Hot Air Balloon Crew Training Manual

fly me to the moon
HOT AIR BALLOONING

GENERAL INFORMATION

Quite often you will find yourself driving passengers from point A to B, and you won't have your handy reference-guide, the pilot, with you. He'll be flying. Here, we'll try to answer some of the more common questions and concerns of the intrepid balloonists-to-be.

Remember that they are probably worried or nervous about their forthcoming adventure, so your answers should reassure them of their safety, of their craft's reliability and the pilot's competence. Now is not the time to be telling them how long it took you to retrieve the balloon from the bottom of the quarry last week, or about the windy landing that was so much fun, etc, etc.

If you really don't know the answer, or you're not sure what they really want to know, tell them that the pilot is the expert, and he will answer their question as soon as you meet. Don't invent any answers.

History: The first balloon flew in France in 1783, built by the Montgolfier brothers. They actually thought that the smoke was the lifting factor, and burned all manner of things on a brazier.

The modern revival began around 35 years ago, with the convenience and power of a new fuel (propane), and a strong and lightweight fabric (nylon), which revolutionized the sport.

Fuel used in hot-air ballooning is propane, or LPG (liquid petroleum gas), which is contained in liquid form.

The coils in the burner pre-heat the fuel, which in turn vaporizes it and gives higher pressure.

On average a 6 person balloon will burn a little over 1 litre per minute whilst in flight. The exact consumption depends on weight to be lifted and outside temperature.

Fabric: The bottom panel of the balloon is made from a fire resistant fabric called "Nomex" ".The bulk of the envelope is made from rip stop nylon or polyester which has been treated with a polyurethane coating to prevent porosity.

The upper ½ or ⅓ of the balloon may be made from a heavier weight fabric called HTN90"or Hyperlast" These fabrics have a tighter weave and are about 10% heavier than the rip stop fabric. These 'long life' fabrics are coated in silicone.

Fabric Life: Approximately 500-600 hours.

The fabric may have very small holes, which does not affect it's strength or safety. These small holes can be patched with a special adhesive backed repair tape.

Larger holes are patched and sewn-on, according to manufacturer's specifications.

The balloon will not "pop". All damage comes from ground handling, or landing near barbed wire fences and deflating on them, etc.

Maximum internal temperatures:

Balloon Works (polyester fabric) 150°C

Thunder & Colt, Kavanagh and Cameron 125°C

On an average commercial flight the temperature will be around 100°C.

Cost of a Balloon:

Sports Balloon	$25,000 plus
120 (6) Passenger Balloon	$45,000 plus
210 (10) Passenger Balloon	$75,000 plus

2nd Hand sports balloons in good condition can often be purchased for about $10,000.

Maintenance and Safety:

All balloons are aircraft, certified and registered by the Civil Aviation Safety Authority.

They are maintained by certified maintenance engineers and have annual or 100 hourly inspections.

Each balloon has a back-up burner system, so burner failure is very unlikely. In the event that it does, the balloon becomes it's own parachute and falls even slower than an emergency 'shute.

If you run out of fuel, it's likely to be at low altitude (it's actually very unlikely to happen, as we carry a reserve on top of our scheduled flight time), so the balloon will set down gently.

Pilot Qualifications:

Private

15 hours flying instruction + theory + exam + flight check.

Commercial

Private licence + 75 hours flying + more complex exam (navigation, meteorology, air legislation, aerostatics)+ medical + flight check.

Licenced directly by the Civil Aviation Safety Authority.

Balloons fly under the same VFR rules as any other aircraft, carry VHF radios and talk to Control Towers and Flight Service.

The Flight:

Will be 45 minutes to 1 hour.

Distance depends on wind speed - anything from 5 to 20 kilometers in an hour's flight.

The retrieve vehicle will follow the balloon and bring people and equipment back.

The direction will be the same as wind direction. - Steering is sometimes available if there are slight wind direction changes at different altitudes.

Altitude and Climate:

We don't go high enough for it to get any colder, in fact it's warmer because we're travelling with the wind; and as the sun rises things warm up.

We will vary the flight - at treetops to see the kangaroos, etc., and panoramic views at a height of 1500 feet or so.

It also depends on the different wind directions that a pilot may want to use, at different heights.

Weather:

Storms or heavy rain will affect the safety and comfort of a, so we would postpone.

Winds 10 knots + make the landings "energetic".

Records:

Altitude - 65,000 ft. (oxygen required above 10,000 ft.)

Duration - about 6½ days.

Distance - America to India .

Gas Ballooning:

Is not found in Australia.

It is a balloon, containing either hydrogen or helium, unlike a hot-air balloon, which has the opening for the flame to heat the normal air.

Sand is used for ballast - when thrown out, the balloon becomes lighter and will climb. To descend the pilot releases some gas.

Long distance balloon flights are usually completed in hybrid balloons called Rosieres. Rosieres use a combination of helium and hot air to give much better duration and decreased fuel consumption.

TECHNICAL DESCRIPTION

Envelope

The balloon envelope is manufactured from high tenacity nylon or polyester fabric coated with polyurethane. The fabric weave is the load carrying element, while the coating produces an airtight membrane.

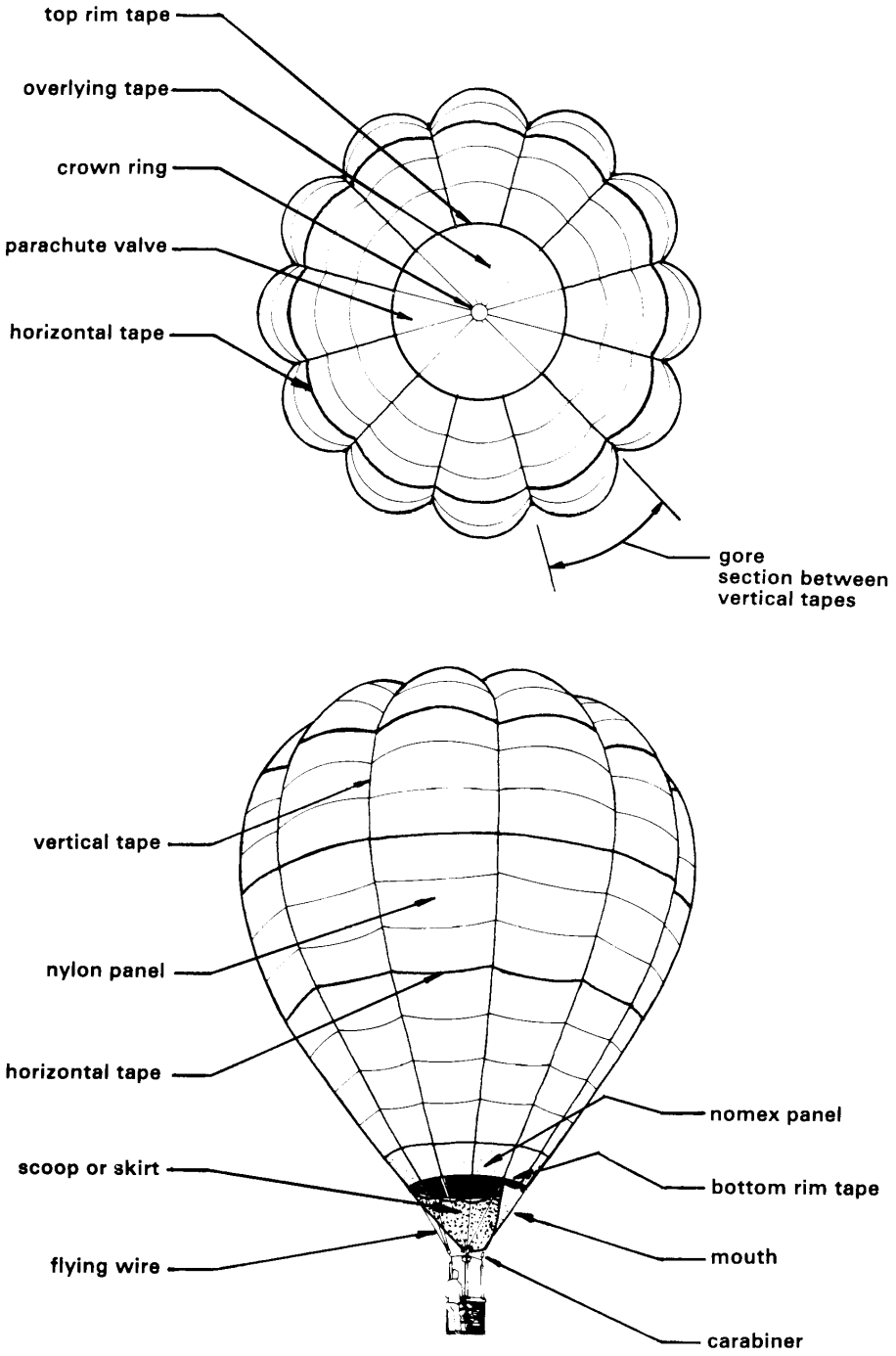
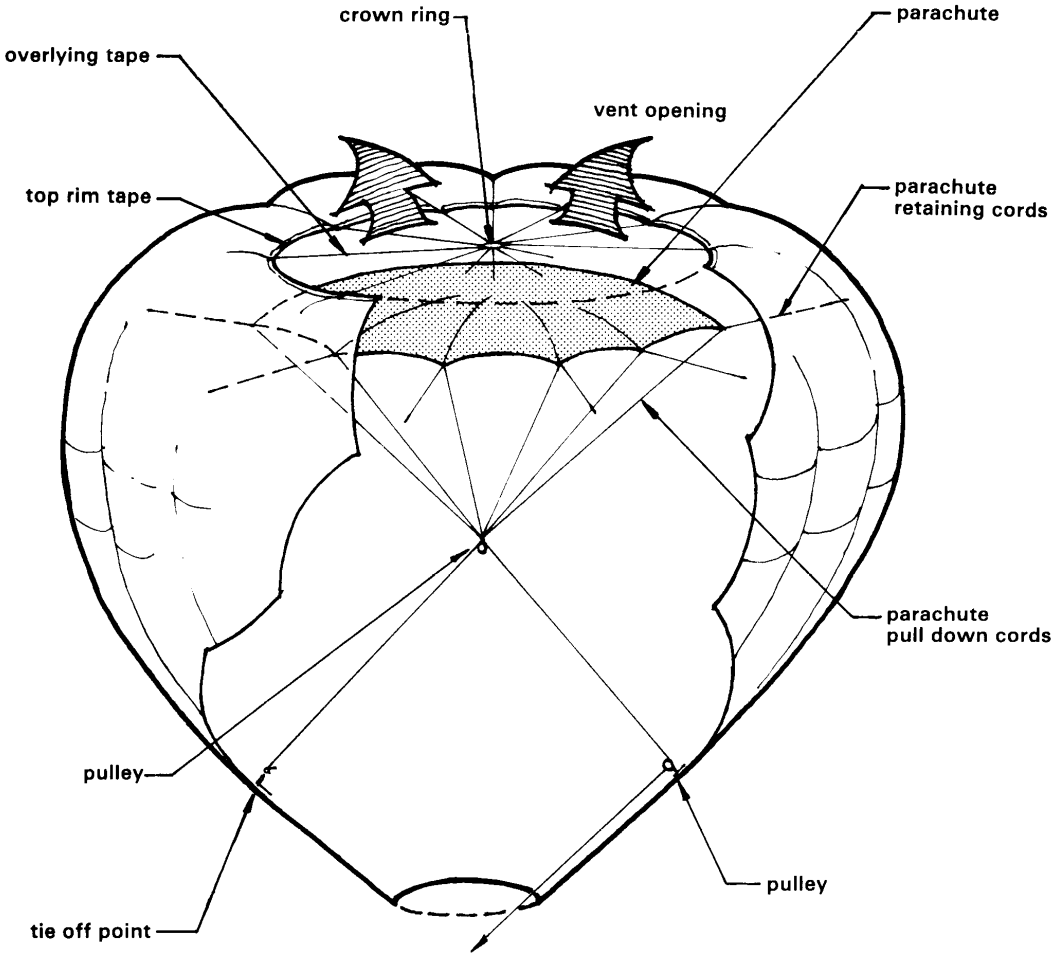


Figure 1 - Balloon Envelope

A network of nylon/polyester webbing, called load tapes, encapsulates the envelope and constitutes a further structural element, and also provides suitable anchor points for the payload. Hot air in-flight venting and final deflation is achieved with a valve situated in the envelope crown. The valve can take a number of forms and is operated by a red rip line that runs via a block system down into the basket.

The parachute vent has been the most popular vent system for a number of years but is now often replaced by more efficient system. The most popular of these being the "Smart-Vent" , the "Tri-Vent" , the "Lock Top" and the "Velcro Rip". The Smart Vent and Tri-Vent are able to be reset after use which makes them more "user friendly" than the single shot "Lock Top" and "Velcro Rip"



note: parachute reseals automatically when ripline is released due to internal envelope air pressure

Figure 2 - Parachute Vent System

Another optional envelope feature is rotation vents, which permit intentional rotation around the vertical axis (see fig. 1.5). These pairs of vents are located diametrically opposed on the envelope equator, and by pulling maneuvering lines, slits open sending out air tangentially. They reseal after use by internal air pressure in the same way as the parachute valve. The two steering lines are coded black for left, and white for right hand rotation.

The envelope mouth is made from nomex fabric which has a very high resistance to heat, saving the balloon from unnecessary burn damage during inflation and tethering.

As an option, balloons can be fitted with either a skirt or a tapered scoop, also made of nomex, to aid inflation and protect the burner flame from wind gusts.

The flying wires link the envelope to the burner frame. The latter always has four hook-up points; the former normally the same number of wires as gores. Flying wires are connected to the burner and basket wires by means of locking carabiners.

A gore is the fabric section between two adjacent vertical load tapes. The gores are assembled from the individual panels. The panel construction can either be vertical or horizontal.

Basket

The basket is traditional wickerwork, built on a marine plywood floor, reinforced underneath with ash runners. The structural load is carried by stainless steel wires forming a continuous sling around the basket.

On the top edge of the basket the cane-work is terminated around a tubular stainless steel frame onto which the overhead frame sockets are welded. On smaller baskets a bamboo, rather than a steel frame is fitted. Dense foam covers the top frame which is then trimmed with leather.

The bottom edge is protected with rawhide which is nailed underneath the basket and lashed onto the sides. The rawhide serves to protect the bottom edge from damage on landings and in transit . A series of openings in the basket provide passages for strapping in cylinders, instruments etc., and footsteps are provided for easy entry into the basket.

Nylon rods fit into sockets at the basket rim and outer burner frame to support the overhead frame system. The basket wires attach to lugs at the burner frame corners with carabiners, and the upright rods and wires are fitted with leather covers matching the basket trim. Pilot light hoses from the burner are enclosed inside the leather covers, while the main liquid hoses are strapped to the outside of the covers to permit easy cylinder changes in flight. Fuel cylinders are strapped into the basket.

A variety of basket sizes and styles are available. The smallest standard size is 1.0 m x 1.0m with heights ranging from 1.05m to 1.15m. Larger baskets range in size up to 1.50m x 3.50m and incorporate internal partitions to segregate passengers from pilot and fuel cylinders. The partitions are covered with padded upholstery and all baskets include internal rope handles for use by passengers during the landing for their comfort and safety, as well as exterior carrying handles.

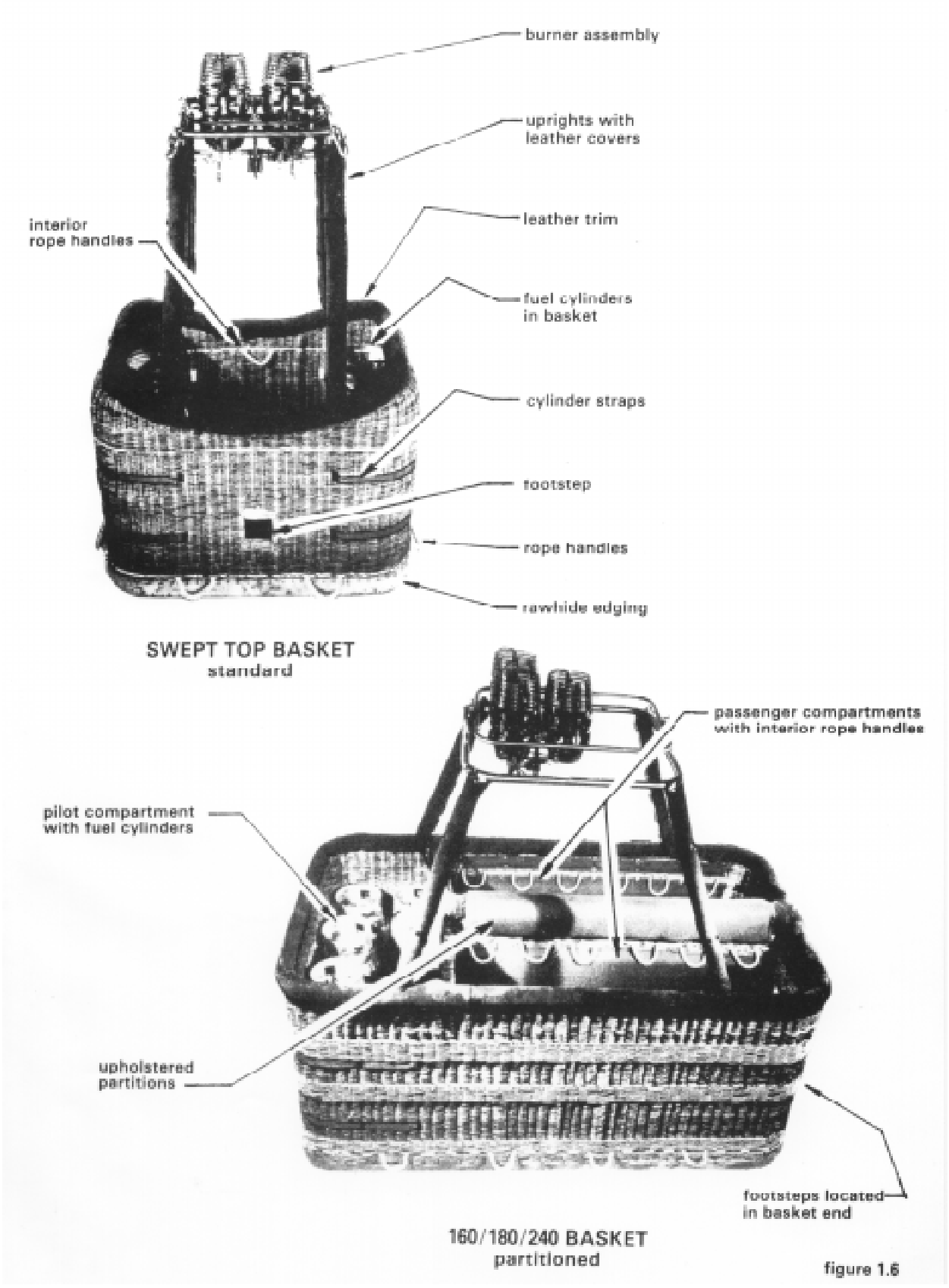


Figure 3 - Balloon Baskets

Burner

The burner is fed with liquid propane which is vaporized in a coil prior to combustion. It is controlled by a lever-operated ball valve (sometimes a toggle valve) commonly referred to as the blast valve. A minimum of two blast valves are always fitted.

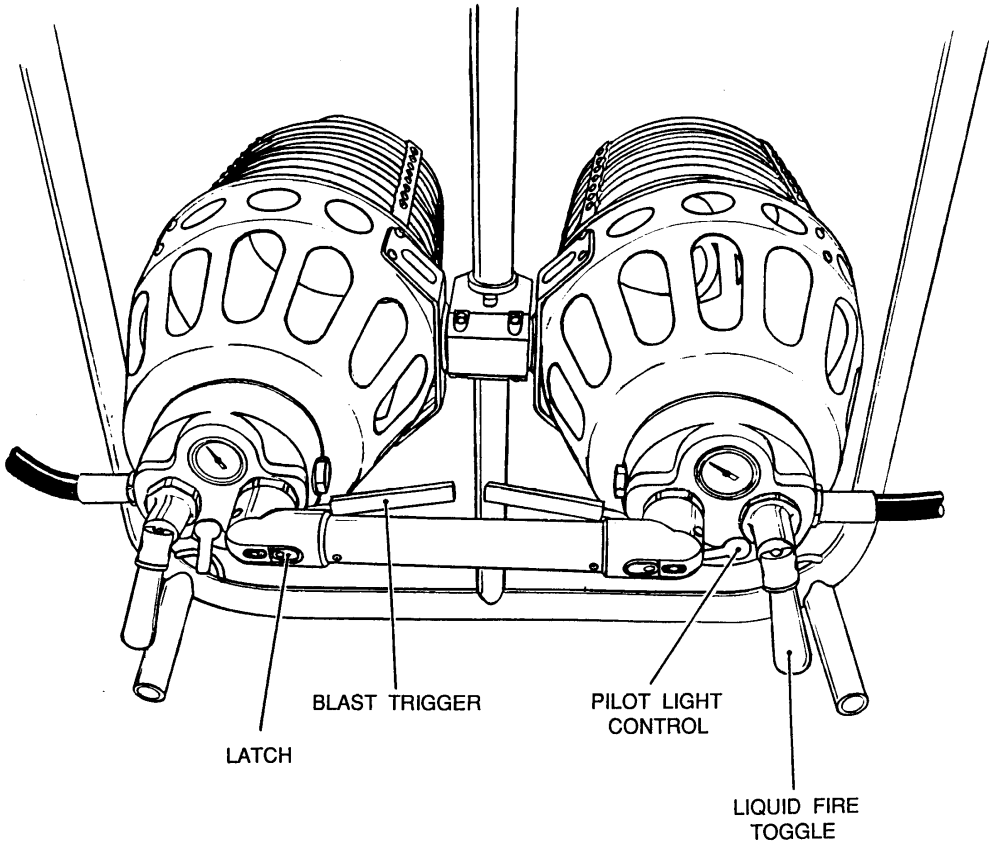


Figure 4 - Double Burner System

In a single burner configuration, these feed from two fuel cylinders into the same coil; in a double burner configuration they feed one burner each. On a double burner there is also a transfer valve providing a cross-feed capability between the two burners.

Ignition is achieved with a pilot light of the bunsen type, one for each burner coil. There is a shut off valve for each pilot light located on the bottom of each burner can adjacent to the blast valve.

A Piezo electric ignition system is fitted to the pilot lights for ease of operation and provides an instant means of igniting the pilot light.

The burner is swivel-mounted in the inner burner frame, which in its turn is swivel-mounted in the outer frame. This provides a 2-axis gimbaled system. The square burner frame has sockets at each corner to accept the nylon rods from the overhead frame system and there are lugs where the envelope carabiners hook up to the basket wires.

Each burner assembly also features a quiet burner system where liquid propane is fed directly into one of the burner cans, bypassing the coil. It is operated by a ball valve and is for use in stable flight only. It has a low noise level, and is intended for flying over animals or other noise-sensitive areas.

For larger balloons, triple or quadruple burners can be supplied.

Fuel Tanks

The onboard propane fuel is stored in pressurized cylinders which have a liquid supply. All tanks have an over-pressure relief valve, a max-fill valve and a quantity gauge.

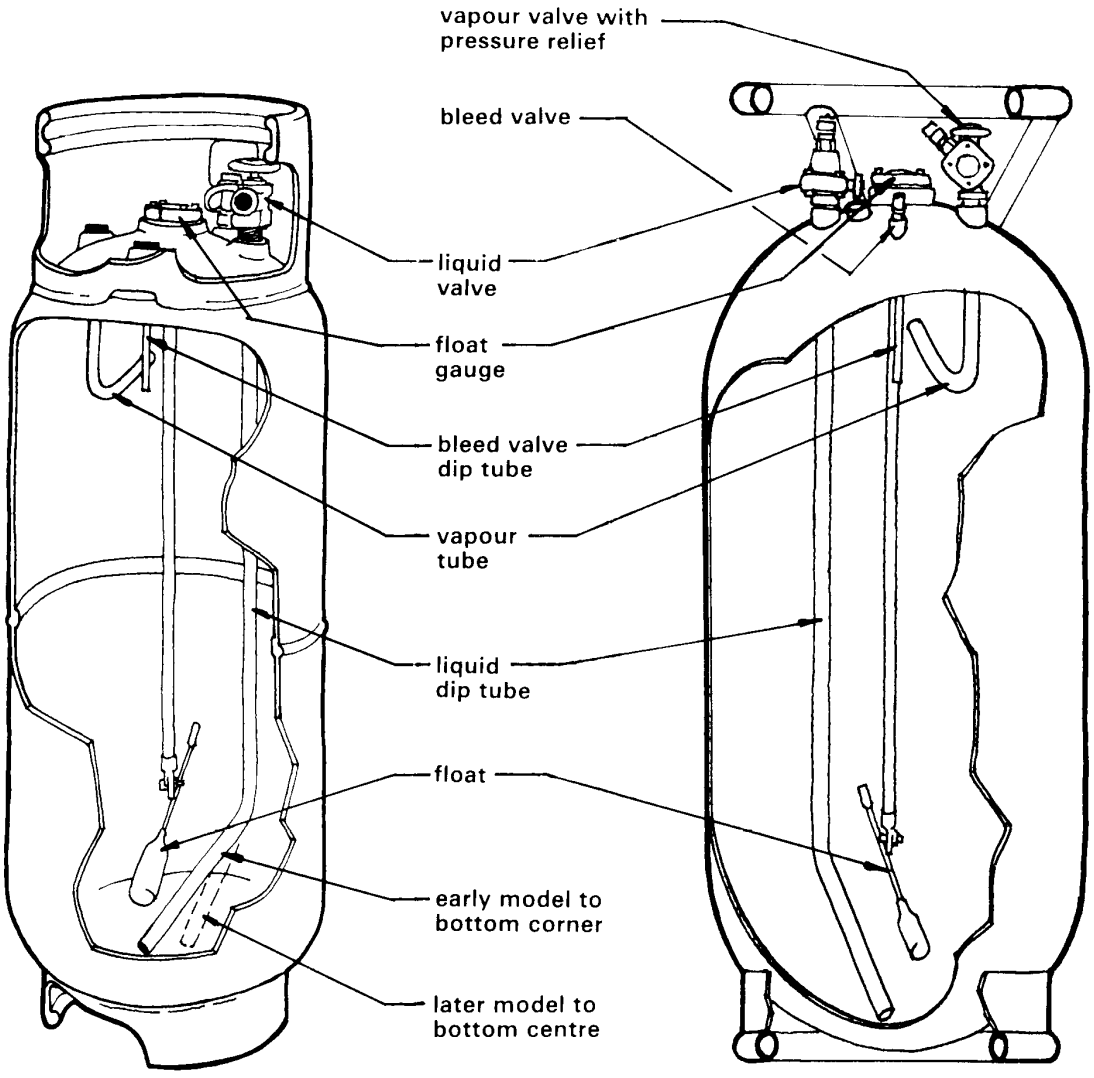


Figure 5 - Balloon Fuel Tanks

PRE-INFLATION

- Loading the Balloon Envelope - tied down?
- Basket, Burner-Frame, Poles.
- Tanks - (plus 2 spare?)- fueled?
- Fan - tied down? Fueled?
- Launch rope.
- Fire extinguisher - vehicle and Balloon.
- Handling Line in basket.
- Trailer - Dolly wheel off, hooked and chained.
- All lights tested.
- Maps.
- Radios.
- Helium.
- Balloons.
- Vehicle - Fueled - and keys!

Do you have your own gloves?

This time of the morning is the passenger's first impression of Ballooning, so it's important that we all be

PROFESSIONAL, CHEERFUL, and ENTHUSIASTIC.

DRIVING TECHNIOUES

- Every time your passengers get in or out of the vehicle, tell them to "MIND THEIR HEADS"
- Remember your passengers in the back do not have handholds. Go slowly around corners, pot-holed roads, over paddocks, etc.
- Do not exceed the speed limit at any time.
- If you are holding up other traffic, pull over and let them pass.
- It's very obvious, on each vehicle, as to who owns it. Be very courteous to other traffic. We stand out in the crowd.
- Obey the rules of the road.
- BE AWARE OF YOUR TRAILER.
- Be thoroughly familiar with your vehicle (e.g. Diesels need pre-heat of fuel on ignition switch). Can you find the jack, spanner etc, to change a flat tyre?
- Practice backing up your vehicle/trailer.

INFLATION

Your pilot will direct the whole proceedings, and may actually carry out many of the following duties himself, but your assistance in some areas may be sought.

People Participation:

It's going to be more fun for everyone, all round, if you and/or the pilot can get the passengers actively involved. It lessens your workload and gives them first-hand experience of actually inflating a balloon. Usually, it's not a problem. Keeping their unbounded enthusiasm under direction is normally the case. However, you may find yourself with a shy group who just need motivating. Obviously, there are going to be mornings where you meet people who have a desire for a champagne flight in a hot-air balloon, and nothing else. So be it. They are quite entitled to sit back and watch, but some minds you can change.

- Do not give out orders or be bossy.
- Calmly show them how a job is carried out. You can have an air of competence without being authoritative.
- Don't ever stand around and watch them work.
- Before you start moving the basket/lifting the envelope, etc., ask if any of them want to get actively involved, assure them that they won't be getting in the way, but will be a big help.
- Use your judgement of the character of the group, perhaps you can directly seek volunteers.
- The pilot will set off a helium balloon to test the wind direction. Arrange the vehicle and trailer so that the balloon can be unloaded and laid out along the direction of the wind (downwind).

Balloon Rigging:

1. Drop basket from trailer.
2. Drive to front and drop envelope.
3. Drive behind basket and drop fan (and position).
4. Tie off the basket to vehicle bull bar.
5. Assist with burner frame erection as per pilot instructions, stow pole-bag in vehicle/trailer.
6. Lay basket over and assist with initial hook-up of envelope to basket.
7. When 2 cables are attached, drag envelope bag downwind, letting envelope spill out in a long line.
8. Lay out the crown line, ensuring that it has not slipped through the crown ring.
9. Stow envelope bag in basket.

If pilot requests it, fabric may be spread out to allow easier filling by fan. Always start at the basket end of the envelope, finding the "floor" areas by following the fabric from the lower suspension cables attached to the basket. Passengers, you will find, are very enthusiastic at this point - direct them carefully:

Always handle the fabric by the load tapes only - this avoids nails, etc., tearing through the material.

Don't let them have a tug of war with it, either side of the balloon.

If it seems to catch on something, don't force it.

Fan:

1. Area in front clear? (Dry grass, dirt, stones.)
2. Check blade, cage and general integrity.
3. Choke On.
4. FuelOn.
5. IgnitionOn.
6. Clear behind?
7. Start.
8. Choke (half) Off.
9. Hold steady.
10. Keep people clear.
11. As balloon stands, turn off at ignition and wheel clear of basket. Go to basket, and" weigh-on" upwind.

Safety:

- Watch for scarves, belts, hair, etc. getting "eaten"
- Do not lean over fan.
- Clothing - long trousers, long sleeves, sturdy shoes.
- Stand clear of propeller (i.e. not beside).
- Do not move whilst engine is running.
- It is still HOT after turn-off.

Mouth:

Hold the upper cables, making sure you don't twist the envelope relative to the basket, form a square opening - TALL and narrow, rather than stretched flat. This gives a passage for the cold air, and keeps the fabric clear of the flame.

Stretch out the floor. Do not allow air under the fabric (an air bubble can form and obstruct the flame). Anchor the bottom with your foot but don't entangle yourself in the wires.

When the flame is turned on, standing behind the Nomex section of the mouth will reduce the radiant heat.

As the balloon rises, work your hands down and around the mouth, letting go before it stands, so that it doesn't spring up.

If the fan is not attended, turn off at ignition and wheel clear of basket, then

Go to basket and put "weight-on" - upwind.

Safety:

- Clothing - Gloves, Long Sleeves, Long Trousers, Sturdy Shoes.
- Don't allow feet, hands or head to get tangled in wires.
- Don't allow your feet to leave the ground.
- Don't "weight-on" downwind of the basket.
- A gust could come through and you might get run over by a ton of people and basket.

Crown:

Assist the pilot to tab in the velcro strips on the parachute valve, ensuring that the thin shroud lines are inside and load tapes/ropes are outside.

If you get there first, wait for some fan-air before trying to separate the parachute from the main fabric pile. If it 1S tangled, you might need to spread the fabric out a little more.

If the parachute seems stuck, the valve line may be caught on something. Do not force it. Get the pilot to free the line.

At the pilot's signal, stand at the very end of the crown line, with one helper, maximum (who has gloves), leaning back with your full weight, to keep the tension on the line, walking in slowly until the balloon is standing, not allowing it to suddenly spring up.

When the pilot calls you in, hand him the line, and "weight-on" the basket.

The purpose of keeping this constant tension on the line is:

To keep the fabric from crowding back on to the mouth.

To stop it rolling around.

Most importantly, to prevent a bubble of hot air from lifting the top of the balloon, which would result in the lower half and mouth sucking in and closing.

Safety:

- Clothing - Gloves, sturdy shoes.
- Refuse additional help to that prescribed by the pilot. Extra weight can result in the pilot needing too much heat to make the balloon stand, and being already buoyant with no ballast on board.
- Do not wrap the line around any part of your hands or body.
- If your feet leave the ground - LET GO - the balloon has taken off!

Post Inflation

1. Help passengers into basket.
2. Make sure you know where you are on the map - confer with pilot.
3. Radio check - select channel. adjust squelch.
4. Help guide balloon clear of obstacles as it lifts off.
5. Stow fan and tie down.
6. Ensure spare bottles tied down.
7. Stow launch rope.
8. Check site for any other equipment.
9. Collect your second-hop passengers, if applicable.
10. SHUT THE GATE of the launch field.
11. If you have family/friends following in their own vehicles, brief them to:
12. Not follow you onto any private property, but wait at the gate until advised.
13. Obey the rules of the road, taking care not to obstruct traffic by very slow driving.
14. Pull well away from the road when stopping to watch the balloon.
15. BEWARE OF FIRE HAZARDS IN SUMMER farmers are concerned about vehicles with hot or faulty exhausts starting fires beside the road - and of cigarettes.

RETRIEVAL AND LANDOWNER RELATIONS

All pilots, and hence their crew, are bound to abide by the ABF "Farmer, Landowner Relations Code of Conduct" found in the ABF Operations Manual. A copy of this may be found in Appendix 2 of this manual.

Special Note: *In each retrieve vehicle it is advisable to have a plasticised emergency number card. This card has Emergency Numbers, such as the Lost Balloon Retrieve Number, Road Service Club, Electricity, Fire, etc, etc. (See also "Emergency" Sheet, following.)*

- DRIVE carefully, for passenger comfort. Don't speed or bounce them over pot holes/paddocks. Remember, in the back, they don't have handholds.
- Don't exceed the speed limit at any time.
- Watch the road, not the balloon, whilst driving.
- Obey all road laws and do not obstruct or hold up traffic with slow driving.
- STOP to make balloon sightings, pulling well off the road, both for safety reasons and the fact that you cannot judge the balloon's track whilst you're on
- the move.
- Plot the balloon's course on your map, and follow by main roads, intersecting the course, until 45 minutes flight time has elapsed, and the passenger/fuel changeover (or final landing) is likely to happen. Then you can follow underneath, on minor roads.
- Try to keep just ahead of the balloon. If it is slow enough, have a break every now and then to let your passengers stretch their legs and take photographs.

Change over:

When the pilot has landed (or before, if he has pre-advised his intentions), get permission from the landowner to do the changeover. Use your discretion, but, hopefully, the intermediate landing will be next to a road/driveway, and you shouldn't need to drive onto his land for the changeover.

If the landowner is not happy, advise the pilot and he will fly on again. Talk to the landowner, be polite, apologetic for any disturbance caused, explain that we can mark our maps to ensure we don't land there any more, take name and lot number details, etc., and generally try to restore goodwill. If they are still unhappy, tell them you'll ensure the pilot comes back to talk to them as soon as he's landed elsewhere.

If all is okay, time is of the essence. If the pilot requests it, get the new fuel tanks to the balloon as soon as possible, and the passengers.

- Help the new passengers into the balloon - "One IN before one OUT."
- Help guide the balloon clear of obstacles as it lifts off again.
- Stow and tie-down MT fuel tanks.
- Load the passengers.
- Thank the landowner again.
- SHUT THE GATES YOU OPENED.

Final Landing:

- As above.
- Check with landowner if it is okay to deflate and to drive onto his property to collect the people and equipment. Advise pilot of decision.
- Keep to landowner's tracks. Don't deviate unless you have his explicit permission.
- SHUT THE GATES AS YOU GO THROUGH.
- The pilot will also talk to the landowner, after deflation.

Landowners :

- It cannot be stressed enough how vital our relationship is with the landowner. Should they, en masse, take a dislike to balloons in a given area, we will be without landing sites, and unable to fly that area.
- Remember, you are an uninvited guest on someone else's property. Be polite and appreciative of their hospitality and permissions. Do not drive on without permission. Be careful where you drive - no wheel tracks please, if any passenger vehicles are following you, ask them to wait on the road. Keep your passengers from wandering around too much.
- Absolutely no smoking on landowners' properties.
- Politeness and friendliness are imperative to our good landowner relations. In this instance you are our ambassadors, as you generally meet the landowner before the pilot.

N.B. For "unusual" retrieve situations, there is an "Emergency" section later in this manual.

DEFLATION AND PACK-UP

- Check downwind ground area for fabric hazards - thorns, thistles, tree stumps, barbed wire, etc. Advise pilot if the area needs to be cleared, or if a hazard needs to be attended by a passenger so they can keep the fabric clear of it.
- When he is satisfied that all is clear, the pilot will hand you the crown line and, as he opens the top, you will literally pull the balloon down, downwind. To keep pace with it's collapse, and to prevent the fabric from falling on top of the burner and basket, you might need to almost run across the paddock, all the while pulling with all your strength. Offers of help should be accepted here.
- Watch for wind shifts. If a sail develops due to a change in the wind, it could be easier to go with it. However, if there are obstacles (trees, power lines, etc.)you will have to work even harder to keep the balloon clear.
- The important thing is to keep the tension on until the pilot is satisfied that the balloon is deflated enough to be safe from both gusts and obstacles.
- As the pilot starts to 'squeeze' the air out the balloon, walk in to the load ring at the crown of the balloon and assist by keeping the tension on (not too hard or you will pull pilot and basket over). Pull on the different load rope/lines to gather the fabric in, this will still allow the hot air to escape through an opening. If a "bubble" of air gets caught in the fabric, work your way around the edge of the parachute opening until you release the fold, and air can escape.

Safety:

- Wear Gloves and Sturdy Shoes.
- Do not wrap the crown line around any part of your body.
- Watch your footing as you pull the line down across the field - rabbit holes, etc.
- Be alert for power lines.

Equipment Pack-Up:

- Envelope bag to crown of balloon.
- Crown line coiled and laid along length of balloon.
- Top section of balloon rolled up past crown line, so it cannot tangle.
- Envelope stuffed into the bag by one packer (usually the pilot) as two people hold the bag (with flap away from the basket), dragging it to the pilot as he picks up the fabric, every six feet or so.
- Maneuvering lines, parachute valve line and rip line coiled and thrown inside envelope mouth.
- Flying wires dismantled from basket. Unhook and attach to relevant

points on envelope one at a time. If you lay them all out on the ground, tangled spaghetti will be the result.

- Wires, etc. wrapped in Nomex skirt/scoop and packing into bag completed. A "bounce" of the bag will settle the contents so that it can be tied. Stow on trailer, and tie down.
- Burner frame dismantled - when the pilot has vented and disconnected the fuel hoses - and burner supports dismantled, and stowed as per pilot instructions.
- Basket cover on if looks like it might rain.
- The pilot will pay a final visit to the landowner.
- SHUT THE GATES AS YOU LEAVE.

REFUELLING AND PROPANE

Do not attempt to refuel a balloon without previously having done so.

- ALWAYS WEAR GLOVES, long sleeves and long trousers, when working around LPG (liquid petroleum gas - propane).
- Disarm all sparkers and other forms of ignition. Ensure that a burner with a peizo igniter is treated with immense respect.
- Don't drop tools.
- Don't jump into the basket.
- Don't wear nylon.
- Don't drag nylon basket covers around.
- Do we have to say it? - NO SMOKING!!!
- Here are a few general points that apply to most systems:
- Liquid propane on your skin can give you severe burns -freeze burns - it is very important to wear gloves when refueling.
- Propane expands tremendously with rising temperatures. To allow for expansion, cylinders are only filled to 80% capacity.
- During the filling process you know when you have reached 80% when liquid propane is expelled from the bleeder (spit) valve, as a little white cloud.

  Worthington aluminum cylinders hold 38L / 20 kg fuel

  Stainless steel cylinders hold either 55L / 27 kg fuel or

  82L / 41 kg fuel
- All hoses should be vented when refueling is complete - again, as propane expands with heat, it could rupture the hoses.
- Make sure that all cylinder and refueling tank valves are shut and that liquid has been released from safety valves on cylinders or manifolds.

LPG HANDLING SAFETY

- LPG may only be handled by pilots or approved crew, wearing gloves, long sleeves and no nylon or polyester.
- No igniters may be carried or be visible. A fire extinguisher must be available outside the basket.
- Understanding clearly the emergency shut-off procedures of the refueling system before commencing.
- Do not leave the system unattended during filling.
- Should a fire commence, immediately attempt to close off supply. If unable to do so after 30 seconds, evacuate the site.
- After fuelling, check all valves, vent lines and fittings. Be very careful of auto bleed fitting "gums" if the refueling adapter does not have a self-sealer.
- Return hoses and fittings to where you found them.
- Always store and transport cylinders in the vertical position and protect them from abrasion, or shocks.
- If a tank is accidentally overfilled, bleed it down.

REMEMBER LPG STAYS FLAMMABLE - IT'S JUST WAITING.

* CARRY LOCAL FIRE AUTHORITY PERMIT, IF REQUIRED.

EMERGENCY AND "UNUSUAL" SITUATIONS

The key in all situations is "DON'T PANIC", take steps calmly and logically, and the situation will be resolved far quicker than if you dash around wasting energy and time. More than likely, you will also have passengers with you, who must be kept calm, informed and confident of your leadership.

Radio Failure:

Firstly, take steps to re-establish communication. Reception is improved by:

- Turning off engine.
- If an installed base-set, ignition might need to be on - or on "accessories", with all other electrics off (fans, wipers, etc.)
- If a hand-held set, get out of vehicle.
- Adjust squelch. Just off "static level"
- Adjust volume. (Not full blast).
- Check channel frequency.
- Transmit button might have jammed on previous transmission.
- Check visible electrical connections.
- Drive to a high point - a hill, or at least, higher ground, or drive out of a forest.
- If a hand-held set, attach spare battery pack, or use cigar lighter adapter.
- Remember that most of our communications equipment operates on a line-of-sight principle. Endeavor to eliminate the obstruction of your line-of-sight to the balloon

- If you still have no communication:
- Keep transmitting relevant information to the pilot:
    - your whereabouts,
    - your destination,
    - your plan of action,
    - whether or not you have a visual on the balloon.

Quite often, a radio set can still transmit, and just not receive, so your pilot may be able to hear your transmission and act upon the information received.

Continue to chase, as normal, remembering your flight duration (usually 45minutes - 1 hour) and try to anticipate landing site.

If you have no idea of the balloon's whereabouts, read on.....

Lost Balloon

(See radio procedure, previously, for establishing radio contact and receiving navigational directions from pilot).

Try searching for up to half an hour after proposed landing time.

Plot the course of the balloon from the take-off site, and start the search by following the line as far as an hour would take it, then search either side of the line.

Keep a look-out for either passengers or fuel tanks positioned along the road side, showing the access point.

Keep eyes open on surrounding countryside for either the balloon or people stationed on hill-tops.

Enquire of locals, along the way, if they have seen the balloon, where it was heading, and how high. Get a description. Don't go after the wrong balloon.

Always have your passengers keeping a lookout, because the pilot, if he knows you are in difficulty, will try and go aloft to show himself. If he does, get a bearing, quickly, and orient on the map.

Don't panic.

Drive there carefully.

If all else fails, and retrieve is half an hour overdue, there should be plasticised cards in your vehicle (glove box, door pockets, ash tray, brochure holder, etc.) which list emergency numbers - one is the Retrieve Number.

Phone-in Procedure:

Whoever 'phones in first will provide:

- Balloon Call Sign,
- Own Position,
- Call-in Time,
- Phone-back Number.

Obviously, if the pilot calls first, he will provide a six digit grid location. No return call to him should be necessary, unless you have a problem getting there.

If You 'phone-in first, you will have to stay accessible to the telephone, to receive further instructions. At this stage of the search, there is no point burning up further fuel. Wait.

Make sure you have a pre-agreed plan drawn up with the pilot.

Vehicle Breakdown:

If you are on the way to an intermediate landing, and your passengers have "a balloon to catch", try to use our other vehicles to get them, and the fuel, to the balloon i.e. other retrieve vehicles, following vehicles of passengers,

Telephone your applicable Road Service Club. Use your discretion when the vehicle is fixed as to whether to go to the balloon or back to base. See "Lost Balloon" previously, if that's what you have by now.

Obviously, keep the pilot informed if you have radio contact. He might be able to relay to the other chase vehicle.

Vehicle Accident:

Use your discretion. If it's minor (i.e. if you've hit a gate post, etc.) and there is no landowner accessible, continue with the chase, and report to the pilot after the flight. He will take remedial action later.

If it's minor and the other party is present, quickly exchange names, addresses, telephone numbers, licence numbers, insurance details, incident details, etc. and resume the balloon retrieval quickly.

Don't get into arguments. Be polite, but firm about your responsibility to get to the balloon and passengers quickly.

Maior Accident (Vehicle incapacitated):

Your passengers' safety and comfort is your first consideration. You might have to break off the chase and forget about the second hop if anyone is injured, or in shock.

If no-one is injured, take steps to get your passengers onto the balloon flight by contacting the other retrieve vehicle(s), or using the following vehicles of relatives/friends, and follow break-down procedure detailed previously.

Use RACQ or applicable Road Service Club for tow.

Standard serious accident procedure police, ambulance, etc.) should be followed if applicable.

Serious Passenger Injury or Illness:

- Forget the balloon chase.
- Advise pilot of problem if possible.
- Seek medical assistance.
- Go to a hospital, or call an ambulance, whichever is relevant.

BALLOON INCIDENTS:

Stock Disturbance/Property Damage:

You might find yourself on or near a property where the balloon has over flown at very low altitude, perhaps whilst attempting to land. The pilot may have either found the site too small in windy conditions or decided it was unsuitable due to stock, etc., The balloon may have disturbed livestock or perhaps even damaged crops or fences.

Assess the situation. If the landowner is not there, and no livestock are at risk of getting loose, or are in pain, take note of the location and leave the pilot to return and sort things out.

Otherwise, secure the stock, endeavor to pacify the landowner if he is present and angry, or other appropriate action as you see fit - also see "Landowner Relations"

Being polite, explain why the problem has occurred, and assure him that the pilot will return as soon as he's landed, to discuss the rectification.

Advise the pilot, where possible, of your actions and intentions.

Power Line Contact:

If the balloon is still in contact with power lines when you arrive DO NOTAPPROACH. Similarly, watch for LIVE WIRES that might be lying on the ground.

In this instance, refer to your emergency card and call the electricity supply number. If unsuccessful, dial 000.

The pilot and passengers will stay in the basket, unless there is a fire risk.

Should they have to exit, the pilot will ensure that no line is dropped that may conduct to the ground, and that anyone leaving the balloon will have to jump clear, so that they also do not conduct between the balloon and the ground.

Crash Landing:

Crash landing could be as a result of strong winds dragging the balloon through trees/fencing/buildings, etc., or a power line collision. If the balloon is still attached to a power line, do not approach - see previous paragraph.

Obviously, you will take instructions from the pilot if he is unhurt. Here we will cover the situation where the pilot is unconscious. Your first priority is to the occupants of the basket. Balloon equipment is expendable - lives are not.

Where there is injury, take appropriate first-aid action and send for medical assistance (ambulance, etc.). Do not move suspect back injuries unless there is a risk of fire.

If tree rescue, etc. is necessary, or if there is a basket or bush fire, send for the Fire Brigade. There are some actions you can take prior to their arrival:

Risk of Gas Leak:

Even if you cannot smell a leak, if the pilot is unconscious there is a fair chance that the cylinders are still open, and a leak could develop. Where there is no

obvious danger to yourself, reach inside the basket and turn off all main valves and pilot lights at the tanks. (We will show you this during your practical refueling demonstrations.)

Small Fire:

There are fire extinguishers in all chase vehicles, trailers and in all balloon baskets next to the main tank.

Point at base of fire.

Large Fire:

Where there is no immediate danger to yourself, take action as above. If not extinguished within 20 seconds, or it is out of control, evacuate the area. The LPG tanks might explode.

If, in this instance, you need to remove disabled basket occupants, remember your own safety.

Use of Handling Line

In the rare instance that a handling line (or "drop-line") will be deployed, it will be because conditions have calmed out, and the balloon can be towed by 2 or 3 people.

In general, the handling line is deployed when a pilot finds himself calmed out over an unsuitable area (e.g. trees), with a clearing accessible to be pulled into. This can also be the case in the first thermals of a morning, when direction over trees is unpredictable, and your guiding assistance required.

If the pilot throws you a handling line - or requests that you receive one - act immediately, before he drifts too far from the chosen clearing. It is likely to be at the end of proposed flying time, and fuel reserves running low, so your prompt action is essential.

When you have the line, tow the balloon to the clearing ... when you are standing in the clearing, pull the balloon in, hand over hand, shortening the line, until it lands, with you able to control where the basket touches down; and put weight on the basket. It is very important that the landing be ultra-controlled (no bounce), as trees are likely to be surrounding the area, and the fabric must be kept clear.

Safety:

- Keep well away from power lines.
- Brief passengers in advance, involve the young and fit only.
- Don't let your feet leave the ground.
- Wear gloves.

RADIO PROCEDURE

Whether using CB, or VHF, it is important that we be heard adopting a professional approach to our communications - particularly with the latter. A Radio Telephone Operators Licence is required from the CASA to operate a VHF radio.

The radio should be used purely for receiving and acknowledging instructions from the pilot. No chit chat entered into - the only reason you should call the pilot is if you are uncertain of his location, have encountered a landowner problem or emergency situation, or cannot find access to the site.

Keep communications brief and concise, employing correct terminology and procedures at all times, using calm, clear speech. Bear in mind that, particularly during the landing phase, the pilot will need all his concentration to fly the balloon - don't distract him unnecessarily, and await the response with patience.

The standard broadcast/response sequence would take place as follows:

STATION BEING CALLED *(Balloon Registration)*

IDENTIFY SELF *("This is ... Ground/Retrieve")*

Await acknowledgement

Advise your location / intentions / question

If the pilot contacts you, your acknowledgement will be similar: e.g. "Uniform Delta Victa; Ground"

THE PHONETIC SPELLING ALPHABET

A Alpha	N November
B Bravo	O Oscar
C Charlie	P Papa ("Pa Pah")
D Delta	Q Quebec
E Echo	R Romeo
F Foxtrot	S Sierra
G Golf	T Tango
H Hotel	U Uniform
I India	V Victor
J Juliet ("Juliette")	W Whiskey
K Kilo	X X-Ray
L Lima ("Leema")	Y Yankee
M Mike	Z Zulu

Spelling out car number plates is a good way to practice

APPENDIX 1

CHECK LISTS

Loading the Balloon

1. Envelope - tied down?
2. Basket, Burner-Frame, Poles.Tanks - plus 2 spare - fueled?
3. Fan - tied down? Fueled?
4. Tie-Off rope.
5. Fire Extinguisher - Vehicle & Balloon.
6. Handling Line ("Drop-line") - in basket?
7. Trailer - Dolly wheel off, hooked and chained.
8. All lights tested.
9. Maps.
10. Radios.
11. Helium.
12. Balloons.
13. Vehicle - Fueled, Keys.
14. Spare Tyre and Jack, etc.

Phone-In Procedure

1. Balloon Call Sign.
2. Own Position.
3. Call-In Time.
4. Phone Back Number.

Personal Equipment

1. Gloves.
2. Watch.
3. Sunglasses.
4. Hat.
5. Compass.
6. Pen.
7. Phone change.

Following-Vehicles Briefing

1. Do not follow onto private property ... wait at gate.
2. Obey rules of road ... don't obstruct traffic with slow driving.
3. Pull well away from road when stopping to watch balloon.
4. Fire risks in summer.

APPENDIX 2

FARMER/LANDOWNER RELATIONS

Introduction

To assist you in establishing and maintaining harmonious relationships with ALL landowners this appendix has been placed in a prominent position in the Manual. We have survived the introduction of self regulation for sport ballooning and the control of commercial ballooning by the Department of Transport and Communications without permanent difficulties.

To avoid any future problems, good landowner relationships are mandatory.

Prohibited Zones (PZ's)

When deciding on or communicating about Prohibited Zones some degree of standardization is obviously desirable.

Maps - specify the scale and type of map used in the original report.

Surface area - give a radius (define units of distance) on a grid reference and any identification from the map, i.e. poultry farm, or define boundaries of a property or area by a combination of grid reference, name and reference to prominent features.

Heights - give the minimum height AGL in feet at which the PZ should be over flown.

No operation at all - if a landowner will not permit launching or landing - SAY SO - if operating near such a PZ do not take off or set up for landing until well clear, do not aggravate an already bad situation.

Be conservative, if local research or comment shows an area MAY be sensitive, declare it to be so and let the landowner know what has been done and why.

Some suggestions on human relations

Watch body language, it may indicate the best course of action far sooner than words.

Introduce yourself and use the landowner's name in conversation.

Spend a few minutes explaining the equipment, the flight planning process and potential steerage problems.

Do not dramatize, leave the impression of a safe, orderly flight about to start or of having just finished.

Ask about local events you may be able to be involved in.

Invite locals to the next club meeting or social event, consider your local club or group having one day a year for a particular group of landowners.

Do not dress too flamboyantly, this may put across an image of flashiness or well-to-do people out playing with expensive toys.

Do not have post-flight parties in the paddocks (unless body language suggests

otherwise). Quaffing champers and having fun while locals are struggling with the farm crisis is not the best basis for a strong relationship.

After landing on a calm day if locals are in sight consider keeping the balloon inflated until they arrive. Perhaps give a tether ride or hop into the next paddock. So often locals express disappointment on arriving after the balloon is deflated.

Address any problems from the Landing with the landowner before packing up, make it first priority not something you get around to when you are ready to leave.