harness and wing for airworthiness. Pull out your reserve and get familiar with it. Check the lines as you would your wing. Look at the way it connects to your harness. Practice pulling it out and visualise throwing it away from your body.

Invest in educational material you can learn from during the winter months. Jocky Sanderson's new DVD "Security in Flight 2" demonstrates all the paraglider collapse and recovery techniques, and also has a second disc which covers everything from EN glider testing to locked-in spirals and water landings. Bruce Goldsmith's "SIV Bible" is another great source of information with in depth diagrams and descriptions detailing all aspects of paraglider emergencies and recovery techniques.

ABOVE: RELEASING THE GLIDER AND LINES BEFORE IMPACT

Of course nothing beats world class instruction and first-hand experience gained by attending an SIV course. We Southern Hemisphere pilots are now lucky that there are first class SIV instructors and courses available to us, both in NZ and Australia. This is a real benefit to the paragliding community and allows pilots from all areas and backgrounds the opportunity to learn skills which could save their lives (and are lots of FUN!!). When choosing which SIV course to attend, it's a good idea to contact pilots who have previously completed SIV training and get their feedback and opinion on the course/instructor and how it was run. There can be a big difference in what manoeuvres are taught and the way they are taught depending on instructors.

Types of Reserves

Most manufacturers these days offer reserves and ongoing maintenance/repack services. Before you choose which reserve to buy, do some research on the net to determine its suitability for you (don't just take whatever your instructor sells). Ensure you buy a reserve which has been tested to your weight range. Small light weight reserves open very quickly but have a high sink rate; large reserves have a lower descent rate but can have a delayed opening and can be unstable/oscillate during the descent. The two main types of reserves are the round reserve canopies and the steerable Rogallos.

ROUND RESERVE CANOPIES
The most common type of reserve.
Advantages: Very easy to pack, light weight, fast and reliable openings.
Disadvantages: Cannot be steered, higher sink rate when compared to a rogallo.

ROGALLOS
The steerable reserve.
Advantages: Low descent rate (average 3.2m/s), steerable with forward speed (average forward speed 6.5m/s)
Disadvantages: The Rogallo cannot be steered until the main is either cut away or has been pulled in/depowered, or there is a high risk of down planing. Rogallos can often deploy and inflate with a strong turning movement, resulting in riser twists after opening which can prevent steering altogether. Low stability and inner pressure – if after opening the rogallo is hit by your paraglider (main not under control/ depowered) it can easily deflate and get caught up in your paraglider lines.

SKY OUT PARAGLIDING is running three SIV courses in 2014 with Jocky Sanderson in the Hunter Valley, NSW Australia. There are two 3 day SIV courses running from 24-27th February 2014 and 13-16th March 2014 (with 1 back up day in case of bad weather). For the first time, we are also offering an 11-day combined SIV Course & XC Safari running from 1st-11th March 2014. If there is the demand, we will also offer a Comp Pilot/Wing SIV course for those pilots currently competing in comps and flying high end C's, D's & 2 liners. For more details and information on SIV training, or reserves and recovery techniques, email info@skyoutparagliding.com or Jocky@jockysanderson.com.