Australian Ballooning Federation

PILOTS CIRCULAR

IN THIS ISSUE

Thanks to all the pilots around Australia and others who have contributed to this issue.

Pilots Circular is produced by the Australian Ballooning Federation Inc., and contains operational and safety information for all Australian balloonists.

ABF pilot and student pilot members receive Pilots Circular (and a PC folder) by post as part of their annual membership. PC will also be published on the ABF website as soon as possible, for the benefit of non-pilot members.

All ABF members – from the newest student to the most experienced pilot – are invited to contribute. Tell us about issues you feel other pilots may wish to know about, or that you would like information about.

Contributions should be sent to: *ABF Operations Manager Simon Fisher*
phone or fax 08 8172 0196
email sfisher@picknowl.com.au.

Examiners and Instructors

New Examiner

Congratulations to ABF President **Gary Pask** who was recently appointed as an ABF Examiner. Gary has been an ABF Instructor since November 1999.

There are now 24 ABF Examiners and 73 Instructors, however some of these may be inactive or not current. Student pilots are reminded to check the currency of any Instructor and Examiner who assists them – it's sensible and reasonable to ask!

Examiner and Instructor currency

Examiners are reminded that your Examiner certificate is not current unless your Instructor certificate is current.

An Instructor certificate only remains current while the Instructor:

- is a financial member of the ABF
- has demonstrated their piloting and instructing skills to another Examiner within the last 24 months (on the ground as well as in flight)
- is a current pilot (3hrs and 3 flights in last 12 months, or check flight with an Examiner in the last 90 days)

(refer ABF Operations Manual Sections IV 2.3 and V 2.2).

It is YOUR responsibility to maintain your currency.

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Sport AOC Update

ABF response

February 28 was the closing date for responses to NPRM 0115SS, the CASA Notice of Proposed Rule-Making regarding the Introduction of Air Operator Certificates for Sport Aviation Flying Training Aerial Work ('Sport AOC' is the short title).

The ABF and the PBAA* have both responded that '**the proposal is not acceptable under any circumstances'.**

The ABF Executive and Operations Manager consider that the Sport AOC proposal is an example of taking a sledge hammer to crack a nut – and then hitting your toe with the sledge hammer. The proposal is an attempt to satisfy CAR 206 which requires that flying training be conducted under an AOC (Air Operator's Certificate), and it arose because of a general aviation dispute with ultralight training. However, flying training for various kinds of sport aviation (including ballooning) is already being conducted and administered quite effectively and safely by the relevant sport aviation organisations such as the ABF. The proposal would simply have added bureaucratic complexity and cost without any addition to safety. In fact safety would have been reduced as some of our precious resources of time and money were diverted.

What the ABF would like to see

1. The ABF supports an alternative proposal that sport aviation flying training should be exempted from the requirements of CAR 206. You could call this the 'If it ain't broke – don't fix it' approach.
2. We believe all ABF Instructors and Examiners should follow the ABF Operations Manual in regard to flying training, and should not be required to submit alternate manuals or apply for a separate AOC for flying training purposes. Requirements and procedures should be the same, whether or not they are also commercial balloon operators.
3. We also would like all ABF Instructors and Examiners to be able to make some charge for their services if they wish to. We believe it is unrealistic to expect that they will continue to supply their services free – or that they will remain reasonably accessible to student pilots if they are unable to receive anything in return for their services.

The ABF will continue to negotiate with CASA to achieve these goals.

**PBAA is the Professional Ballooning Association of Australia, the recently formed association for commercial balloon operators. PBAA's first President is Clayton Priddle of Hot Air in Cairns, and Secretary is Steve Griffin of Fly Me To The Moon in Brisbane. The PBAA and the ABF have a very co-operative working relationship and open communication on a range of common issues.*

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Mobile Phones and GPS

The Jan-Feb 2002 issue of CASA's *Flight Safety* magazine reports on 2 GPS failures (page 23). The pilot notes that he has 'conducted further experiments with this GPS and mobile phones. It continually fails when mobile phones are on and close to the aerial. Sometimes there is a failure alert, sometimes there is not.'

CASA recommends adding to your preflight checklist to advise passengers to switch off their mobile phones.

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THERMALS

Three recent incidents – and some feedback

Incident 1

May 2001. Four balloons (sizes 84 to 180) found themselves caught over a small country town in mild thermic conditions. All experienced loss of control but landed safely in tight situations.

One pilot reported:
'It was the last flight of a successful Barossa Regatta weekend. The four balloons launched just NE of Nuriootpa shortly after 4pm. All four pilots were commercial, although two were conducting private flights. Surface wind gusts from earlier in the afternoon had died down and the pibal a few minutes before indicated a steady light easterly. Ambient temperature was low to mid 20's. We expected to clear the built-up area within minutes. It looked like a perfect afternoon flight.

'The balloons launched close to each other and we followed the same track as the pibal for a few hundred metres until we were overhead the built-up area of the town. At this point we all started moving in different lateral directions, in slow circles and curves, quite close together. However, vertical control remained fairly positive, and we avoided hitting each other. I climbed to 3000ft AGL, hoping to clear the town and find a more suitable landing area, but without success. We all kept flying for some time but were unable to get away from the town. Eventually all balloons landed safely in small park reserves. One balloon came very close to making contact with the corner of a house due to air movements as it landed. Another waited until almost last light before landing, expecting the air to become more stable, but this did not happen.

'The pilot of the largest balloon reported afterwards that his GPS track "looked like a corkscrew."'

Incident 2

August 2001. An instructor and student in a 77 were caught in a thermal during the second flight of the morning. The balloon experienced turbulence and was quickly carried to 6500ft, then descended to a safe landing.

The instructor reported:
'The incident occurred towards the end of a training flight. We had completed one flight earlier in the morning and, after refueling, with the calm and flyable conditions we were now at the end of our second flight of the morning looking for a suitable area to land.

'While crossing over a hobby farm area with only tight landing areas, there was a sudden sway of the basket to the left of about 10 metres, aligning us over a road and powerlines at approximately 60ft AGL. Realising it to be thermal activity I explained to the student what I believed was happening and that we will land as soon as possible. The visible weather conditions had not changed except for the appearance of a few very small high clouds to the west.

'The next thing to happen was a sudden change of direction to the north of about 100 metres and then a complete halt. This time located over a house, and after a 10 to 15 second delay, a complete reverse of direction out over a paddock that was suitable for landing. While waiting to clear the powerlines on the road and get enough space to land safely there was another direction change to the east, much more rapid and with a very noticeable increase in height and moving us around in a tight circle. At this stage the control was handed back to the instructor.

'In less than what seemed 15 seconds we were 350ft AGL and climbing fast. At this stage the instruments still seemed to be giving accurate readings. The whole balloon then started to spin on its axis

causing the basket to swing outside of the vertical position. Both pilots experienced a sense of nausea which we put down to a bit of motion sickness and the adrenaline rush. In this situation of rapid climbing and spinning there was a lot of wind buffeting and the digital variometer was now quite erratic – one second registering off the end of the up scale and then the reverse on the down scale. The only indication as to going up or down was the old 'look at the horizon' trick. Virtually flying by sight was the only reliable indication of movement at this stage. Due to the swing of the basket both pilots wedged their backs into a corner of the basket and their feet on the other side, holding on as tight as possible.

'During the entire time the envelope was kept hot and there was no sign of envelope distortion. By this time the few clouds had developed into many small clouds in a narrow band running NE to SW and had moved over our position.

'When the balloon stopped rotating and the buffeting stopped the instruments seemed to be giving accurate readings. The altitude was indicating 6500ft AMSL and the vario was indicating level flight. The lapse of time from the beginning of the ascent to starting descent was only about 5 minutes and we had climbed about 5500ft, so the vario indicating ascent rates of over 800 feet per minute could have been accurate, but I fail to believe this when within 2 seconds the indication was the reverse.

'When we reached the stage that we seemed to have topped out, or been 'spat out', the envelope was allowed to cool and descent was established at 600+ feet per minute. At 2000ft AGL the descent was slowed to 400fpm down to approximately 200ft from the ground and, with a final slow-up burn and the system shut down, the Smart Vent was partly deployed at around 15ft and fully deployed within 10ft to ensure a positive landing.

'By the time we had packed up the balloon and had it on the trailer the clouds that were overhead during the incident were already clear of the area and moving westward.'

Incident 3

November 2001. After tethering a brand new 120 for about an hour at a promotional event, the pilot took off in free flight with 5 passengers at around 22deg C. The balloon landed heavily in a vineyard, causing damage to property and minor injuries to passengers.

The pilot reported:
'There had been some mild thermal activity during the tether to the extent that the balloon had to be held on the ground by several people whilst waiting for the thermals to pass before ascending again. I had experienced these conditions several times during my 15 years of flying and did not rate the conditions this afternoon as extreme.

'After 15 to 20 minutes into the flight I was descending slowly from 1100ft AGL looking for some air movement as we were becalmed over a large vineyard. At approximately 500ft AGL there was a noticeable increase in our descent rate. I kept the burner on and ignited the second one but was unable to stop the descent, resulting in a hard landing in the vineyard, breaking some trellis wires and at least one post. I had 2 burners on from approximately 200ft AGL until we hit the ground. In hindsight the trellis wires helped to soften the landing. On inquiry of the passengers two indicated they were hurt but were able to climb out of the basket with some crew help and a third one decided to alight also. There was no damage to the balloon so I announced that I would fly on alone if necessary to a suitable place to deflate and pack up. At this stage two other bystanders asked if they could come on board which I agreed to thus taking off with 4 passengers on board.

'Before this take-off I attempted to identify what had caused our rapid descent and suspecting a fuel problem I isolated the tank. At this time I noticed the fast shut-off lever on top of the tank that I had been using was not in the full open

position, apparently having been knocked by a passenger. It was approximately 10% closed, [but] there was no evidence of icing around the valve. With the new tank connected I took off and flew for another 20 minutes to a calm standup landing.

'Upon refuelling, the suspect tank had 22% useable fuel and a test burn proved fine. This added to my confusion as to the cause of the incident as fuel shortage did not seem to be the problem.

'On debriefing with the ABF National Safety Officer he raised the possibility of a thermal downdraft. This I had not considered, as my only experience with thermals in the past was with updrafts not downdrafts. On reflection we were becalmed over a large vineyard with early budburst and a large bare-earth car park nearby on a clear sunny late afternoon with 20 degree temperatures. Prior to take-off some thermal activity had been experienced. The most probable explanation for the hard landing would seem to be due to a thermal downdraft although it was late in the afternoon.'

What could have been done better? What would you have done?

Consider the following information – and see if you agree with the comments …

Facts about thermals – a gliding pilot's perspective

Thermals are a major power source for gliding, so glider pilots get to know thermals pretty intimately. Ian Rothe, an experienced gliding instructor, offers the following points:

- **Expect thermals over surfaces which radiate more heat** – eg an open rock quarry, scrub adjacent to arable land, and built-up areas of towns. Thermals start when bubbles of superheated air break free from the land surface and start to rise. Thermals can easily be triggered by the spinning of a gliding winch in an open paddock, or the movement and heat of a hot air balloon at low level.
- **Full strength thermals develop quickly** after a short period of less severe air movements near the surface, known as 'mixing'.
- **Thermals can happen all year round**, not just in summer, whenever there is enough change in air temperature from night to day and clear enough sky. Low level cloud cover will delay thermal formation.
- **The strongest thermals occur in clear air.** Scattered cumulus clouds may indicate the presence of thermals, but the absence of cloud does not mean no thermals.
- **"The hotter the higher" – and the hotter the faster**. Thermal strength increases with ambient surface temperature. On a day in the low 20's, thermals may rise to around 4000ft at speeds of 200 to 500ft per minute. In the low 30's, they will often go to 8000ft at speeds of 800 to 1000fpm. In the high 30's even higher and faster.
- **Downdrafts are a normal part of thermals – and are almost as fast as updrafts**, as cooler air descends to replace the rising hot air. However, if there is a seabreeze flowing in, there may be no downdrafts, or only weak ones.
- **There is no precise pattern to thermals**, especially up to 2000ft AGL. Remember those novelty lamps we used to see, with coloured blobs of liquid constantly going up and down and changing shape inside a different coloured liquid? Imagine the thermal air mass as the blobs. Neat diagrams of thermals in meteorology textbooks are really only a general guide.
- **A dust devil or 'willy-willy'** is a particularly narrow type of thermal, not usually much use to gliders. Most thermals are much more extensive.

What can we learn from the 3 incidents?

Incident 1 (over the town)

- The balloons were in warm 'mixing' air but not in full thermals – as there was little vertical movement.
- Expect thermal activity over a built up area.
- Thermal activity does not necessarily die away before last light, however it may do. So in this situation it is probably OK to keep flying until the first really safe landing appears.
- **A 'safe landing' is one which causes no injury. The pilot may have to accept some risk to the balloon fabric**.

Incident 2 (the training flight)

- This was a real thermal – and obviously very scary! The instructor and student are clearly lucky not to have had a more serious outcome – such as deflation of the envelope in flight, or a harder landing due to a downdraft.
- We should **always expect thermals** as the morning warms up – be especially careful if making a late morning flight.
- The ballooning rule of thumb is: **at the first sign of thermal activity, land ASAP in the middle of the largest clear area.** This was difficult to do due to flying over congested hobby farms. Such areas would be better avoided late into a morning flight – especially if there are numerous powerlines, the worst hazard in a tight landing.
- **Practise tight landings** so that you are confident of your skills if you do get caught like this.
- When the thermal mixing began, the instructor would probably have done better to **take the controls sooner** and demonstrate a tight landing, rather than leave the student at the controls. Although 'flight in mild thermal conditions' is listed as an optional flight exercise for student pilots, this was originally written for the UK and **should be treated very conservatively** in Australia.
- If you are lifted in a thermal, it is recommended to **maintain heat**, so the balloon has its own buoyancy when it leaves the thermal, and the descent can be controlled. The instructor did well to keep a clear head, maintain control and land safely.
- The sudden change in vario reading from fast climb to fast descent was probably just an indication of the sudden changes in air pressure due to the turbulence around the balloon. After all, air pressure is what a variometer reads. Under normal circumstances this is a reliable indicator of altitude – but these were not normal circumstances!

Incident 3 (hard landing in the vineyard)

- Thermal downdraft is not the only possible cause of this incident, but it is the likely cause. As the pilot observed, the vineyard wires cushioned the landing and probably prevented more serious injury. As it was, one passenger reported receiving possible fractured ribs and another a severely bruised elbow.
- The occasional gusting experienced during the tether is a typical sign of thermal activity. It often helps to **release a series of pibals** at intervals when there has been gusting like this. Surface gusts usually become weaker and less frequent as thermal activity dies down. **The movement of pibals should be consistently steady before undertaking a free flight**.
- In these weather conditions, and because the pilot was not used to the new balloon, a conservative approach would have been to **reduce the load by another passenger, or not fly at all.**
- Further flight would be better avoided until the cause of the hard landing was clear. In the circumstances, to deflate the balloon over the vineyard may have been a nuisance and not a publicity success, but safety must always be the first consideration. Also, the pilot's decision to fly on apparently left the injured passengers and the vineyard owner feeling

they had not been well treated. More attention to their wellbeing after the accident would surely have been good public relations all round.

Summary

1. LEARN TO RECOGNISE THERMALS – SO YOU CAN AVOID THEM!

2. IF YOU DO GET INTO THERMAL MIXING, LAND PROMPTLY. (EXCEPT NEAR SUNSET, WHEN IT MAY BE HELPFUL TO KEEP FLYING IN CASE THERMAL ACTIVITY DECREASES).

3. FLY DEFENSIVELY – BE PREPARED FOR WHAT MAY GO WRONG, BECAUSE YOU HAVE THOUGHT ABOUT IT AND ALLOWED FOR IT.

4. PRACTISE SPECIFIC EMERGENCY ACTIONS, SUCH AS TIGHT LANDINGS AND USE OF DOUBLE BURNER.

5. MAINTAIN LANDING OPTIONS – THINK CAREFULLY BEFORE OVERFLYING ANY 'TIGHT' AREA. WHAT ARE THE RISK FACTORS?

6. "PEOPLE BEFORE PROFIT" – PERSONAL SAFETY AND GOOD PUBLIC RELATIONS ARE MORE IMPORTANT THAN THE COST OF A BALLOON REPAIR OR A PROMOTIONAL FEE.

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Balloonists have died in Australia
as a result of being caught in thermals.

Be a smart pilot - don't become a statistic.

Vent line problem

From Alan Cameron in Mildura:

I have a vent line story I would like to share with you in the hope that it may serve as an alert to others to a problem I encountered, and one which could well save their lives.

Some years ago all balloon owners were required to remove the lower section of the vent line which contained a stainless steel cable, and replace it with a Kevlar one, or some similar non-conductive material. The method of attachment was to tie the new bottom section to the remaining section with a "bowline". There was no stipulation as to the amount of line left hanging free each side of the knot, nor any requirement to bind the join with tape or any other method of making the knot "slippery". Herein lay a potential problem.

On a flight which required an approach over a vineyard to carry out a passenger changeover, I vented lightly to bring on a little more rate of descent, and allowed the line to slip gently through my gloved hand until it went slack.

I was somewhat surprised when the rate of descent was maintained at a greater rate than I had expected, and even with some aggressive burning I was unable to avoid the bottom of the basket hitting the top of a trellis post in the vineyard. Immediately after the bump on the post, the balloon became buoyant and flew on normally. There seemed at the time no explanation for the continued descent, and after

landing and subsequent inspections there were no apparent irregularities with the envelope.

Some time later again after light in-flight venting, this time with a lot more airspace under the basket, the rate of descent was again difficult to control with the burner. On looking up into the envelope I noticed that the knot had become snagged in the angle between a flying wire and the lower rim of the nomex mouth. It was quite clear that the vent was still venting although the vent line in the basket was quite slack. It just needed a quick jerk to free it and allow the vent to close.

I contacted the manufacturer and obtained a single piece of line sufficient to go from the basket the through both pulleys to the tie-off point, and after fitting it the problem was never to recur. So if you fly a balloon with a two-piece vent line, either arrange the knot carefully to make it snag free, or be very mindful that a slack vent line may not always mean the vent is closed.

ABF Operations Manager's comment:
The removal of wire cored riplines was required by Airworthiness Directive AD/BAL/10 in 1990. The AD did not anticipate this 'catch', and did not specify how the knot should be finished off.

Considering the potential risk, a new one-piece ripline is an excellent safety investment. ☺

ABF Incident Reporting Policy

Incident reporting is intended to help us all learn to be better and safer pilots. The aim is to 'fix the problem – not fix the blame'.

For this reason incident reports remain **confidential to the ABF Operations Manager and Safety Officer**. The general details may be shared for educational purposes, as in Pilots Circular, without identifying the balloons, locations or people concerned.

Have YOU experienced an incident lately?

We should hear about it promptly from you rather than 'on the grapevine' or in the media.

An Incident Report Form is included with this issue of PC, and copies are available by post/fax/email from the ABF Operations Manager or ABF Office. Please use them.