

# An Introduction to Ballooning

Contributed by Pauline Hickey

*There must be more than a few aviators, not to mention the general public, that have watched a balloon travel peacefully by on a calm morning somewhere and thought – that looks great, I must give it a go one day. Of course you can always sign up with a commercial operator for a joyride, but what's involved behind the scenes and how about actually getting involved yourself? KiwiFlyer asked Waikato balloonist Pauline Hickey who contributed this article in response.*

## BALLOONING

is not new. In fact, it is very old. 1783 old. This is when Joseph and Etienne Montgolfier launched the first unmanned hot air balloon using fire and smoke to heat the air.

Ballooning - it's exciting, it's quiet, it's different, it's team and mates, it's weather and wind, it's rules, it's exhilarating, it's basic, it's serene, it's flying, and it's wonderful. And it is addictive. Some of us are on our second or third ten year stint.

Your first balloon ride can be a life changing experience, and likely was for all the current balloon pilots who are part of the sport in New Zealand. The view from above is spectacular.

## About the Balloonists

Balloonists get up very early, before dawn, to arrive at the launch site at dawn. We do this because this is when the weather is at its best (most stable) and to share a first flight with new friends and prospective balloonists.

Ballooning is a team sport. Most teams (usually of 4 or 5 people) are made up of a Crew Chief (an experienced person with knowledge of balloon systems and technology, people management, map and wind reading, fuel consumption, refuelling etc.) a Driver, a Navigator, mouth crew and fan crew. We sometimes swap crew people between teams so they all get experience on different rigs and with different pilots.

When the pilot is in the air, the Crew

Chief takes responsibility for all things on the ground, including the launch site pack-up, the retrieve, the deployment of crew especially upon landing, landowner relationships and much more.

Crew Balloonatics need a clean drivers licence – to be the Driver. They need map reading skills to be the Navigator. They

56 – 120 cu ft. A commercial pilot licence is required to fly a 180 – 240, and time on type is required for above 240,000 cu ft.

The bigger the envelope, the bigger the basket and of course the requirement for additional burners and tanks.

Parts of the envelope include gores (vertical panel column) and panels, a scoop

(sometimes a skirt), the parachute (sits inside at the top), turning vents, the crown line and webbing, parachute lines and turning lines, though not all balloons have all the items listed.

Baskets are traditionally made of wicker and may have a wicker or a marine plywood floor. As the envelope size increases, the size of the basket usually increases as well. Pressurised

need listening skills and team skills, and to be able to accept that the pilot is the ultimate decision maker and boss. Most pilots will want a team to do things 'their way', which may be neither right nor wrong.

## About the Balloon

Balloons come in a number of different makes, models and sizes. Common brands of balloons in New Zealand are Cameron, Kavanagh, Kubicek, Thunder & Colt, plus a couple of US balloon makes – Aerostar and Boland which is a homebuilt model.

A balloon rig is made up of three main parts; the envelope (fabric), the basket with burner, and the fan.

The envelope is usually made of coated rip-stop nylon. The coating seals the fabric to keep the hot air in. This is the part that determines the size and in turn, the lift capacity.

Envelopes are discussed in terms of cubic feet capacity; i.e. a typical sport balloon would be called a '77' or a '90', meaning 77,000 or 90,000 cu ft of air. Sizes can range from a '56' all the way to

'340'. Private pilots usually fly the range of

propane fuel tanks are strapped into the corners of the basket, with the burners supported by nylon poles which fit into place within the basket edge cover.

These poles are secured with stainless steel wires, held with carabinas to the burner frame. Leather covers are zipped on to cover the poles and fuel hoses which come down from the burner to the tanks. The larger baskets have passenger partitions and a partition for the pilot and fuel tanks. The bottom of the baskets are bound with leather to protect the wicker during landing and during manoeuvring in and out of the trailer.

Burners come in single, double, triple and quads. Most sport balloons (77 & 90's) will have single or double burners, with the larger commercial balloons having the triple and quad burners due to the size of their envelopes and the lift they require for passengers.

The burners have a piezo ignition system on pilot lights which are usually fed off a different fuel line to the main burner(s).

The burner is fed with liquid propane which is vaporised in a coil prior to

combustion. It is controlled by a lever operated ball valve or toggle valve, commonly referred to as the blast valve. The burner system is also fitted with a whisper burner (lower noise level) for flying over animals, noise sensitive areas and for Night Glows. The whisper burner is used for level flight and is not intended to be used for climbing as icing may occur. This burner is operated by its own valve which feeds liquid propane directly into the burner can, bypassing the coil.

The Fan is essential equipment, being used to inflate the envelope so that it is full of cold air ready for the pilot to turn the burner on to 'hot inflate' the envelope and stand it up.

Fans usually have a 5 hp petrol motor and a well balanced prop to maximise the air pushed into the envelope.

## Preparation and Flight

Now to what happens early in the morning. The balloon team arrive at the launch site at dawn, although in a commercial operation, ride teams are usually there setting up before dawn. Local conditions will be reviewed, and a pibal (party balloon) will often be set off to view the wind track from the launch site.

Firstly the three major components are taken out of the trailer and set out in place for assembly. The basket and burner are assembled, then tested and tied off to the chase vehicle before being laid over to the ground for the flying wires of the

envelope to be connected to the burner frame carabiners. The envelope is then systematically unpacked from the bag and inflated.

The rig is arranged so that the breeze is at your back to help fill the envelope without twisting or turning as it is inflated by the fan which is placed to the side of the basket and set to blow air into the envelope. This continues until the envelope is fully cold inflated.

the chase vehicle using local knowledge and road maps. The chase will likely take between an hour or 90 minutes and the pilot will usually call the chase crew on the air to ground radio to advise of landing spot. The crew will check in with private landowners before going on to the property to seek permission to retrieve the balloon and also to determine the best way to access the balloon.

Once reunited with the balloon, the

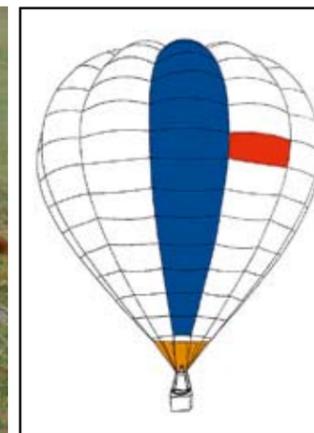
crew undertake a systematic pack-up back into the trailer. With a last check of the landing site to ensure nothing has been left, the crew and passengers leave the landing spot, close any gates as required, and head back to the land owner to thank them for their hospitality and check out



Exemplifying serenity. A peaceful morning flight above Hamilton Lake in the Waikato.



Left: There's a reason the propane tanks are strapped in - Post landing and ready for pack-up of a typical sport balloon. Right: Envelope components include gores (blue), panels (red) and the scoop (orange).



When the pilot is happy with the volume of cold air in the envelope they will begin the hot inflation. This is when the burner is turned on to heat the air inside the envelope and the fan is incrementally turned off. As the heat in the envelope increases, it slowly stands up with the assistance of the crown line crew and the mouth crew.

When the pilot has all the maps, manual and instruments on board, they will board the passengers, give them a briefing and then increase the temperature in the envelope to equilibrium – shortly thereafter followed by lift off.

The crew pack up any remaining items into the trailer and follow the balloon in

from the property.

Passengers and crew are usually back at the launch site within three hours.

## Become a Balloonatic. Join a balloon team.

Balloonists are always keen to share the sport with others and new balloon team members are always welcome. You'll have a lot of fun and may well find yourself quickly addicted to the sport and on the way to becoming a pilot. If you think you would like to become part of a balloon team, email the secretary@baanz.co.nz and leave your name, address and phone number. We will get back in contact with you and try to match you up with a team.

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