



**Australian Parachute Federation Ltd**

# **Star Crest and Bigway Guide**



Notes to help skydivers achieve their Australian Star Crest (ASC)  
and perform well on larger flatfly formations.

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**STATUS: EDUCATIONAL**

## About This Publication

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This guide is offered free to APF members. It was originally produced by Kelly Brennan and has been adapted by the Australian Parachute Federation Incorporated (APF) for circulation to APF members. If you want more information or copies of this guide for yourself or your friends, please ask the instructional staff at your DZ or contact the APF Office.

**Warning**  
***Parachuting and flying in parachuting aircraft can be dangerous.***

## Version Control

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It is important that members refer to the current version of this guide. This guide is current only at the time of printing by the APF Office. These notes were first written December 2011, revised August 2013, August 2014 and minor amendments made in 2015 and 2016. Current versions of APF manuals, guides, the Operational Regulations, Regulatory Schedules and associated forms can be found on the [APF website](#) (under 'Publications').

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This guide is not a do-it-yourself guide to skydiving but should only be used while under the supervision of a qualified APF instructor or RW coach. Individual skydivers should check the information in this guide and assess the risks involved before carrying out any of the procedures or manoeuvres described.

## Credits

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This guide was developed by Kelly Brennan for Skydive Nagambie, with tips, advice and ideas from Fiona McEachern, Mark 'Stretch' Szulmayer, Don Cross, Michael Vaughan, P3 coaches, Simon 'Sas' Di Sciascio, Shirley Cowcher, John Swanland, Melissa Harvie, Laurence Garceau and dozens of jumping friends. Photos are from Skydive Nagambie's Star Crest Saturdays, P3 camps and other bigway events. Thanks to every bigway camera jumper who makes us look good!

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## Contact the APF

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## PART ONE: INTRODUCTION

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### 1.1 Using this guide to build your skills

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These notes are designed to help you get in the right head space for your Star Crest jumps; but they don't come remotely close to real coaching or real experience. Use this guide and other material as a useful starting point, then tap into ways of learning while you're at the DZ.

Watch experienced people planning their bigway jumps or debriefing with their videos. Ask your AFF instructor or a local bigway flyer for useful advice and seek out opportunities for coached Star Crest loads.

Boogies and special events are often the best time to take advantage of great coaches and willing players.

### 1.2 What is a Star Crest?

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The APF adds a Star Crest number to your licence in recognition of your proficiency in flatfly relative work. The Australian Star Crest (ASC) allows you to take part in skydives of more than ten people.



### 1.3 Who needs a Star Crest?

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An ASC is essential for everyone on an 11-way or larger, doing ANY type of freefall relative work. That includes flatfly, freefly, wingsuit, tracking and angles (See Op Reg 9.1.3). It's also a prerequisite for any Instructor rating.



***“There’s this beautiful big carpet in the sky that I have to join on to and be part of, and it’s a great feeling!”***

Fiona McEachern, 1959-2010  
Instructor & Bigway Coach

### 1.4 How do I obtain a Star Crest?

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Refer to RS 52, 6.1. You need to dock fifth or later on three separate, successful eight, nine or ten ways. They must be flatfly jumps. You need two Star Crest holders to witness the jump and sign your application form (or two APF FS judges), and your CI verify and sign that you are safe and competent to jump with more than ten people.

***“Big ways have a slower rhythm than the frenetic pace of the competition disciplines and give you a chance to appreciate what we actually do, plus there are so many more friends to share the experience and discuss the dive with afterwards.”***

Mark ‘Stretch’ Szulmayer  
Instructor and Bigway Coach



## 1.5 What can I do after I get my Star Crest?

The bigway world is your oyster once you've done your Star Crest jumps. If you keep up the disciplined flying skills, experienced people will include you in larger formations. It's not acceptable on bigways to crash into a formation, take a death grip on that gripper that you fixated on and hang off the base until it folds. That's why coaches are looking for solid, safe and disciplined skydiving on Star Crest jumps. They're setting you up for bigger and better skydives in future. They're also ensuring it's safer and more enjoyable for the other skydivers who've spent their jump money to help your Star Crest mission!



Western Australian Record Wingsuit Formation, August 2014  
Photo by Paul Morton



## 1.6 Before you start your Star Crest jumps

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The following points are 'Skydive Nagambie' policy, set by Chief Instructor Don Cross, and they are an excellent guide to your preparation for Star Crest jumps.

Check with your Chief Instructor or DZSO on the policy at your drop zone.

### Before you start your Star Crest jumps

- Get your Certificate Class B.
- Re-read your 'Certificate Class B Training Guide' for useful information on body positions.
- Practise 4-6 ways, especially with unlinked exits.  
(As a guide, it's preferred that candidates have done 20-40 of these flat skydives after finishing their 'Class B Training Table'.)
- Practise a variety of exit slots; diving, floating and base.
- Develop safe, efficient and consistent tracking skills.
- Perfect your packing – You don't want off-heading openings with larger groups up there.
- Know your fall rate and improve your range.
- Dress for success! Make sure you have appropriate gear for flat flying and an appropriate jumpsuit for your fall rate. Consider weights, audible alti and full face helmet.
- Practise your 'no momentum' docks – Stop in your slot, take a breath, then take your grip.
- Read our notes for 'Star Crests and Bigways'.
- Discuss Star Crest opportunities with AFF instructors and experienced bigway flyers.

DON CROSS  
Chief Instructor, Nagambie

## PART TWO: TERMINOLOGY

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Different coaches often use different words, but here are some of the relevant basics that you'll need to get your head around.

**Floaters** – Usually exit the aircraft from outside the plane.

**Base** – Usually the centre person or people of the formation, setting the fall rate for the rest of the participants to dock on. A base could be a small linked group, but is often 'free built' or unlinked for larger formations.

**Divers** – Usually exit after the base, from inside the plane, and dive to the formation.

**Line of flight** – You'll already be familiar with line of flight (or aircraft heading) from earlier training, but it has extra relevance for bigways. Formations are usually built on the line of flight, with the base person facing the same direction as the aircraft heading.

**Present, Identify, Intercept** – This means first presenting yourself to the relative air flow when you exit the aircraft. Next you identify the base of the formation. Then you intercept your appropriate point to approach the formation.

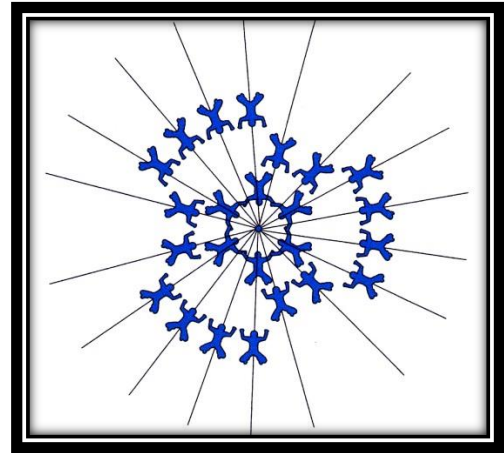
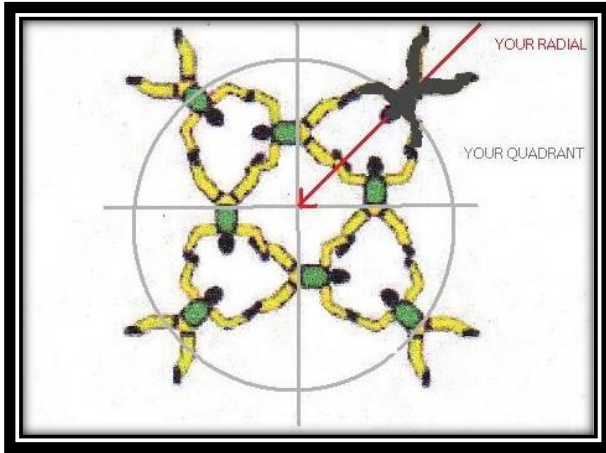


**Sector / Quadrant** – Different terminology is often used for these, but the general idea is the same. It's all about having a zone of your own to stay in, from exit to formation, to ensure a direct approach and minimise the risk of getting in the way of others. Your portion of the completed skydive is often referred to as your SECTOR. This might be a pod or a wacker group. The QUADRANT is your 90 degree zone. You must stay in your own quadrant from the start of the skydive, and then your focus should shift to your more specific approach path.

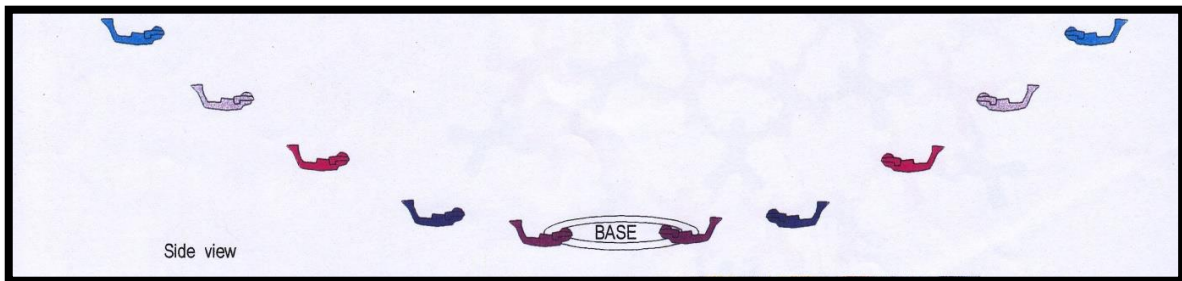
**Sheepdogging** – This is a skydiving verb that's usually saved for larger formations. Just like a working dog stays close to the sheep he's chasing, a skydiver should stay close to the person they're following to the base. It helps you avoid getting lost, and if you really pay attention to the jumper in front of you, it helps you adjust fall rate all the way down.



**Radial** – Your RADIAL is your specific line of approach. It’s an imaginary line from the centre-point of the formation out through your assigned slot, a bit like the spokes on a wheel. To avoid collision, you must fly a disciplined approach on your own radial. The larger the formation, the more specific your radial will be. It becomes even more vital that you stay on your own radial and don’t allow yourself to drift into anybody else’s.



**Stadium** – While the radial is all about the horizontal angle, you need to focus on the vertical angle of approach as well. That’s where the stadium comes in. Some people also call it a wok or a bowl. You must stay on an approach angle that’s above and out from the formation, just like the angle of seating in the MCG. As you approach the base, it’s a bit like you’re moving down the stadium’s tiered seating towards the front row, right on the edge of the action.



You must continually be ready to adjust your fall rate to stay in the correct position in the stadium before you get close to the formation. Most skydivers find it easy enough to drop down a little, but if they get below the angle of the stadium, it’s a struggle to get back up. When you arrive in your slot you become part of the playing field.



**Fly quietly** – This phrase sounds odd, but it’s something worth aiming for. When you look at jumping videos, there are some people who fly wildly and arrive dramatically. Even when they’re in their slot they wobble around and their legs wave. Then there are those who look smooth for their arrival and rock solid in the formation. This is what we mean by flying quietly. These flyers are relaxed enough to make subtle constant changes as needed, but they are rigid enough to strongly hold their space in the air. To achieve this, you might need something simple like an extra two kilos of weight or a bit more effort in pointing your toes to control your legs. Coaches can usually give some useful tips.



## PART THREE: BEFORE THE SKYDIVE

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### 3.1 Dress for success

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Wear a Flatfly RW suit for this skydive, and make sure it's appropriate for your fall rate. Do you need weights to increase your fall rate or a baggy suit to slow you down a bit? If you need to wear lead or a baggy T-shirt to fall relative to others, it's no reflection on your personal flying ability. Extra attention like this is worth the effort to help the whole group fly together regardless of size and shape.

*"Perfect speed, my son, is being there."*

Richard Bach, 'Jonathon Livingston Seagull', 1970

### 3.2 Equipment

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A hard shell helmet is recommended, along with an audible altimeter and a canopy that you are familiar with. Avoid dark visors, goggles or sunnies because they reduce the visual communication between jumpers.

### 3.3 Cameras

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Don't over complicate your own star crest attempts by running a camera. Many coaches nowadays ban cameras for specific slots. For example, cameras on first-row divers add to the risks of hurting people or catching on reserve handles in a crowded exit.



### 3.4 The jump design

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It's usually better for experienced bigway skydivers to design your star crest jumps. Coaches and Load Organisers tend to aim for centre facing skydives, where they can keep an eye on the Star Crest participants. They'll often limit the number of Star Crest seekers on a jump to 2 or 3, and put them in separate parts of the formation.

## PART FOUR: ETIQUETTE AND DIRT DIVE

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### 4.1 Etiquette

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If you commit to a skydive, then be there for the dirt dive. The load organiser is not a babysitter. Do not make them go searching for you!

Wear your jumpsuit to the dirt dive. Everyone needs to visualise the colours of the person they'll be docking on. (If you need to make any clothing/equipment change after the dirt dive, check with the coach first and they will alert the rest of the group before you do the skydive.)

One person speaks at a time. Listen while the load organiser explains the formation and the slots.

If you need extra guidance, ask for it. If you feel strongly about not doing a particular slot, speak up early in the planning, not at the end.

***"...no spitting, pissing, farting or picking your ass."***

Clint Eastwood, 'Any Which Way But Loose', 1978

### 4.2 The dirt dive

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Use the dirt dive to plan every aspect of the jump. A practice pack-up for exit is there for a reason. Be precise in your practice.



During the dirt dive, the load organiser should ask you to take 5 steps back and look at the big picture. You need to be really clear on your position in the formation and you do this by locking in as many key reference points as you can.





*Some large formations, like the 400-way world record, use colour coded sectors.*

Identify the main base person who'll be flying on aircraft heading/line of flight. What colours are they wearing?

- Where is your sector/quadrant in relation to this person?
- Who will you be docking behind and next to?
- What colours are they wearing?

***TIP - Take advantage of people with bright jumpsuits. If everyone in your sector is in black, then use the opposite person in the bright yellow jumpsuit as a key reference point. Tell yourself that your quadrant is directly opposite that person, rather than trying to line yourself up behind a person in black.***

Mark 'Stretch' Szulmayer

Use the dirt dive to plan what order you will get INTO the plane as well as what order you will get OUT of it. Look at the person behind you in the pack up. This is likely to be the person you follow onto the plane. (Don't forget to think about the camera flyer when you're planning the climb out.)

It's dangerous to reorganise people in the plane, so get the seating right when you get in.

Use the flight to visualise your entire jump. Think about where you'll place your hands and feet for exit. How will you present to the airflow? Who will you be looking for in the base? What are your other reference points? Don't waste this valuable pre-jump time with worrying about how you'll go, or perfecting your six-step handshake around the plane. Visualise the sequence, back your own abilities, and move to the door in a confident state of mind.

### **4.3 The debrief**

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Let the coach run the debrief. It is not a free for all conversation or a finger pointing game.

The coach will focus on important points for this group. They might not have time to cover every aspect of every jumper's performance. They might have already spoken to individuals.

If the coach invites others to speak there should only be one person speaking at a time.

Be open-minded about the debrief process. Your recall might be different to how the video and coach saw it.

When it's your turn to speak, be succinct. Focus on what you did well or could do better.

Don't be a victim! Look for ways you can improve your own flying instead of deflecting blame to others.

If you saw something important that the coach might not have seen - like a questionable track or canopy flying - then privately and quietly let the coach know before the debrief.

## PART FIVE: DURING THE SKYDIVE

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***"Big way (and team) flying requires us to fly with a 'strong' body position... Where we can exit strongly onto the air and fly relative to others, fly 'down the tube' in a straight line, holding our position relative to others and a formation even if they move up, down or sideways or even if we get bumped into."***

Melissa Harvie – FS Coach and Mentor



### 5.1 Exit pack-up/stack-up

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You all have to leave together, with minimum distance between each other. That means packing up promptly and properly at the door. Take up as little space as you can, whether you're outside the door or inside. You can't spread out like a four way exit because there are too many people to get out. There should be no gaps between divers and anybody on the outside who looks in should not see any of the aircraft floor. Divers should have upright straight backs and should not be leaning forward. Be strong in claiming your exit space. Don't steal other people's exit space or let anyone else take yours.

### 5.2 Timing

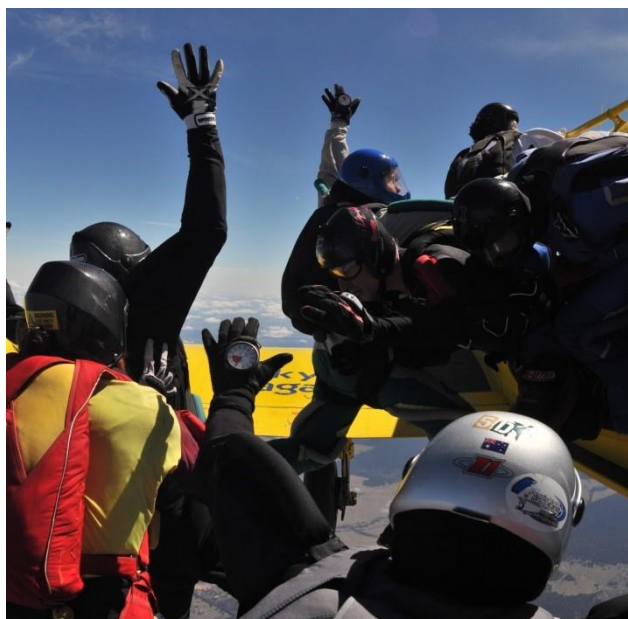
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Watch the exit key and be ready to go WITH the group, NOT a split-second afterwards. Timing is vital. You should be able to touch the person in front of you. In some skydives, a couple of the floaters might be asked to leave a split second early.

### 5.3 Present

---

No matter where you are in the exit, your first aim is to present yourself to the wind, which means getting the wind on your chest.



As a floater, be packed up facing the front of the aircraft, then simply step off and look up at the aircraft. Even if you are a front floater, looking behind you for the exit count (usually given by the centre floater) you must concentrate on presenting your body to the relative wind as your first priority. Your coach will advise how far to launch out and which way to turn after presentation, depending on the dive plan and aircraft.

As a diver, make sure you launch straight out the door, aiming toward the wing, not down toward the rear. For aircraft with a left hand door, like PAC XLs, Caravans and Otters, have your left foot forward and launch off this foot with your right shoulder and elbow high.



If you get a knock and go unstable, then get stable and get on with it! Better still, if you get a knock, don't go unstable at all. If you are presenting really strongly, then you should be able to withstand some incidental contact. Often, if you're pancaked on top of somebody, you can gently grasp them and pop yourself off them.



## 5.4 Identify

Once you are out of the plane and flying, find the base (or base person if the base has not yet built). Use your base references to ensure you are going to the correct place.



## 5.5 Heading

---

The base on a Star Crest jump needs to be on aircraft heading to give the best chance to all participants. Many coaches like to free build bases to avoid the confusion caused when a linked base funnels or veers off heading. Nevertheless, be prepared for the possibility of the base building on a different heading to how it was planned. As you adjust your approach, keep your eyes open for the other jumpers changing their position too.



## 5.6 Approach

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It is not a race as you approach the formation. You need to ensure you're in the correct QUADRANT when you're still well away from the base. It's important that all approaches are in straight lines on the correct RADIALS to minimise traffic. If you rush straight to the general vicinity of the formation then orbit in a search for your slot, you'll cut others off and you'll increase the risk of mid-air collisions. As you get closer, make sure you are still in your STADIUM position, above and out from the formation, with the correct people in front of you and beside you. Keep looking through the centre of the formation and across to your opposite to gauge the fall rate.



## 5.7 Base instinct

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Keep your eye on the base and your other reference points. Let the base build before you dock. Just because all gaps are closed, doesn't mean the base is complete. Count the jumpers in the base. Make sure ALL of them are there before you move in to dock.

## 5.8 Stop above the formation

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You need to stop your approach about 10m out from your slot, at a 30 to 45-degree angle. Assess the fall rate. Anticipate changes as other people dock. Formations usually slow down as they get bigger. It can seem like it is rising towards you. You must match the fall rate, stay above the formation and approach slowly but surely. Stop again 4m out and do the same. Look through and across the formation. Don't fixate on the grip that you're going to pick up.

## 5.9 Stop before you dock

---

Fly to one metre from your slot, at the same level as the formation. Stop your momentum before you get there. Take a breath, THEN move that last small distance and take your grip. This is a no momentum dock. The person you are docking on should hardly feel you are there. That will win you friends on larger skydives!



## 5.10 Dock smart

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If you are docking on an outside leg grip, take the grip above the person's knee. This allows them better control over their lower legs so they can keep flying. Wrist grips are often better than shoulders because they allow everyone to control their own flight better. But don't cover the other person's alti!

**Stay out of the Danger Zone – Don't fly over or under the formation. You could cause a dangerous funnel.**



## 5.11 Keep Flying

Focus on the base and your 'opposite' in the formation. Keep flying your slot rather than hanging off it. There should be no tension. Do not look away from the centre of the formation. Do not look around for people who aren't there yet. Be strong in your position and keep flying. Concentrate on matching the eye-line of your opposite. If you see backpacks, you are too high. If you see bellies, you are too low. If you're on the outer edge of the formation, you should usually be looking through grips, or slightly under them. In large formations, you often spend a lot of time looking at bums and underarms.




***“Best advice – Stay level, fly quiet, know when to let go.”***  
 Mark ‘Stretch’ Szulmayer

Don't 'help' others - Do not reach out to 'help' somebody else. This can lift your side of the formation and start a wave through the whole thing. The best way to help others is to keep flying YOUR slot and give them a solid, reliable platform to take up their dock.

***“A Star Crest is a one point skydive, just doing a 2-way with the person you are docking on.”***

Michael Vaughan, 1969-2015  
 Instructor, Bigway Coach, Australian Champion



## 5.12 If you don't get on

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Make sure you have a plan during the dirt dive for anybody who doesn't get on. It's usually a case of 'Don't give up!' to start with at least. If you're above the formation, keep trying until the break-off height. If you fly well and get close, you will be praised and you will have learnt something new. But, if you rush and take out the formation at break-off height, you are in VERY dangerous territory.

If you're BELOW the formation, keep trying to get up. Most current coaches don't want you to track off early, because it's better to see you in the vicinity of the group and have everyone break off together. Some coaches stick with the traditional idea of getting low people to track early and track further than others. It's vitally important that everyone on the skydive knows the plan.

## 5.13 Body position

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You'll need to be flexible about how you fly your body for bigways. Even if you've spent a fortune perfecting your mantis-style fast and slow fall in the wind tunnel, it's rarely the best body position for bigway. If you've taken side-body grips on a tall person, you'll need to use your body arch (or de-arch) to match the fall rate, because you can't be moving your forearms in or out to do the job. Sometimes you just have to reach out more than you'd like to in order to close a wide gap between people. If you aren't doing your best to fly with the rest of your body, a wide reach could make you slow down and 'pop' above the formation. When you look at large formation photographs, you tend to see more box shapes than mantis.

## 5.14 Break-off and track

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Break off at the planned height. It's always tempting to hang in there for an extra 500 feet if somebody is close. Don't do it. Imagine waiting for that extra 3 seconds, then the last person hurtles in and crashes hard. Suddenly you have ten people in a mega-funnel just at the height when they should have been about to deploy.



Track away from the centre, but don't track straight up the line of flight towards the next group. Depending on the formation, it's not always a 180 degree turn. The aim is a flat, belly to earth track, generating maximum lift and distance. Keep your eyes open for others. Keep your head on a swivel, looking down and ahead, over each shoulder and between your legs. No short tracks. Be obvious when you are about to pull, with a clear wave off.

**Note: Some freeflyers and angle flyers encourage a barrel roll or forward loop to check the sky around you before deployment. This is NOT appropriate on large flat jumps. If in doubt, check with the organiser during the jump planning. The break-off and track are vital parts of the skydive planning. Every participant needs to be clear and consistent.**

## 5.15 Under canopy

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Like all skydives, keep your head on a swivel from the moment your canopy opens and be ready to avoid other canopies. Don't let yourself get distracted by stowing sliders, undoing booties or other 'housekeeping' issues. On really big formations, these things are often banned. Watch out for other canopies all the way down. If you see other canopies at your level and they have similar flight characteristics to yours, then there's a good chance you could be landing at the same time. Do something to change this up high. Either fly with a little brake to get above the other canopy, or some riser to get below.

Be aware of how your canopy flies. If it's a big, slow canopy, don't try to spiral down to land first. You'll only cause problems for those on smaller faster canopies trying to follow you in. Fly predictably for anyone who may be behind or above you. Fly the designated landing pattern, without sudden turns or braking movements. The aim is a safe landing for all participants. This is not an accuracy jump or a chance to practise your swoop. Once you land, collapse your canopy quickly and watch for following canopies. When it's safe to move, get off the landing area as quickly as possible.

**The skydive is NOT over until you are safely in the packing area.**

## PART SIX: COMMON MISTAKES

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### 6.1 Traffic problems

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People can get confused if the picture is different to what they expected. This might be due to a base not going to plan, or somebody taking a wrong slot, or somebody rushing to their slot and confusing people who were supposed to get there first. On top of creating confusion, it starts getting dangerous when people criss-cross into other jumpers' air space.

### 6.2 Rushing

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It's very common for new players to rush their Star Crest attempt. They feel pressured to perform and want to get on with it. This is what leads to many of the common mistakes listed here. Remember, it is not a race. Every person must do their job equally well for the formation to succeed. If you rush and muck it up, you'll add to the pressure for next time.

***“Number 1 most common mistake: Rushing. Often, star crestees will make 2-3 rushed approaches at the formation. They'll go past it and usually low each time, then come back and rush it again. Taking it easier and slower the first time would easily get them there in time.”***

Michael Vaughan

### 6.3 Hesitating

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We often say that slow is fast, but don't hesitate too much or you'll never get there! Sometimes people are so cautious about rushing or going low that they hang back too far. Sometimes they're so keen to let the base build that they stay way back and the whole thing builds without them. Coaches call this 'being a spectator'.

A better option is 'slowly but surely'. Think of constantly working to halve your distance and close the gap. If you are not 'surely' on your way to your place in the formation, then you need to have a bit more faith in yourself and get cracking.

### 6.4 Going low on the formation

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Ask any experienced bigway flyer about their own 'go low' horror stories. Don't let yourself go there. Stay above the formation and in your stadium position. Don't rush. Stop more than once on your way down to wash off any fast fall or dive momentum. Often people dive like crazy to get there and they only apply the brakes as the formation appears level with them. Then the formation looks like it's shooting up in relation to them. This is because the downward speed still had plenty of momentum that they did not take into account.

When you do stop, do it like you mean it! Hang everything out and flatten out to stop that momentum. If you go lower than your stadium position, then get back up to the correct angle above everything before getting closer to the formation. If you go lower than the formation, move away from it, turn side on and slow fall to get back up to the best approach position. Keep trying. Don't put your head up and look at the formation as this will make you backslide.

***“Number 2 most common mistake: Too low. After going low, star crestees will often come back up level with the formation and start approaching. They often go low again. It’s important to get above the formation to have some insurance.”***

Michael Vaughan

## 6.5 Sliding over, under or around the formation

This happens a lot! The most common cause is that people have too much momentum from their approach. They think they have stopped, but they haven’t washed off the speed yet. That momentum needs to go somewhere and often ends up as a sideways or forwards slide. The victims of this often say *“Just as I got there, the formation turned,”* or *“It suddenly moved towards me!”* You must stop all momentum before you arrive at the formation. To do this, practise moving faster and slower on your radial, without having to slide sideways to come to a stop. When you need to stop, use the most powerful slow fall you can do, putting all your body into it, rather than letting yourself slide.

## 6.6 Reaching

Just like your B-rels and all other formations, reaching will only make things worse. Yet people still do it. They arrive and reach out or down. Or the formation moves and they reach desperately for the grip anyway. You must fly the slot, match the fall rate, and be able to take the grip without reaching. Think of your body as flying the actual slot and the arms (i.e. the grip-taking) as incidental to the process.

## 6.7 Failing to anticipate changes

It’s easy to get fixated on the grip that you have to dock on, rather than the big picture of the formation. The problem is that you then miss changes to the formation, and such changes can suddenly make your slot disappear. For example, people might be docking and the formation might slow down. It shouldn’t, but it might. If people dock hard they might cause the formation to turn or set up a wave reaction which causes the opposite side of the formation to buck and kick. You need to anticipate these changes. Don’t add to the problem. If it slows, don’t reach up and grab your grip. If it turns, don’t let it go underneath you. Wait until it settles, fly your slot, and then take your position.

***“YOU know when YOU are skydiving well in a big formation when nobody else notices you.”***

Simon ‘Sas’ Di Sciasco  
Coach, Competitor, 400 way participant



## 6.8 Docking then clocking off

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Phew, you've made it. You did a long dive, you stopped your momentum and you took your grip. Now is NOT the time to relax. You are now part of the formation and you must keep flying. If you just hang off the formation you might drag it down. If you stop matching the fall rate you will create tension. If you don't concentrate on your opposite you could make the shape uneven and difficult for somebody else to dock on.



## 6.9 Swing on a star

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You've just joined into a really cool star. Wow. Nice fall rates and big smiles! Then somebody thumps down onto the back of the person next to you. Let go of them immediately or you will be dragged down too. Now you need to close the gap. It's a common mistake to pull over towards the person on the other side of the gap. This does not work. The way to rebuild a broken star is for everybody to use their legs and drive inwards towards the centre. This reduces the gap and the star can be linked again.





## 6.10 Being floaty or flying too light

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People who ‘float’ on the formation or lift it as they dock can be just as damaging as those who drag it down. These are the lighter ones, or the ones in baggy suits who struggle to keep up with the fall rate. When they dock, they tend to waffle around in the sky and pull the other person upwards or over to one side. This destabilises the whole formation and can lead to a funnel. The solution is to arch harder and solidly match the fall rate of the person you are docking on. Do this before you take your grip and continue to do so through the skydive. If you tend to float a lot, you probably need weights or a tighter suit.

## 6.11 Missing the key

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Despite all the possibilities listed here, the skydive might actually go really well. You might all arrive smoothly and dock gently, and the key might be given for the next point. You’ll feel pretty silly if you miss it! Resist the urge to look around, and keep your focus on what is due to happen next. When the key comes to break and go to the next point, you need to be ready to adjust your fall rate and make your move.

## 6.12 Confusion at break-off

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We can’t plan every possible contingency for where each person might be at break off. You might be in between points, or maybe even mid funnel. Keep your cool, keep your eyes open and, as best you can, follow the plan that your coach discussed.

***“If the formation funnels in the later part of the skydive, then everyone should stay together until track off height. If there is time, try to build anything at all to get everyone flying toward the centre and on level. At the planned break-off height, track away from the centre of the mass so we can all see where everyone else is going. The higher people will be able to pick the gaps between the lower jumpers.”***

Michael Vaughan

## PART SEVEN: OLD SCHOOL VERSUS NEW SCHOOL

Skydiving is always evolving and coaches are always developing new techniques. Just because something is 'old school' doesn't always mean it's a bad thing. Just because something is new, it isn't always the best. Different coaches do things differently, and you must follow the plan that is agreed for your particular jump.

Here are some changing trends that make really good sense:

OLD SCHOOL	NEW SCHOOL
"Chase the low man."	If the base funnels or somebody goes low, work to the centre and the original base person. They can pick up the speed a bit. It's better to all work to match a common fall rate, and risk cutting the 'low man' out of the formation. A group of people diving at the low man creates danger and confusion.

OLD SCHOOL	NEW SCHOOL
"Dive out the plane and straight down towards the base."	Divers need to exit straight out, towards the wingtip, presenting the air to their chest, before they head to the base. This gives a large number of people the chance to catch their own air, without cutting off or clashing with people in the lower half of the doorway. This all part of what is now referred to as "Present, Identify, Intercept." Sometimes the base people will be inside the plane, so it's extra important that everyone gets to catch air for a clean exit.

OLD SCHOOL	NEW SCHOOL
"Hold your linked base until the docker grabs to break in."	We often fly an open slot nowadays to encourage people to really fly their place in the formation. If we make it too hard for people to break in, they tend to pop up as they apply the force needed to break your grip. If you are asked to 'break in' to a formation, you should do it with the grips at or slightly above your eyeline, so you are not reaching down and popping.

OLD SCHOOL	NEW SCHOOL
"Upper arm grips are the best for a solid star formation."	Wrist grips are often better. Yes, upper arm grips are good for holding onto. But what happens to your fall rate? You become chest high, your arms get quite locked up with each other's and the fall rate slows. With wrist grips, your bodies can still fly. You can fall faster and you can drive easier with your chest and legs instead of just clinging on to the whole thing.

OLD SCHOOL	NEW SCHOOL
<p>“Fly all the way in to your grip.”</p>	<p>Do not use the grip to stop your approach. Fly the slot with your body and get your centre point where it needs to be. Stop all momentum, match the fall rate and then take the grip. The grip is not the slot. The body position is the slot, and the grip merely completes the picture. Many coaches encourage jumpers not to take grips at all, or to only take them when the coach gives the nod.</p>

OLD SCHOOL	NEW SCHOOL
<p>“Linked bases are best for bigways.”</p>	<p>If the organiser opts for a linked base, that base must be an experienced group that is 100% reliable for exiting on heading and not funnelling. Since this is not usually the case for Star Crest groups, you’re best to stick with free building where everybody aims for their slot in relation to the base person. This way, the base stays put and the rest of the jumpers are not criss-crossing the sky in search of their ever-moving quadrant.</p>



‘Old School’ jumpers perform ‘New School’ tricks  
 Skydivers Over Sixty (SOS) 17-way record at Batchelor, 2013. Steve Fitchett photo.

## PART EIGHT: BEYOND STAR CRESTS

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### 8.1 Help others

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When you've finished your Star Crest jumps and you've been bitten by the bigway bug, don't forget the people who are still trying. You really appreciated the experienced people who used their jump tickets to help you. It's important that you do the same for others.

***"If we want people to jump with in the years ahead,  
then we have to jump with them and help them now."***

Fiona McEachern

### 8.2 Help yourself

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Even with your Star Crest signed off, there's still plenty to learn about different slots and different styles of exits before you can safely participate on really cool bigger skydives. Consider different ways of brushing up on your skills.

**Star Crests:** Continue your own skills development on Star Crest jumps. Even highly experienced jumpers use these skydives as an opportunity to refine their skills, perfect their long dives and practise their no-momentum docks.

**Teams:** Joining a 4 way or 8 way team is an excellent way to build your flying skills. You'll learn a lot about exit presentation, fall rates, opposites, no-momentum docking, and all of the other necessary skills for bigway in a challenging and technical environment. Another benefit of regular coaching is that bigway organisers are more likely to invite you to step up to larger and more difficult skydives.

**Tunnel:** With the right coach, the wind tunnel is a really useful tool for improving and locking in your flat bigway skills. You can really fine tune your fall rate adjustments and learn to make yourself rock-solid in your body position.



### 8.3 Base building

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Have a go at flying the base. It isn't as easy as it looks. You have to set a fall rate, hold a heading, link up quickly and provide a rock solid platform for others. That's why the best people are put in base slots nowadays, not just the biggest like they used to do.

***“Star Crest jumps are a great opportunity to model the very best principles of big-way skydiving. People say that actions speak louder than words!”***

Larry Henderson  
P3 Coach



## 8.4 Formation loads

Every now and then, we’re lucky enough to have planes, pilots and jumpers capable of formation loads. This means two or more planes are used for the group. These skydives can be fantastic fun, but they do require extra planning. It’s essential that a thorough plan is organised between the jumpers and the pilots for all the planes. If you’re diving from the chase plane, the base might not be where you expected, so your skills at ‘Present, Identify, Intercept’ are all the more important.



## 8.5 Higher altitude

If you ever have the opportunity to go to a higher altitude, you’ll need to be fully briefed on the use of oxygen and the risks of hypoxia. There are other funky things that can happen at higher altitude, like faster canopy openings if a pin is knocked. Extra height brings extra issues, and you need to fully understand them.

## 8.6 Boogies

The best way to get better at your skydiving is to step outside your comfort zone. Jump with new people. Try new techniques. Take advantage of the coaches at boogies and special events. Never underestimate the value of expert coaching.



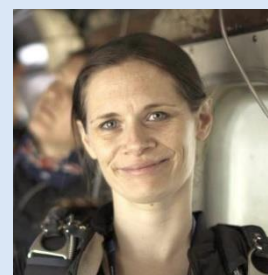
## 8.7 Hybrid skydives

Who says flatties and freeflyers can't have fun together? Hybrid jumps are a terrific way to make use of your bigway skills. It's amazing how quickly the speed changes when the freeflyers start to 'hang' from the base, so the flatties really have to be solid and fast. Just like any other jump, it's vitally important to have a clear plan for building the formation and breaking off. Due to the different types of flying, jumpers can be very scattered when a hybrid funnels or breaks off.



***"The wind tunnel is a great tool to learn and practise the skills needed for bigways. From stability and slow fall drills to stadium approaches and even tracking technique, with instant feedback and repetition, you can become proficient much faster."***

Laurence 'LG' Garceau - Tunnel & bigway coach



## 8.8 Bigger opportunities

If you really enjoy bigway jumping, then consider honing your skills overseas. Some of the bigger drop zones have special programs like 100-way camps. These opportunities don't happen often in Australia, so it's worth investing in a trip.

***“There is no team effort that quite compares to what goes into large formation FS records. 100+ people putting in hours for groundwork, preparing them and demanding them to be at the top of their game for the same 90 seconds. Sharing the success of something that requires this much from everyone on the team is incredible.”***

Dan Brodsky-Chenfeld  
World Champion, Author, P3 Coach, 30,000+ jumps



Australia's current large formation record is a 119-way, set in Perris Valley, California, in May 2015. Photo by Norman Kent.

***"The Aussie Bigways group has a State Mentor in your region who can give you some advice, help you find the right coach and put you in contact with other bigway players. There are also helpful articles and information on our website."***

[www.aussiebigways.com](http://www.aussiebigways.com)

Tracey Basman  
Aussie Bigways National Mentor



## 8.9 Further reading

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- "Star Crest Techniques from Basic Body Flight for B-rels and Beyond" - Thesis by Alan Moss 2008.
- APF "Certificate Class B Training Guide"
- P3 Big Way Camp Manual
- <http://www.aussiebigways.com>
- [http://www.dropzone.com/safety/Disciplines/Relative\\_Work/](http://www.dropzone.com/safety/Disciplines/Relative_Work/)



## PART NINE: NOTES FOR ORGANISERS

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### 9.1 Tips for Load Organisers

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Just like learning jumping skills, you can't become an excellent coach or load organiser by simply reading a checklist. Your best knowledge comes from experience, from making mistakes and from picking up the best techniques of the load organisers who you've most enjoyed jumping with.

Load organising is a lot of fun, but it also carries a lot of responsibility. While Star Crest jumps are not deemed to be 'Training Descents' in the Op Regs, it's wise to think of them as important jumps in a skydiver's progress. Participants will look to you as a leader, even if you just do the one jump, so do your best to cover all safety bases and lead by example with your flying.

The following tips are a useful starting point for planning a Star Crest jump.

### 9.2 Know the subject matter

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If you're going to sign people off as proficient and safe relative workers, it's important that you really know what you're doing with them. Things have been changing in recent years and the techniques might be very different to what you were taught when you did your Star Crest jumps.

- Read this guide or similar current articles.
- Read the APF's Certificate Class B Training Guide so you know the techniques and terminology being used.
- Talk to current Star Crest load organisers, or even participants who've been on a few lately.
- Jump on Star Crest loads being organised by others.

### 9.3 Get to know the players

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Do your best to assess the likely capabilities of ALL participants, including the ones who already have their Star Crest.

- Ask about their total jumps and currency.
- How many of their jumps are flat jumps?
- Have they done a team or tunnel time?
- What's the largest jump they've done?
- Ask their fall rate, but also ask others who've jumped with them.
- What slots are they usually most comfortable with?
- Have they struggled on larger formations?
- Are they wearing a rel suit that's appropriate for their size and skills?
- Make sure everyone is appropriately licenced and the Op Regs are observed.

Naturally, try to ask some of these questions privately to avoid embarrassing people. But they're all important questions for the safety and success of the jump.

## 9.4 Housekeeping stuff

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The larger the group, the harder it is to get everybody where you want them. Explain the plan. It will make life much easier for everyone.

- Just one jump today, or several?
- Jump, Land, Debrief, Pack (or whatever other order you plan).
- Collect tickets.
- Explain any expectations. (Don't be THAT guy!)

## 9.5 Plan the dive

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When you're considering the degree of difficulty for a Star Crest jump, keep in mind how much of a challenge it can be for the newer people. Plan for a good chance of success.

- Best to limit it to 1-2 Star Cresters per jump.
- At least 2-3 very experienced people are needed. Avoid too many with low experience.
- Freebuild exits give everyone a better chance, minimising crossovers and confusion.
- Avoid a linked exit for the base unless you are 100% sure they can do the job.
- Plan a formation that's generally inward facing.
- Put your faster, most reliable people in the base.
- Put the Star Cresters in your sight line and as close to you as much as possible.
- Try to avoid having your Star Cresters docking on each other.
- Make the first point achievable.
- Small movements for a second or third point.
- Don't plan any more than 3 points. That could be too overwhelming for newer people.



## 9.6 The dirt dive

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An excellent dirt dive involves practice of every part of the jump. Make it a balance of essential spoken information, visualisation and 'doing' what they need to do.

- Make sure everyone is wearing the suit that they'll be jumping in.
- Walk through the formation first to get a general picture.
- Practice the climb-out and exit stack up to learn the positions.
- Use this time to plan the emplaning order and where everyone will sit.
- Practise with the exact exit key that you will use in the sky.
- Run it out realistically. Present to the air as you run it out.
- Practise building it in real time. Remind everyone of the visual cues.
- Repeat. Repeat. Repeat.
- Invite questions but don't encourage too many voices in the mix.
- Invite experienced people to add comments.
- Use terminology that everyone understands, or explain anything they don't.
- Watch every participant. Are they catching air? Are their feet and shoulders on the right angles when the formation is standing or creeping?
- Are they grip-focussed on the ground? Get them looking to their opposites.
- Remind everyone to anticipate the next point. The first point is the most important, but the skydive is not over yet!
- Ensure that everybody is working to the same, clear break-off plan.
- Discuss tracking.
- Discuss canopy circuits and landing directions.

## 9.7 The skydive

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As Load Organiser, you are the group's leader in every sense. You are usually the person giving the exit key and flying the primary base slot.

- Encourage your group to check each other's gear.
- Ensure the pilot is aware of your group's plans.
- Make sure those near the door know how to open it.
- Give a really clear exit key and launch.
- Set a good pace and solid heading for the others to aim for.
- Make slight adjustments to help anybody who's struggling with fall rate, but don't move off your heading or change the dive.
- Give encouraging smiles. Avoid nods that might be mistaken as a key.
- If the first point builds, make sure it settles before keying the next point.
- If it's close to break off time, consider just staying put.
- Be aware of the track-off. Check the group's separation when your canopy is open. Ask the camera flyer if anybody was close to them.
- Look out for any malfunctions or likely off DZ landings.

- Watch for any unsafe actions under canopy. Set an example with your own landing circuit.
- Make sure everyone is safely on the ground.

## 9.8 The debrief

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It's important to ensure the main points are emphasised, in a positive way, to ensure each skydive gets better.

- The LO leads the debrief. It's not an all-in!
- The best debriefs have outside camera. If time allows, one more camera angle may be helpful. We don't need to look at ten different videos for one debrief!
- Encourage feedback. Keep it brief, relevant and one person at a time.
- Pause the video at useful points, like a split second after exit. Praise the great launches and those who got clear air.
- Instead of telling people what they did wrong, suggest how they could do it better.
- Make sure you are pointing out the action (or inaction) and not picking on the person.
- Treat others with respect.
- Admit your own errors, and tell people what you will do better next time.
- You don't need to point out every error by every person. It is not a game to see how observant the LO is, but a chance to focus on the main things that can be fixed next time.
- Remember, the video doesn't always tell the whole story. Sometimes what went wrong is not as obvious as it may appear.
- Finish on a positive. There is ALWAYS a positive!

While you have people within reach, collect tickets for the next load. You'll struggle to round them up if you don't!

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*End*





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