CANOPY FORMATION (CF)

CONTENTS

1 GENERAL

Canopy Formation (CF) may be described as the intentional manoeuvring of two or more parachutists under canopy in close proximity to one another. The most basic manoeuvre in CF is the hooking up of two canopies in flight. This formation is known as a "Stack". Night CF, large stacks, plane formation, and other advanced relative manoeuvres are now being accomplished by experienced Canopy Formation Skydivers. The increase in this facet of sport parachuting has made the need for guidelines vitally important.

Like freefall formation skydiving, the concept of CF is that of smooth flow and grace between two or more jumpers and their canopies. Collisions that result in deflated canopies or entanglements, fast closing speeds, and sudden break-offs are potentially very dangerous, not to mention aesthetically undesirable. Entanglements between two or more canopies in flight are the greatest danger in CF, for they can easily result in serious injury or death.

The purpose of this section is to recommend certain procedures that experienced Canopy Formation Skydivers have determined to be safe methods of conducting aerial manoeuvres under canopy

2 EQUIPMENT

Correct equipment

- 2 x hook knives (“Jack” type knife is preferable)
- Cross connectors or stirrups (recommended for larger single dimension jumps only)
- Helmets that do not restrict hearing, with no hook-up points and with quick release catch (optional for D Licence.)
- Gloves
- No sharp hook-up points on any equipment (altimeter mounts etc.)
- Shortened bridle cords or retractable pilot chutes
- Compatible canopies (preferably purpose designed for CF)
- Functioning altimeter
- Square reserve
- RSL disconnected (if fitted)
- Puff type reserve handle (recommended)
- Reserve flap cover (recommended)
- Foot and ankle protection

Note: Consider pro’s and con’s of using AADs.

3 PROCEDURES AND RULES OF THE SKY

3.1 BRIEFING

Ensure that all jumpers on the load are capable and are briefed as to the dive sequence and safety procedures.

Ensure that the pilot is briefed as to what you are doing (warn other air traffic).

The following points should be covered:

- Exit order
- Time between exits
- Length of delays
- Designation of base/pin
- Order of entry
- Direction of flight and techniques of rendezvous
- Docking procedures
- Formation flight procedures
- Verbal commands and other communication
- Break-off and landing procedures
- Emergency procedures

3.2 GENERAL FLIGHT

- Stay out of free fall air space
- Only land formations in perfect weather conditions
- Never fly in front of the formation
- Never lose sight of the formation (dive turn out on front risers if you do)
- Steer clear of turbulent air
- Standard commands:

– UP	apply brakes
– DOWN	front risers
– GO	break-off/go
– CUTAWAY	self-explanatory
– DROP ME	drop canopy
– PLANE	commence planing
– HOLD ME	hang on, don't drop
– CLEAR NOSE	clear your canopy's nose
– ALTITUDE	check altitude
– TO ME	turn to me
– HEADING	steer towards the DZ
– SASHAY, LEFT, RIGHT	self-explanatory
– BRAKES	apply brakes

NB: use person's name to avoid confusion

- When a collision is imminent, TURN RIGHT
- Do not dock on, transition, or break formations below 1500 ft

3.3 DOCKING ON FORMATION

- If the bottom jumper has crossed legs, do not dock
- Do not dock on a formation that contains a collapsed canopy or on a formation that is oscillating
- Do not dock with sideways motion to the formation
- Avoid hard and fast docks
- Never overshoot the formation and try and dock from the front
- A centred, high line-dock is preferred, otherwise a centred body-dock (avoid off-centre docks)

3.4 WRAPS

- Climb out of lines and/or canopy as quickly as you possibly can, preferably prior to the wrap settling
- Protect your handles
- Establish communication and do not panic
- The wrappee (person in the wrap) is in command (if he can communicate) or else the person with the best visibility.
- Maintain altitude awareness
- Never drop a person that is in a wrap unless requested to do so: **hang on with all your strength, someone's life depends on you doing so.**
- Only drop a collapsed canopy when it is clear of traffic below
- Only cut away when the bottom is clear and you have been instructed to do so by the wrappee
- Only cut away when you are totally free of any wrapped canopy or lines and open reserve when clear. If too low, get out as much canopy as possible, perhaps even without cutting away.
- Once you cut away from a wrap, freefall for several seconds (if your altitude allows you to do so) so as to ensure nothing drops into your reserve.
- Preferably do not cut away below 1000 ft: make a call as to whether the canopy combination can be landed with a chance of survival.

Wraps are discussed in more detail in paragraph 6: Emergency Procedures, below.

3.5 BREAK-OFF

- Break-off above 1500ft (downplane above 500ft due to automatic separation inherent in this formation)
- Establish communications before break-off
- Break-off in an orderly fashion, alternating in direction, staying aware of other traffic
- Ensure pilot chutes are not entangled, before break-off
- Lift your canopy off the lines by applying brakes (i.e.: don't drag across) before turning away from the stack
- After break-off, ensure that you know where all the other canopies are until landing.

3.6 PILOTING FORMATIONS

- Communicate with the formation you are piloting
- Avoid radical manoeuvres
- Do not stall your canopy
- Maintain heading
- Always stay in the vicinity of the DZ

3.7 LARGER FORMATIONS

- Keep your nose clear (unrolled)
- Control washing canopies:
  - Full drive on top
  - Control specific canopies using some brake
- Control oscillation:
  - Do not pull front lines forward while planing (causes noses to roll)
  - Plane evenly to avoid oscillations
- Be particularly aware of traffic when lining up to dock and when breaking off
- Communication to be passed, person to person, up and down the formation
- Be aware of pilot chutes being sucked forward by the burble
- Even tension ensures smooth flight
- Never hit a large formation hard or from the side
- Be aware of canopies stalling within the formation
- Never drop a collapsed canopy or a wrapped piece until the bottom is clear

3.8 NIGHT CF

- It is recommended that night CF be planned for full moon evenings
- Jumpers should wear light coloured clothing.
- Strobes are not recommended, as they interfere with night vision and depth perception. Constant beam red lights are preferred.
- A torch attached to the hand/wrist is recommended so that it is constantly pointing to and illuminating your canopy while flying.
- Other night jump PANAM MOPs will apply.

4 TRAINING PROGRAMME – BASIC STUDENT EXERCISES

4.1 GROUND TRAINING – CF BASICS

The student is encouraged to engage in discussions throughout the training programme pertaining to the following:

- **Survival -** How, When, and Why to cut away, or ride it.
- **Air Awareness -** centre/scrimmage line approaches.
- **Docking -** lockup, centre, wing top centre, or end.
- **Linework -** trim, tension, float, & body position.
- **Riserwork -** front and rear, speed & finesse, w/toggles.
- **Planes -** Involuntary dancing, line lengths, & float.

- **Break-off -** single, pairs, starburst, & unintentional.
- **Dirt diving -** planning, rotation, speed, & sequential.
- **Specialty formations -** parabatics & possibilities.
- **No contact flying -** enjoying perfect relativity.
- **Grips -** catching, delivering (docking), & burble effect.
- **Landing on the drop zone -** spot, piloting, & clouds.
- **Large load organising -** multiple aircraft.
- Doing **CF** at a primarily **freefall drop zone**

4.2 DAY ONE JUMPS

Note: The first dive must be performed flawlessly by the coaches, in the specified sequence. Otherwise, student confidence may suffer.

Jump 1 - Introduction

The student exits first and is promptly docked on top by Coach A. Coach B docks on the student from below, on Coach B's centre cell. The student will catch Coach B's centre cell and take foot grips in his centre lines. On command from Coach B, the student drops the grip. Coach B will re-dock on the student, approaching from the right side. Emphasis should be placed upon the student's technique in properly and smoothly catching Coach B's centre lines and getting quick foot grips, then returning to toggles in hands.

Coach B is then released by the student, and docks the student from the left. After the third dock by Coach B, the student then releases his grip on Coach B and then retreats when Coach A releases him.

The two Coaches shall then form a biplane and the student will set up low, on centre, and float up for a centre dock.

Jump 2 - Base Setup Repetitions

Coach A exits. Student follows 5 seconds later. Student positions canopy next to Coach A. Coach B positions himself behind and below. Student leaves Coach A and positions himself next to Coach B. The Coaches continue to provide various approach angles for the student to practice.

Jump 3 - Sashay Wing Rotations - No Grip

Student exits first. Coach A docks right wing. Student turns out to the left and back, then down and over to dock left wing on Coach A. Coach B then docks left wing on student. Coach A leaves and student turns out to the right and back, then down and over to dock as right wing on Coach B. Coach A waits for student to dock. Coach A then descends to make contact as right wing on student.

Jump 4 - Sashay Centre Rotations with grip

Student exits first. Coach A docks the student on top; Coach B docks student on bottom. Rotation begins with emphasis placed on keeping the formation on heading.

Jump 5 - Tri-Plane piloting exercise

360,180, & 90-degree turns. Emphasis is placed on recognising formation appearance, taking proper grips, and observing the leading edge characteristics of other canopies and how to handle them.

4.3 DAY TWO JUMPS

Jump 1 - Top Dock, Plane - Repetition

Student spots the jump run. He exits 3 seconds after Coach A to set up for a top dock. Coach A follows student. Emphasis is on keeping the student's focus on Coach's canopy leading edge. The Coach's leading edge should be kept level with the student's body while the student approaches

The student will be given every opportunity to complete his top dock. After the dock, the formation heading is changed intentionally. The student then descends the Coach's lines to form a bi-plane. Coach B sets up behind, low and to the side on heading and the student leaves the top to go back and get him.

Jump 2 - Stack-Plane-Side by Side Repetition

A Down-Plane is performed at the conclusion of the Repetitions. Student is positioned on the bottom at the beginning of the exercise. Emphasis is on smooth, clean docks, creating smooth planes and smooth side by sides with clean break-offs and quick comebacks. The downplane follows an onheading side by side, flying at 3000'.

Jump 3 - End to End, top or bottom

With the student at the leading edge of Coach A end cell, the student taps the outside edge of Coach A canopy with his foot. Then he flies towards the opposite end cell without passing it with his foot. Then he flies towards the opposite end cell without passing it, and taps it with his other foot. Then the student returns to the opposite end cell without going past. Coach B is relative and preventing him from going past Coach A end cell (Coach B is 1/2 span distance from Coach A, level with student, on heading). Then student Sashays out across, back & down into a wing position on the bottom of Coach A and flies from end cell to end cell on the Coach’s body. The Coach will then sashay into a wing position on the bottom and the dive repeats. Emphasis is placed upon flying relative to the Coach.

Towards the end of the dive, with the student on top, the student uses a foot-grip only walking method to get to the other side of the canopy, while maintaining his heading, and he practices until break-off.

Jump 4 - Wedge Rotation - No Grip

Student starts as left wing, then rotates to the pilot position, then rotates as right wing, then pilot again, then rotates as left wing, etc. Emphasis is on proximity flying with contact, where required (You can place your canopy on his hip ... but he keeps his legs together and away from any grips, when he rotates as wing on you, you let him touch your body at the hip more or less, but do not take a grip - just fly relative). From the pilot position, the student learns to rotate diagonally across the top skin of the adjacent canopy and down, taking the wing position (as in dive 4 with coaching by Coach B). In the wing positions, the student is encouraged to make contact with his canopy end cell on the Coach's waist area, while staying to his side of the centreline of the pilot.

4.4 Day Three Jumps

Jump 1 - Three Stack Rotation

Emphasis is placed on over-the-top rotations, staying on centre and docking with minimal momentum.

Jump 2 - Wedge Rotation with Grips

Emphasis is placed on promptly acquiring grips, preferably with feet *only,* and maintaining the proper position relative to the other canopy. Hence the hand grip, *if used,* must be quickly obtained, so that the student can quickly return his hands to his toggles, enabling him to stay relative and on heading. Remember that, when docking as wing, it may be necessary to use both toggles and risers to maintain position relative to the target canopy.

Jump 3 - Tri-Plane Rotations

This exercise involves building a tri-plane. Student is pilot, Coach A second, Coach B third. Student leans forward in his harness and applies brakes to float up, creating a two stack with a third canopy planed (called a "One-Two") formation. He then releases his foot grips and rotates up, back and over the top of the biplane, and uses risers to get his canopy level with the shoulders of Coach B. He then docks on Coach B, and applies brakes to plane cleanly. Emphasis is placed on a smooth and timely transition from plane to stack, and risering to shoulder level as described.

Jump 4 - Two-Stack Rotation

Initially, the student will serve as the pilot of a three-stack. Coach A is second. Coach B docks third.

After the initial formation is completed, Coach A drops Coach B. The student keeps his grip and flies his two-stack up, over, down and behind to dock on Coach B. After the student docks his stack on Coach B, Coach B will then release grips and rotate to the bottom of the formation to create another three-stack, with the student on top as stack pi 'lot. The student then repeats the two-stack rotation again. Emphasis is placed upon smoothness, acquiring proper grips, and good, clean riser work.

Jump 5 - Student organises!

Dive ends with a drag-plane with student on bottom!

5 4-WAY ROTATIONS

When using front risers, your movement relative to your target is forward and down. The amount that you move forward versus the amount you move down is dependent on how far down you pull the front risers. It's pretty obvious: Pulling the front risers down will steepen your approach, increase your airspeed and increase your descent rate

For the purpose of this article, the pursuing canopy is considered to be directly behind the target and flying in the same direction. An angled approach can be made by pulling one front riser more than the other.

Adding dive loops or blocks to your front risers will make it easier to grip them. Wearing gloves is a necessity for this and other CF manoeuvres. You'll want to lengthen your brake lines or, like most CF jumpers, use toggles built with a double loop.

This will allow you to keep your hands in the toggles while making riser inputs. Otherwise, you will counteract the affects of the risers.

The idea is to crank in the right amount of front risers in the beginning and then adjust it as you approach your target. Your goal is to position yourself behind and below your target. From there, you might use some of the other basic manoeuvres to close the distance and dock. Pulling and releasing the front risers should be done smoothly.

It's helpful to define three types of front-riser approaches: steep, medium and shallow.

• Pulling a small amount of front risers will increase your forward speed without greatly increasing your descent rate. If you are behind and slightly above the formation this manoeuvre will help you get to a better docking position. A shallow approach is any that doesn't exceed about 30 degrees relative to the horizon.
• Pulling more front riser puts you in the medium approach where both forward speed and rate of descent are greatly increasing. If you are at approximately a 45-degree angle, behind and high on the formation, this manoeuvre will once again help get you to a better docking position. You'll use a medium approach when your target is below you, at an angle of about 30 to 60 degrees.
• Lastly, pulling the front risers all the way down will decrease your forward speed relative to the formation, but it will increase your descent rate to the maximum. This technique is used during the 4-way rotation event, when the top jumper leaves the formation and dives behind and below it to redock. If you need to descend at an angle that's greater than 60 degrees, you'll use a steep approach.

The idea is to begin your approach by pulling down your front risers and holding them steady until your pursuit path stabilises. Calculate where that path is taking you and adjust it as necessary.

All this takes practice, because it's not easy at first to judge your pursuit path. And only practice with your own canopy will familiarise you with how far to pull the risers in any situation. You might even consider practising these approaches on a solo skydive.

The fastest way to learn the front-riser technique is to hire the services of a CF coach. One morning or afternoon of focused instruction will do wonders.

Very rarely will you find yourself directly behind and above your target. Usually you'll be off to one side, or your target will be in a slow turn. In such situations, you'll find yourself pulling one riser down more than the other to create a curving path.

6 EMERGENCY PROCEDURES

The first step towards successfully surviving an emergency situation is to have a plan, prior to the onset of the emergency. It must be a well-considered plan, based on experience gleaned from the wisdom of experts and analysis of fatal errors committed by others. Do not limit yourself to a single course of action, however.

For example: You are wrapped! The canopy is wrapped around your head and the lines are wrapped around your neck. You can't communicate with the jumper below you. Your face is turning purple and consciousness is fading. Your plan was for the guy who wrapped you to relieve the situation by cutting away, since he can't hear you yelling instructions to him. He is supposed to cut away, but he cannot. Unknown to you, he has become wrapped severely and is having his own problems. Therefore, you whip out your trusty Jack the Ripper and lay waste to his canopy, thereby saving your own life.

A primary plan is necessary, but don't limit yourself to a single emergency procedure and kid yourself that it is going to work every time, all the time.

The second step is to practice it. You should practice your emergency procedures so that they become second nature to you. The middle of an emergency is not the time to become confused or indecisive. You should review your emergency procedures prior to each skydive. You should also quickly review your emergency procedures whenever you become involved in a rapidly deteriorating situation. This will replace potentially paralysing fear with action. The middle of an emergency is not the time to become confused or indecisive.

6.1 TYPES OF EMERGENCIES

CF emergencies are divided into two categories, Wraps and Entanglements. A Wrap occurs when a canopy becomes wrapped around a jumper's body. An Entanglement occurs when two or more canopies become entangled with each other.

Wraps

A wrap can be compared in severity to a low speed free fall malfunction. With sufficient altitude, you will have time to consider the problem and solve it. The canopy of the jumper above you, who is wrapped, *should* remain inflated. This gives you substantially more time to deal with your malfunction than you would have during a high speed freefall emergency.

Do not land a modem square canopy with two people suspended under it. You will have incredible forward speed because of the increased wing loading on the still-inflated canopy. Landing impact will be severe, particularly to the bottom jumper.

The rule for wraps: The bottom jumper cuts away first. The top canopy usually remains open, so there **is** no reason to release it. Also, if the person who is wrapped cuts away, (the top jumper), he will go into freefall with the bottom jumpers canopy wrapped around him. That will only make the situation much worse.

Usually, you can extricate yourself from a canopy that has wrapped you by sliding it down your body. If not, then the bottom jumper will have to cut away. That will release the tension and make it easier for you to extricate yourself and get free of the fabric.

Entanglements

An entanglement usually results from one person passing through the lines of another person's canopy. This causes the two canopies to become entangled, with the jumpers dangling beneath the partially inflated or completely collapsed canopies. This situation almost always requires both persons to cut away. This can result in both jumpers being subjected to sudden and extremely violent G forces. Usually, one person is suspended higher than the other.

The general rule for entanglements is for the top person to release first. If the bottom person releases his lines first, the risers may recoil upward and wrap the other person. When the top person releases first, he may impact the bottom person on the way by, but he won't have much momentum.

The top person is usually the one who passed through the lines of the bottom person, and, many times, his canopy will pull itself out of the mess after it is released. This is a bonus for the bottom person.

Sometimes the entanglement begins to spin, and one person will be hanging downward while the other one is orbiting the entanglement. *This spin may accelerate rapidly.* In this situation the orbiter should cut away first. This will fling the orbiter clear of the entanglement and does not alter the other person's orientation to the entanglement. If the jumper who is hanging downward releases first, it can cause the orbiter to change orientation to the mess and could make the situation worse.

6.2 COMMUNICATION

When jumpers become involved in a wrap or an entanglement, *the first* thing to do is to communicate. You need to communicate the altitude, the problem and the plan. When someone has a canopy wrapped around him they may not be able to read their altimeter. In all the excitement they may have forgotten what the altitude was the last time they checked. You certainly don't want them to panic and cutaway. *It is very reassuring to hear the altitude called out every 500feet when you are totally engulfed in nylon.* It can also be encouraging to hear that your canopy is OK.

If you cannot get any response from the person wrapped up in your canopy, *then you should go ahead and cut away.* They probably have nylon across their face or around their neck and can't respond orally. You need to release the tension by releasing your risers.

If you are the person who is wrapped in a canopy, you should communicate that you are working on the situation, if you can. This information should be conveyed at regular intervals. Be cautious of your terminology. Don't say to the other person, "Don't cutaway!", or anything else that could be misunderstood!

Once the decision to cutaway has been made, don't panic. Do it right!

First, get your hands on both handles and insure that you are clear of any lines. You should peel your cutaway handle off the Velcro, but leave the reserve handle in its pocket, If you have a hard pull on the cutaway handle, you can momentarily release your grip on the reserve handle and use both hands to cutaway. Keep your eyes on the reserve handle, so you can regain your grip quickly. Be prepared to do a freefall delay, if you have sufficient altitude.

If there is going to be more than one person cutting away, the first one out needs to freefall for five to ten seconds, *altitude* permitting*!* This will provide sufficient vertical separation for the next person who cuts away to safely deploy a reserve.

The most important thing that can be done to maintain a margin of safety is to *remember your altitude!*

6.3 DOCKING

Most problems begin during docking or break-off. The minimum altitude for docking is 2500 feet.

The minimum safe altitude to initiate a cutaway is 1800 feet. These limits have been determined by years of experience and several fatalities. Respect them.

It is also conventional wisdom that a cutaway initiated below 500 feet has almost no chance of being successful. At that altitude you *may* save yourself by deploying your reserve into the malfunction. It is better to increase aerodynamic drag than it is to accelerate toward the ground in freefall.

What causes wraps and entanglements? Usually, bad docking techniques. The three factors most often involved are speed, (closure rate), angle, and distance from centre. If you have too much speed, your body continues to travel forward after you have docked. The point where the target jumper grabs your canopy remains stationary, but the rest of the canopy continues to move in your direction of travel. The canopy may then lose pressurisation and wrap the person you docked on. Because objects tend to swing in an arc, it is common for the canopy to dissipate its momentum by wrapping securely around the jumper that you docked on.

There are good and bad angles to dock from. Docking from straight behind, a zero degree angle of approach, is the safest angle. Docking head-on is obviously the worst angle. A head-on dock can result in injury.

Docking with your canopy heading 90-degrees to the target jumper's heading will still give you too much speed. The most efficient angle is 45-degrees to the side of straight behind. Docking unintentionally with an end cell is more likely to generate a wrap than docking with a centre cell. These three factors combine to make a dock safe or unsafe.

6.4 FORMATION FUNNELS

Another cause of wraps and entanglements is when the formation "funnels." This can be the result of the unanticipated collapse of a mismatched or misflown canopy. It can also occur if a canopy in the formation stalls.

In a plane formation, the nose of the canopy below you is pushing on your brake lines. Your canopy can stall if you apply as little as half brakes.

If someone docks and wraps the corner of a formation, it can cause part of the formation to funnel. It can also funnel at break-off because the trim of the formation changes as canopies leave it and the stress distributed throughout the formation changes.

Another problem is carelessness. Some people don't look where they are going. You should *Always* look before you turn. Don't fixate on the formation. After all, it *should* be behind you.

(Many people have gotten wrapped on a freefall jump by not looking where they were going, after opening. If you are looking at your toggles right after your canopy opens, you may experience a sudden and violent encounter with someone else who is doing the same thing).

6.5 AVOIDING PROBLEMS

What can we do to prevent wraps and entanglements? The foremost preventative measure is thorough planning. Perform a thorough dirt dive. That is the time to share techniques that will work for the type of formations and transitions that you are planning to accomplish.

CF is very three dimensional and, therefore, quite complex. Participants can easily miscalculate a manoeuvre, if they are trying something new. Don't just dirt dive the formation. Share what you know. If someone is approaching too hot, you can spread out your arms and prevent the canopy from wrapping you.

Even if it does wrap, you can extract yourself easier because you won't be cocooned so tightly. Nylon will stick to itself like a Chinese finger trap when it is wound tightly around you. If you can give it some slack it will come loose. You can grab the area of nylon with the most tension, then lift it, if only an inch, then as you let it down it will loosen and start sliding down your body.

If you are in a formation and someone below you gets wrapped, hold on to him until he can sort things out. Do not drop them unless they expressly request it. This gives them more time and less to worry about, as it will keep their canopy on heading.

If you are planed on the jumper above you and they have become entangled in your lines, you can apply light front-riser pressure. This re-tensions your nose and tends to keep your canopy from spinning. They may then be able to slide up your lines, which will allow their canopy to stay inflated. This front risering must be done initially, as the problem occurs. Once the two canopies become entangled, one or both of you will have to cut away.

If an end cell wraps around your foot, it can be difficult or impossible to release. You can't lift the jumper's weight up with one leg. Attempting to do so can injure you. As a canopy starts to wrap around your foot, you should stick the other foot in there, also. This will enable you to lift the jumper who is fouled on you and will allow you to get your hands on the canopy to relieve the tension on your legs and feet. This can help prevent injury.

If you have just one foot wrapped, you can grab your risers and turn yourself away from the wrapping canopy and backwards under your canopy. Now you will have a 180-degree wrap around your ankle instead of a 360-degree wrap. It should then be a lot easier to shake off.

If the canopy is collapsing and reinflating, you don't want to fight it. Have the bottom person cut away. The snatching action of the rapidly inflating-deflating canopy can really damage your ankles.

The best strategy to prevent or reduce the possibility of wraps and entanglement is to wear proper equipment. All participants should wear thin, leather gloves, shoes, socks and long pants or a jumpsuit. Wrist mounted altimeters are not recommended. Your RSL should be disconnected. AADs are fine. If you are too low and going too fast, you want your reserve coming out, regardless of the circumstances.

You need a CF parachute to do safe and sane CF. The time to learn CF is *not after* completing a freefall opening at 2000 feet on your little micro-lined skyrocket. Learn it from an expert, using the proper equipment, and at the proper altitude.

7 CATEGORY TESTS

The successful completion of each category test shall be logged in the student's logbook, and signed by his DZ Chief Instructor/SO.

CAT I

The student shall have completed the Intermediate Skills Programme and at least 50 jumps on a ram air canopy as well as have been cleared to participate in CF by a competent Cat III CF Coach before proceeding to Cat II.

CAT II

- The student shall have successfully completed the following task on two different skydives:
  - 3 successful bi-planes as the passive partner (pilot) and;
  - 3 successful bi-planes as the aggressive partner (pin).

The above two dives must be done with different CF Coaches.

- Demonstrate a working knowledge of the appropriate safety regulations and safety doctrine associated with CF.

- Have successfully landed a bi-plane formation both as pilot and pin.

CAT III

• The student shall have successfully completed the following task on a single dive:
  – A five point rotation dive where the student docked 4th on the original quad-plane.

• On this dive the student should have demonstrated:
  – Safe docking techniques.
  – Correct communications during the dive.
  – Ability and understanding of piloting a quad-plane.
  – Safe rotation technique
  – Altitude awareness and must indicate the break-off at the correct altitude.

8 LICENCE REQUIREMENTS

A Licence

As per Section 2 (PANAM MOPs)

B Licence

As per Section 2 (PANAM MOPs)

Note: Category III test must be done in accordance with point 6 above.

C Licence

Must have met all C Licence requirements as per Section 2 (PANAM MOPs) and
• Have successfully closed lower than 4th on three separate occasions in plane formations of six or larger.
• Have successfully closed 8th on at least one occasion in an eight-plane formation.
• Demonstrate the ability to successfully pilot a plane formation of six of larger.
• Have participated in at least 3 separate 4-way rotation jumps in which the jumper did three successful rotations.
• Demonstrate a working knowledge of safety doctrine associated with two-dimensional formations.

D Licence

Must have met all D Licence requirements as per Section 2 (PANAM MOPs) and
• Have participated in at least three successful 4-man bi-dimensional formation jumps.
• Have participated in at least three plane formations larger than eight in any position.
• Have participated in at least one eight person bi-dimensional formation.
• Have participated in 3 four way diamond formations, one as pilot, one as wing and one as the bottom jumper.

9 COACHES

The coach rating is designed to give a formal qualification to those who teach Canopy Formation jumpers up to Cat III level. All applicants for coach ratings must be recommended by a CI, and endorsed by the Canopy Formation sub committee of the PANAM (see Form 19).

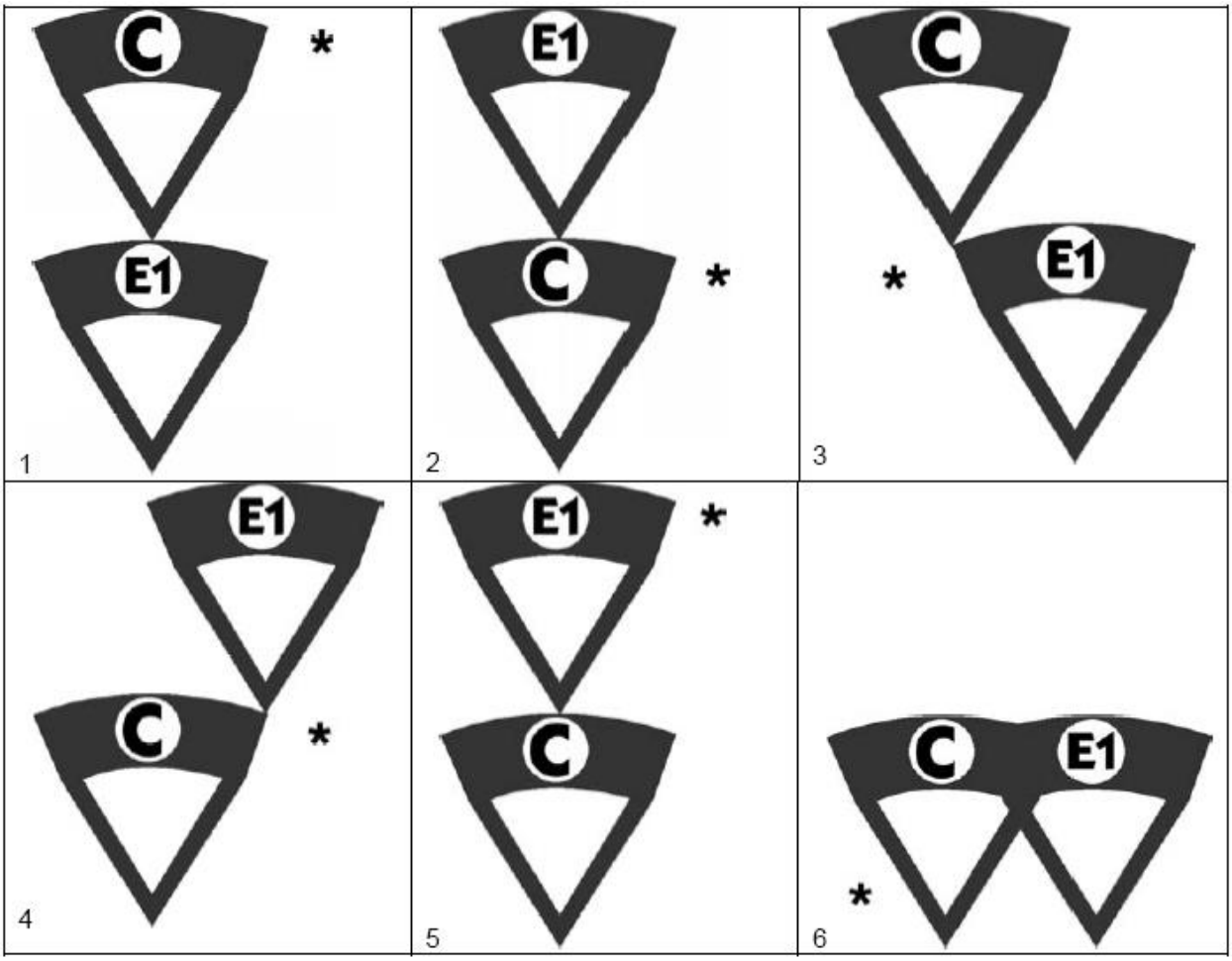
An applicant for a Canopy Formation Coach Rating must:

• Have a minimum of 300 jumps (100 of which in the previous 12 months).
• Hold a PANAM C or D licence.
• Have successfully completed a PANAM approved Jumpmaster, Static Line Instructor, or AFF Instructor Course
• Have received a recommendation from an existing coach.
• Have observed a CF first jump briefing.

- Have observed all Category II and Category III briefings.
- Have given at least one first jump briefing, under supervision.
- Have given at least two other Category briefings, under supervision.
- Have completed the following 3 evaluation jumps:

- **Jump 1: 7000 ft: 2 way**

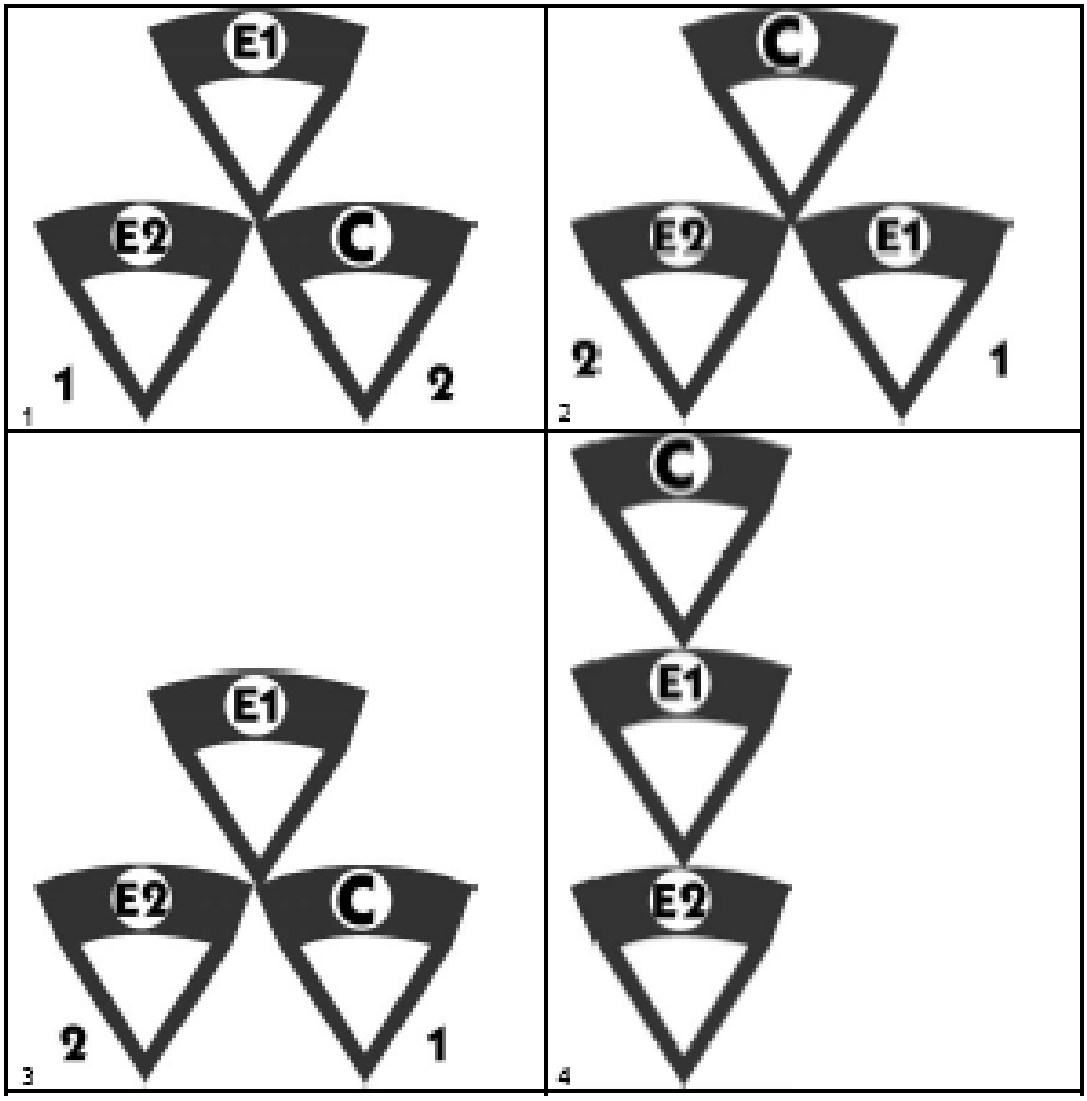
The candidate must show a thorough understanding of the equipment
The candidate is to brief the existing coach on the exit and do a pilot briefing and the physical spot.
The existing coach exits first, candidate second and then top dock the existing coach.
The candidate is to rotate on the existing coach and to do a centre low dock.
The existing coach rotates on the candidate and do a wing dock on the candidate (own discretion to be used), the candidate must maintain the heading for ten seconds.
The candidate is to rotate and do an opposite wing dock and fly this formation for twenty seconds.
The existing coach is to slide across and take centre dock, and then the candidate should initiate a side by side and land the formation.



- **Jump 2: 10 000 ft: 3 way**

The candidate must show a thorough understanding of the equipment
The candidate is to brief the existing coaches on the exit and do a pilot briefing and the physical spot.
The existing coaches should exit first and do a wing dock, the candidate is to dock the as second wing.
Existing coach 1 to rotate and dock wing candidate, existing coach 2 to dock as second wing, i.e. candidate is piloting the stack.
The candidate (pilot) to rotate and wing dock and the existing coach 1, existing coach 2 to dock as second wing.
The formation should end with a three stack spiral with the candidate as the pilot.

The candidate is to land at the existing coaches' discretion.



- **Jump 3: 10 000 ft: 4 way**
The candidate must show a thorough understanding of the equipment
The candidate is to brief the existing coaches on the exit and do a pilot briefing and the physical spot.
The participants are to exit competition style, with the candidate as the base, and the existing coaches should build a 4-stack.
The participants should do twelve rotations, no more, no less.
The candidate should spiral the 4-stack as pilot doing a staged release.

To remain current as a Canopy Formation Coach the rating holder must:

- Have performed at least 10 Category jumps in the previous 12 months.
- Have performed at least 20 Canopy Formation jumps in the previous 12 months.
- Attendance of a CF sanctioned coaching seminar in the previous 12 months is highly recommended.