

## **Survival Skills for Canopy Control** **A Seminar by Performance Designs, Inc.**

I. Avoid landing accidents by doing all you can to eliminate landing off the DZ. As soon as you're open, evaluate the spot. When faced with a bad spot, quickly find out how far you can go by using the accuracy trick. You can greatly extend your parachute's capability to get you back to the DZ by learning how to use the entire control range to your advantage. The accuracy trick will help you learn how to quickly choose the best toggle or riser position for any bad spot. Why deal with unfamiliar hazards off the DZ? Avoid them through better canopy control.

**A. The accuracy trick defined:** Find the point on the ground that doesn't move.

1. Choose a point on the ground in front of you. If it seems to move towards you (the angle gets steeper in your field of vision), then you will fly past that point. If the point seems to move up or away (the angle to the point gets flatter in your field of vision), then you won't make it that far, unless something changes. If you keep looking between these two points, you will find one point on the ground that does not appear to move in your field of vision at all. (The visual angle doesn't change.) I call that point the "special point" that doesn't move. The visual angle to all other points on the ground seem to move outward from this point as you travel towards it.

2. If the winds never changed, and you never moved your toggles, you would end up crashing into the ground right on that special point! If the winds do change, you can tell right away because the special point that wasn't moving will start to move as soon as the winds change. That means there is a new point that doesn't move. A new special point replaces the old one. That special point will also start to move if you change your toggle position.

**B. Using the old accuracy trick to your advantage:**

1. When you have a tail wind and the spot is quite long:

a. Find the toggle position that would take you to a point furthest past the DZ. Then you will arrive at the DZ with the most altitude (and most options) remaining.

b. A simple rule such as, "On a long spot with a tailwind, fly half brakes," may be better than nothing, but it is far from ideal. To avoid the off airport landing, you may need better performance than a simple guideline can give. With a strong tail wind, it is likely that going to deeper brakes will help even more, but how much brakes? Use the accuracy trick to choose what control position works the best in the particular tailwind you have at the time: Find the special point, then add some brakes. See how you have a new special point as you change the toggles? If the visual angle to the new point is flatter, you are doing better. The visual angle to the old point will get steeper and steeper. Now add some more brakes. If your field of vision changes again just as described, then you're doing even better. Each time you change the toggles, (or each time the wind changes), you will have a new special point. Add more brakes. You're flying really slowly now. If the visual angle to the new point is steeper, then you're not doing as well. If this is the case, the visual angle to the old point will get flatter and flatter. So reduce the brakes back to the optimum.

2. If you have a tailwind coming slightly from one side, and you have a long spot, quickly choose the right crab angle to fly a straight path to the DZ.

a. You've turned towards the DZ and have chosen the best brake position that would take you to a point furthest past the DZ by using the accuracy trick described above. You can draw an imaginary straight line between you and the special point, through the intended landing point. If you start drifting off this line, immediately make a crab angle that will keep you on this line. See how the visual angle to the special point changes as you create the crab angle? Adjust the brakes to put that special point in the best position again. If you were really deep in the brakes, you will probably need less brakes after you create a crab angle.

b. Do not "home" back to the DZ by pointing straight at it while drifting sideways. Since the crosswind will blow you slightly off the wind line, you will likely readjust your heading again and again to point back towards the DZ, without ever counteracting the crosswind at all. This means you will be flying a long arc back to the DZ. The quickest way back is a straight line, so crab rather than home!

3. What about a headwind on a long spot?

If you have a headwind, the special point that doesn't move will be quite close to you. If you need to fly past this point to get to a safe landing area, you will probably need to use front risers. (Make sure your canopy is quite stable on front risers before using this technique) How much front risers? Use the accuracy trick to find out! Try a little front riser and the special point will move. (The angle will start changing). Try a little more and it will move again. Try a little more. Did the point move the wrong direction? That's too much front riser. See how this method works to determine the best control position in any bad spot situation?

### **How about a headwind coming from slightly from one side?**

4. Don't forget to leave yourself plenty of safety margin.

Use the accuracy trick in this way to get back to a safe place, but be careful to avoid fixating on this technique so much that we forget to use our safe options while they still exist. Make sure you leave yourself plenty of altitude and maneuvering room to plan a safe approach and landing.

## II. Learn to Fly Defensively

A. Defensive flying has two basic parts:

1. Developing such high skill that you get to the ground safely in spite of the stupid things people are doing all around you.

2. Developing such good judgement that you make your decisions in a way that helps create safer situations for yourself and others.

B. Stage the approaches to avoid heavy traffic at landing time.

Many of the worst accidents are collisions that occur at landing time, often because there is just too many canopies going too many directions to be safe! Staging the traffic can help reduce this risk.

1. To create more separation from other traffic, after opening decide quickly whether it is best to float or dive, assuming the spot is good enough to allow for some maneuvering. The goal is to prevent a high frequency of landings occurring in a short period of time. Less traffic density means less chance of an accident. This is similar to the idea that eliminating tailgating reduces the chance of accidents on the highway. To stage the approaches to the landing area, you must look way ahead and predict how the traffic will arrive at the landing area. Then, adjust your flight path so that you have as little traffic as possible when you are landing. The more people on the load using this

technique the better! Noticing heavy traffic when you're already on final approach is too late. Planning is the name of the game.

## 2. How do you stage the approaches?

First, look all around you after opening. See where everyone is. Ask yourself two questions: Are you near the top of the bunch or near the bottom? Is your canopy loaded more heavily or more lightly than the others? Then:

a. If you're more towards the bottom, and have an average wing loading for the group: You should land as soon as possible. You're trying to stretch out the time period that all the landings will occur by getting the landing process started sooner. If you don't do this, you may start crowding up the traffic behind you, just like a car driver would if he drove slowly in the fast lane.

b. If you're more towards the bottom, but have a big floaty canopy: The faster traffic will probably catch up and pass you. Where would you prefer this to happen? If you dive down and try to set up on final approach early, you will probably be passed during your final approach. In this case, assuming the spot is good, it might be better to float in the brakes right from the start. This will force the faster traffic to pass you while you are still quite high. Being passed up high is safer than being passed on final approach.

c. If you're more towards the top: You should try to float in the brakes. You're trying to stretch out the time period that all the landings will occur, by landing later. This is easy if you are on a larger floaty canopy.

d. What if you're more towards the the top, but you have a high wing loading? If you're loaded heavily, you can still probably float in brakes quite well. Try to stay up with the big floaty canopies, until you find the biggest gap in the traffic that is below you. Then you fly down and fill that biggest gap. That gap is usually just in front of the big floaty canopies.

## C. Learn the habits of others.

Anticipating the actions of others will help keep you out of trouble. Here are some examples:

### 1. The indecisive slow-poke:

This is someone with a big canopy that likes to do sashays while in the final approach area. If you're flying a much faster canopy, don't follow him on his downwind leg. You may get stuck behind him, needing to pass him on late final. The problem is, you may not be able to predict where he will be when you pass! Better to pass him earlier on, or turn your base leg early, landing more up wind than him. Perhaps you can land somewhere else. Just don't cut him off, because he might get overloaded by the whole thing and make a mistake, causing an accident.

### 2. The last second hook turner:

This guy loves to do low toggle turns, way lower than you're willing to risk. If you're following him back from a bad spot, don't wait for him to turn into the wind before you do! You'll probably be turning lower than you want to be! If he is following close behind you and below you, he might be obstructing your turn into the wind. Remove yourself from this situation while there is still plenty of altitude.

### 3. Have you ever known someone who likes landing downwind for fun?

In today's jumping environment, you have to be ready for anything, so keep lots

of options open.

D. Diffuse the hot landing area by taking the initiative to land somewhere else.

Walking is healthy! Its better than being carried back on a stretcher. By choosing to land somewhere else, rather than joining into the already crowded traffic on final to the "cool" landing area, you'll make it safer for yourself, as well as making the "cool" landing area a little less crowded for the others.

E. Check the Spot Early During the Skydive

Many marginal spots are made worse by aimlessly wandering around for a few seconds while figuring out where you are. If you can do so quickly, check the spot during climb out if you're a floater waiting for others to climb out. Check it if you have an idle second or two on during freefall. Checking the spot early and frequently will give you advance warning of a bad spot. You will know right away which direction to fly the canopy. You might even decide to leave a touch early, to start getting safe separation sooner and therefore permitting a little higher opening too.

F. Improve Your Tracking

You'll get safe separation sooner if you improve your tracking. Then you could deploy your canopy higher and avoid problems with bad spots. This will help you avoid the off airport landing. You can also get more separation, which will reduce chances of a collision during opening.

1. How much separation is necessary?

The higher the wing loading on the load, the more separation is required. Most people are way too comfortable with way too little separation! You should be able to have an off heading opening facing directly towards another jumper and still have enough separation to allow for a rear riser turn to avoid a collision. Blaming off heading openings for canopy collisions is a major cop-out.

2. To improve your tracking, first improve your attitude: be dissatisfied!

You must be dissatisfied with your present tracking, or you will have no real incentive to improve. Satisfaction with your tracking is a trap and an ego protection device. This ego protection device helps you make your bad excuses for poor tracking more believable. One bad excuse is, "That jerk tracked right over my head when I was ready to pull." Really? Or did you track too steeply and not see where you were going? Be dissatisfied and you'll get constant improvement.

3. With your attitude changed, now experiment with technique.

Many people have not really experimented with body positions for tracking, so you often see poor tracking. I suggest that you occasionally devote an entire skydive just to tracking. You'll have plenty of time to experiment. Make sure you track away from the line of flight, to avoid conflicts with other jumpers.

4. Avoid these common errors:

a. arching. This is OK for a beginner, but it causes a steep track.

De-arching makes the track flatter. Try bending a little at the waist.

b. knees and ankles bent. This slows the track, making it mushy and steep. Straight knees and pointed toes are better, and they should push down onto the relative wind.

c. arms up, streamlined with relative wind. This causes a steeper

track also. The arms should be pressing down onto relative wind to make the track flatter.

d. legs and arms too close together. This does not help the speed much, and usually causes difficulty avoiding a rolling motion side to side.

A slightly spread position, with feet almost shoulder width and hands 6"-12" from torso is better because it aids in stability and makes it easier to deflect more relative wind.

5. When you leave a formation and track up and away, rather than down and away, you're starting to get the hang of it! On most jumps the fall rate is fast while doing RW, and the body is arched. Since the track should be de-arched and flat, a good track may actually have a lower descent rate than the formation!

### III. Conclusions

I have not covered reducing the risks of normal landings and swoop landings because that will be addressed in a different seminar. As you can see, I believe that most of the canopy survival skills are a combination of improving skills and developing better judgment. Because of my emphasis on improvements, there can be no end to this process, and no real conclusion. I do not wish to fall into the too common trap of thinking that I've completed my learning process and I'm safe from harm. I've seen that this is a deadly trap. That is why I would like to encourage you all to share your ideas on the subject with me. I hope I have presented to you some thought provoking ideas and concepts that you can use to help you reduce the risk of accidents at your DZ.