

# ABF Pilot Training Manual

## **Part 6**

### **Flight Rules and Procedures (FRP)**

Version 1 – May 2006

#### **IMPORTANT**

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While care has been taken to ensure information in this document is correct, it cannot be guaranteed. Readers are advised to refer to current CASA regulations and other source documents, and also to [www.abf.net.au](http://www.abf.net.au) for the latest issue of this document and any changes since that issue.

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## Reading List

### As a minimum you will need a copy of:

ABF Operations Manual	Ops Manual
CASA Instrument of Authorisation 566/03	
CASR Part 39 LTA Airworthiness Directives	AD
Civil Aviation Order 95.54 and 101.54	CAO 95.54 and 101.54
Civil Aviation Advisory Publications 41-1(0), 92-3(1) and 157-1(0)	CAAP
VFR Flight Guide	VFG

### abbreviation used in this text

### You should also have access to:

Aeronautical Information Publication	
AIP Book – General and En Route sections	AIP GEN and AIP ENR
AIP Supplement	AIP SUP
AIP Charts (for areas you fly)	Charts
Aeronautical Information Circulars	AIC
En Route Supplement Australia	ERSA
Departure and Approach Procedures	DAP

### To prepare for the exam you should have some familiarity with:

Civil Aviation Act 1988	
Civil Aviation Safety Regulations	CASR
Civil Aviation Regulations 1988 and 1998	CAR
Civil Aviation Orders	CAO
A balloon manufacturer's flight manual	
A balloon manufacturer's maintenance manual	
A balloon logbook	
A pilot logbook	

Documents are available for a fee in hard copy by post, including an update service. The 'CASA Documents Library' is now available on CD-ROM by subscription, updated monthly. Some documents may be found free on the internet - see the Civil Aviation Safety Authority at [www.casa.gov.au](http://www.casa.gov.au) and Airservices Australia at [www.airservicesaustralia.com](http://www.airservicesaustralia.com). The Civil Aviation Act can be found at <http://scaleplus.law.gov.au>.

## The FRP exam

- Twenty question multiple choice exam.
- Time allowed 70 minutes.
- Minimum pass mark is 70%.
- AIP Book (GEN and ENR) may be used in the exam.

### YOUR FEEDBACK PLEASE!

*If you have any corrections or suggested improvements to these study notes please advise the ABF Operations Manager.*

## Abbreviations and definitions

A list of abbreviations used in this manual is in Section 11. For more abbreviations and definitions see AIP or VFG.

## Aviation authorities

The **Civil Aviation Safety Authority (CASA)** is responsible for aviation safety regulations, licensing pilots and aviation engineers, and certifying aircraft and operators. **Airservices Australia (ASA)** is a separate body that provides air traffic control and airspace management, aeronautical information, and communications. The **Air Transport Safety Board (ATSB)** is responsible for investigating accidents and incidents.

The **Australian Ballooning Federation Incorporated (ABF)** has been approved by CASA to administer private (sport) ballooning, including training and certification of pilots, instructors and examiners; production of training materials and examinations; and maintenance and review of safety standards. Commercial ballooning operations and licensing are administered directly by CASA.

## Aviation documents

There is a hierarchy of documents regulating aviation, from the Act down to the day-to-day operational detail in AIP and VFG. You should understand the role of each, and be familiar with the specific sections which concern ballooning. You should have access to documents as detailed in the Reading List at the beginning of these notes. For study purposes it is sufficient to borrow most of them.

Hint - Use the contents and index pages of each document!  
It also helps to tag key pages for quick reference.

The **Civil Aviation Act (Act)** and **Regulations (CAR)** are the primary legislation.

**Civil Aviation Orders (CAO)** give more specific information on operational, airworthiness and safety technical standards and specifications.

**Civil Aviation Safety Regulations (CASR)** are gradually replacing the **CAR** and **CAO**, to bring Australian regulations more in line with other countries. The first CASR parts were introduced in late 2003. New parts will be introduced when ready, and are expected to include Part 103 (covering private ballooning), Part 115 (commercial ballooning) and Part 149 (sport aviation organisations such as the ABF).

### IMPORTANT NOTE

*New regulations and procedures may apply from time to time.  
Check on the ABF website that you have the latest version of these study notes.*

**Civil Aviation Advisory Publications (CAAP)** set out in simple language the purpose of Regulations or Orders and acceptable ways to comply with them. There are three types of CAAP – blue (operational), green (airworthiness) and yellow (aerodrome). CAAPs are **advisory only** and do not have the authority of regulations.

Balloon pilots should have a copy of CAAP 92-3(1) *Launching and landing areas* and CAAP 157-1(0) *Flight over populous areas* which apply to balloon operations.

CAAP 41-1 (0) *Balloon maintenance* needs updating and may contradict some regulations.

**Aeronautical Information Publication (AIP)** is a package of documents giving specific operational information for the safe and efficient conduct of flights. AIP includes:

- **Charts** (discussed in detail in the Navigation section of this manual). Your charts must be current – they are usually updated twice a year.
- **AIP Book** in 3 sections, AIP GEN (general), AIP ENR (en route) and AIP AD (aerodrome) – updated 4 times a year - available on Airservices website.
- **AIP Supplements (SUP)** containing operational information of a temporary nature and recent changes to information in AIP. Issued usually monthly or as required - available on Airservices website.
- **Aeronautical Information Circulars (AIC)** containing technical information and advance notice of proposed changes. Issued monthly - available on Airservices website.
- **Departure and Approach Procedures (DAP)** from which you can identify aerodromes with an instrument approach procedure – updated 4 times a year (available on Airservices website).
- **NOTAM** – notices issued by Airservices Australia and containing information or instructions concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the **timely knowledge of which is essential** to persons concerned with flight operations (and therefore not appropriate to send out by post). NOTAM are issued as required and are available together with aviation weather forecasts on the Airservices website., **NOTAM should be checked daily before flying.** For more details see VFG or ERSA GEN. NOTAM include activation of restricted areas, and temporary local activities such as airshows, military exercises or low jet routes.
- **En Route Supplement Australia (ERSA)** is a joint military/Airservices publication containing essential information for flight planning and in-flight. It includes details of aerodromes, and restricted and danger areas. ERSA is updated 4 times a year, and is available on Airservices website.

**VFR Flight Guide** is a concise and easy to read handbook that summarises the parts of CAR, CAO and AIP which apply to flights made under the visual flight rules

(VFR) in Australia. Unlike the AIP that it is based on, it is may not be updated for a period of some years and therefore, is not a legal document. However, it is easy to use, and **private balloon pilots are strongly recommended to have a copy.**

## Other documents

**Australian Ballooning Federation Operations Manual** (Ops Manual) is the primary reference for Australian private (sport) ballooning. It contains an overview of legal requirements, plus details of balloon pilot certificates, practical flight training exercises and the syllabuses for written exams. The ABF Ops Manual is **approved by CASA and has similar legal status to other CASA documents.**

**The manufacturer's flight manual and maintenance manual** (may be separate documents) are supplied with a balloon and give general instructions for operation of the balloon, including various flight limitations, and instructions for maintenance and repairs. Updates may be issued and may be available on the manufacturer's website.

**The balloon logbook** is a required record of the hours flown by a balloon, its maintenance and continuing airworthiness, and the weights of the balloon envelope, basket, burner and cylinders. The logbook should contain a statement that specifies the maintenance schedule to be used for the balloon. It must be filled in promptly after each flight or maintenance procedure. The pilot should **always look at the logbook before flying**, to see if there is any reason why the balloon may not be flown, or any other information to be aware of.

**The pilot logbook** is a required record of the pilot's total flying hours and details of individual flights. It must be filled in promptly after each flight. Logbook pages for training flights are contained in the ABF Student Training Record. When you become a private pilot you will need to purchase a full logbook (available from ABF office).

## Conflict or ambiguity in documents

Where differences occur within or between regulatory texts (including manufacturer's manuals and the ABF Ops Manual), the general rule is that **the more conservative requirement or interpretation must be followed** until you have checked the correct interpretation with the appropriate authority.

## Documents that must be carried in a balloon

- maps showing aerodromes, controlled airspace, prohibited, restricted and danger areas and sensitive zones along the likely flight path
- balloon manufacturer's flight manual
- pilot licence or certificate *} as applicable, for*
- radio operator licence or certificate (if required) *} any pilot who will*
- medical certificate (if required) *} be at the controls.*

For private balloon flight the balloon logbook also serves as the Maintenance Release document. CAAP 41-1(0) advises that **the logbook need not be carried in the balloon** but must be available to the pilot immediately before and after each flight.

## Private operations

See CAR 1988 part 1 and part 2 (7A).

A balloon flight is a **private operation** (that may be carried out by the holder of a private pilot certificate) provided:

- the flight has not been publicly advertised or announced,
- the number of people on board (pilot included) is not more than 6, and
- the pilot is not being paid for the flight.

Clearly this means that a private balloon pilot/owner/operator **must not** be conducting a passenger flying business. To do this requires a commercial pilot licence and an air operator's certificate, both issued by CASA.

However, the costs of a private flight may be shared equally by all on board **provided the pilot also pays an equal share, and no other payment is required by any person on the flight.**

Payment for operations other than carrying passengers is called aerial work. It is a generally accepted principle that a private pilot/owner may accept some financial or other assistance in return for advertising on the balloon, provided the pilot is not paid for flying and is not obliged to make flights at the sponsor's request. However, this should be treated with caution and official advice obtained from CASA if you are in any doubt.

## Other privileges and limitations

You must know the privileges and limitations of the ABF student pilot and private pilot certificates, including the requirements for remaining current. See Ops Manual section III. You can expect these topics to be included in the exam.

## Tethered operations

See CAR 1988, reg 260. Except with written approval from CASA, a tethered balloon (CASA calls it a 'manned fixed balloon') may not be flown:

- at a height exceeding 300ft, or
- within 4,000 metres of a government or licensed aerodrome (measured to the boundary fence).

Non-tethered flights are called 'free' flights.

## Parachute drops

See ABF Ops Manual. The pilot must have a minimum 75 hours as pilot in command of balloons, and operate in accordance with any CASA requirements and the guidelines of the appropriate parachuting organization.

Load calculations must allow for the 'exit weight' of each skydiver, including parachute and harness. Control is easier if the balloon is allowed to begin descent before a skydiver exits the basket, to compensate for the sudden lift experienced as it becomes lighter. If a full load of skydivers is to be dropped, it is recommended that no more than half be allowed to exit the basket at once, so the pilot can regain controlled descent before the next exit is made.

## Endorsements and approvals

In general, private balloon operations may be conducted:

- in Class G (non-controlled) airspace (see Airspace Classification below)
- by day (between first light and last light – see NAV section of this manual)
- in VMC (see Visual Flight Rules and VMC for Balloons below).

The following require additional ABF endorsement and/or CASA written approval. See ABF Ops Manual and CAO 95.54.

For CASA written approvals a minimum of 28 days notice in writing is normally specified, but it is recommended to allow longer than that.

Flight	Requirements
Balloons greater than 120,000 cu ft	Logbook endorsement by an ABF Instructor or Examiner.
At a public event	Written CASA approval for flight at a specific 'regatta, race meeting or public gathering', ie any publicly advertised event.
In controlled airspace	Check flight and logbook endorsement by an ABF Instructor approved to train and do flight checks for the specific airspace. Written CASA approval for the specific airspace.
Night flight	Endorsement by the ABF Operations Manager. Requires minimum 75 hrs in command of balloons, and carrying out a night flight with an ABF night endorsed pilot. Written CASA approval for each specific flight. Equipment as listed in ABF Ops Manual and CASA regulations.
Above 10,000ft AMSL	Written CASA approval for the specific flight
Over the sea	Written CASA approval for the specific flight

## Commercial operations

For charter flights carrying paying passengers the pilot must hold a CASA Commercial Pilot Licence (Balloons), which requires a minimum of 75 hrs in command of balloons, plus additional training and CASA exams. The commercial pilot system is directly administered by CASA and is not within the scope of the ABF or this manual.

## Visual Flight Rules

Balloons must fly according to the visual flight rules (VFR). CASA written approval is required for any balloon flight under instrument flight rules (IFR), for example a record attempt which is planned to fly overnight.

VFR means:

- flying in visual meteorological conditions (VMC – see below),
- being able to navigate by visual reference to the ground or water surface while at or below 2,000ft AGL, and
- not operating before first light or after last light, unless the pilot has a night VFR rating and the balloon is properly equipped.

For an explanation of ‘first light’, ‘last light’, ‘night’ and ‘day’ – see the NAV section of this manual. While ‘sunset’ and ‘sunrise’ may sometimes be referred to in balloon competition tasks, they are not the legal limits of daylight. Night flying requires both an ABF endorsement (Ops Manual III, 3.2) and CASA written approval.

‘Navigate’ in ballooning means being able to identify the balloon’s position and track on the appropriate map or chart.

## VMC for balloons

Visual meteorological conditions (VMC) are defined for different kinds of aircraft in different classes of airspace. For private balloon flight in controlled airspace refer to the VMC requirements in AIP or VFG for the appropriate class of airspace. (See Airspace Classification later in these notes.)

VMC for balloons in Class G (non-controlled) airspace are shown in the tables below.

<b>VMC for all aircraft in Class G airspace</b>		
Includes all balloon flights not covered by the specific VMC for balloons in the next table		
<b>Height</b>	<b>Minimum visibility</b>	<b>Minimum clearance from cloud</b>
At or above 10,000ft AMSL	8,000m	1,500m horizontally 1,000ft vertically
Below 10,000ft AMSL	5,000m	1,500m horizontally 1,000ft vertically

<b>Specific VMC for balloons in Class G airspace</b>		
To fly in these conditions: <ul style="list-style-type: none"> <li>• VHF radio must be carried and used</li> <li>• the balloon must be at least 10NM from an aerodrome with an instrument approach procedure</li> </ul>		
Height	Minimum visibility	Minimum clearance from cloud
Below 3,000ft AMSL or 1,500ft AGL (whichever is higher)	5,000m	Clear of cloud
Below 500ft AGL	100m	No minimum distance is required from cloud which is below 500ft AGL, provided the flight is by day

The information above is summarised in the two diagrams on the following page, which show how flight is restricted when you do not carry and use radio in a balloon.

‘Visibility’ refers to horizontal or slightly below the horizontal in the direction of flight, as if looking out of an aeroplane cockpit.

The reduced VMC for balloons below 500ft AGL makes it possible to launch in early morning fog that is expected to clear. Flight must not continue above 500ft AGL unless the visibility and cloud clearance from 500ft upwards are as shown in the table. As a pilot you must always ensure that a flight is safe in your judgement, as well as being legally within VMC. Allow adequate margins with regard to the overall flight conditions and your own experience. It is advisable not to launch in 100 metres visibility unless you are confident that the visibility will improve as you fly. It is possible to fly over fog only to discover that the fogbank is continuing to form ahead of you, and you are unable to clear it. Fog or low cloud is not always calm – it can be moving at up to 8 knots. Powerlines are hard to see and landing in fog can therefore be very dangerous.

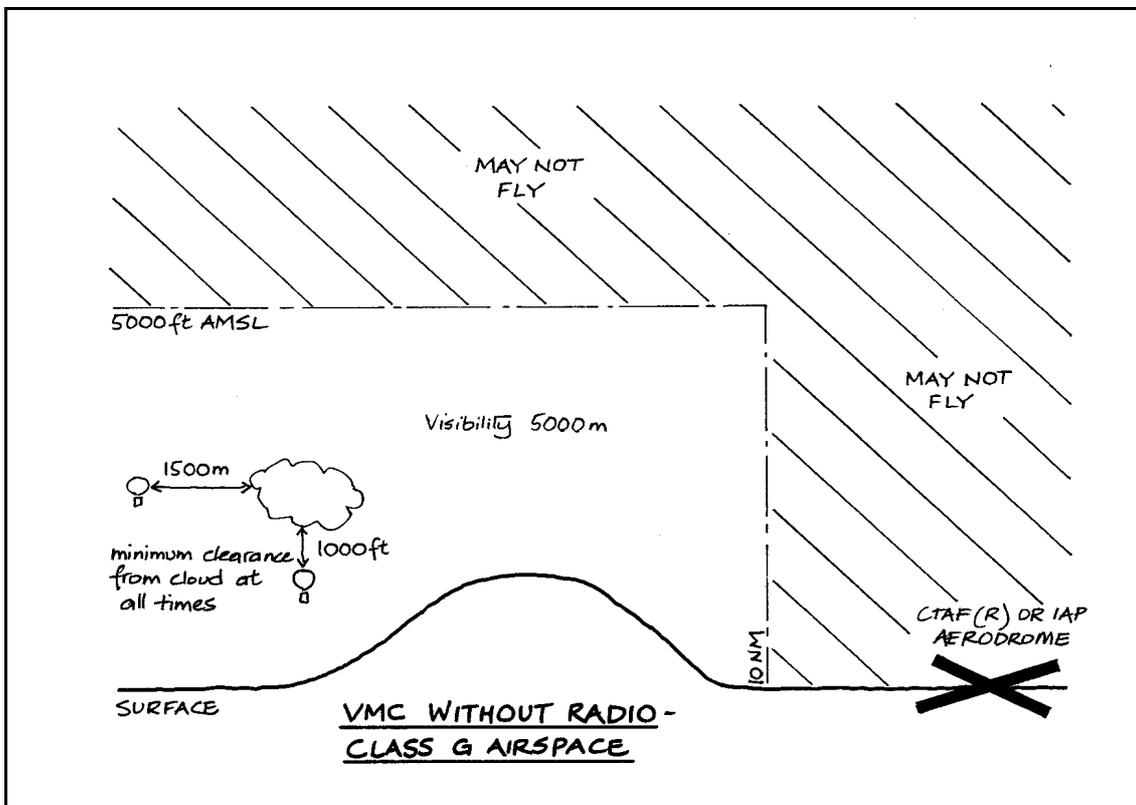
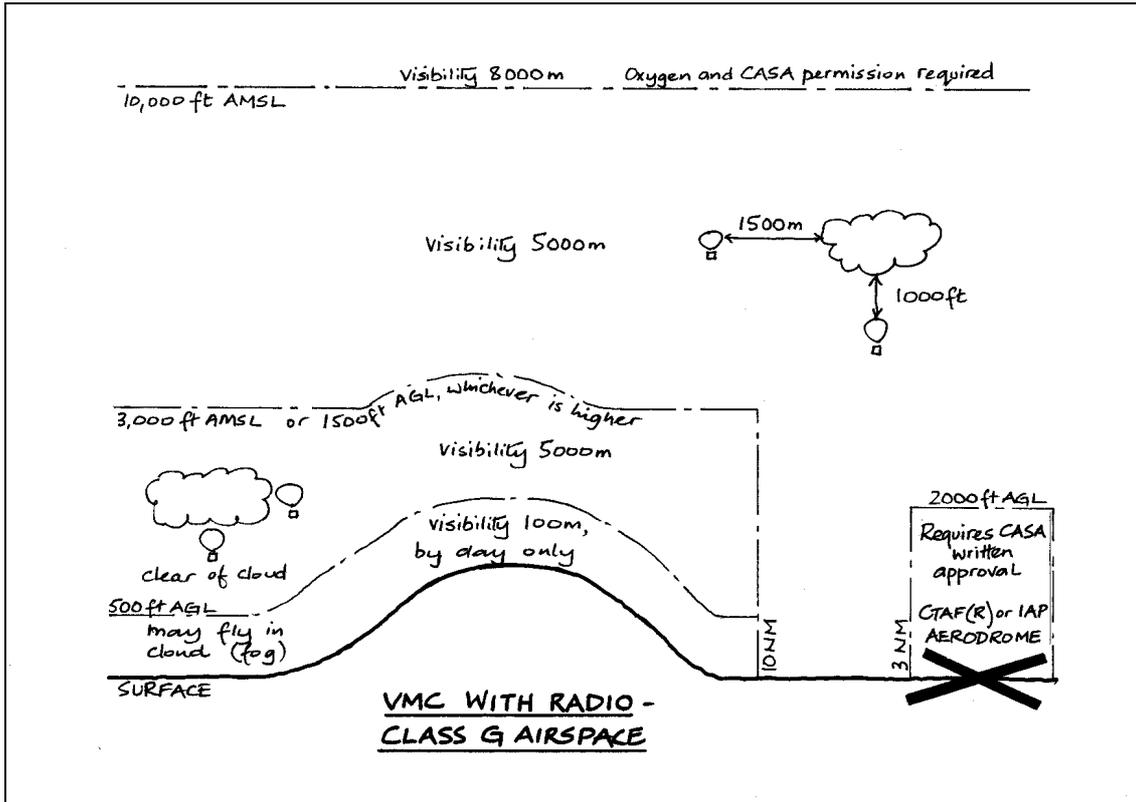
Exam questions will be based on the AIP version of VMC as in the table above, NOT on the previous VMC for balloons found in CAO 95.54 para 4.2 (c), (d) and (f) Issue 3 dated 23 December 2004.

#### **Aerodromes with an Instrument Approach Procedure (IAP)**

A GPS instrument approach is now available at many small aerodromes, including some that have no other IAP. GPS approaches are not listed in ERSA, so the only reliable way to check if an aerodrome shown on a chart has an IAP is to see if it is **listed in DAP** (Departure and Approach Procedures – which is a part of AIP). DAP can be viewed on [www.airservicesaustralia.com/pilotcentre/aip](http://www.airservicesaustralia.com/pilotcentre/aip).

#### ARE YOU UP TO DATE?

*New regulations and procedures may apply from time to time.  
Check on the ABF website that you have the latest version of these study notes.*



Comparison of visual flight in Class G airspace with (top) and without radio.

## Launch and landing

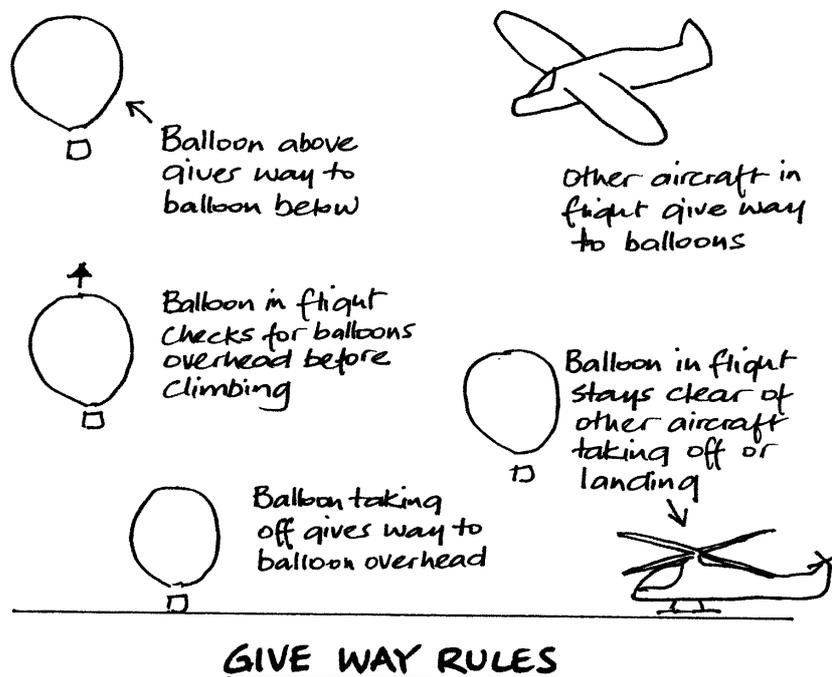
Read CAAP 92-3(1) *Launching and landing areas*. These advisory guidelines include:

- launch area – the recommended safe distance from powerlines is 2 balloon diameters upwind and crosswind, and far enough downwind to safely clear the powerlines by 100ft vertically
- intended landing area – at least 2 balloon diameters from any powerline, and the balloon can be safely manoeuvred clear of any obstacles
- handling line – not to be used within 1 balloon diameter of any powerline.

## Prevention of collisions

Balloons flying together **must avoid basket to envelope contact**:

- **give way to balloons below** your balloon. They may not be able see you, so consider using radio or a hooter or shouting if necessary to warn that you are above. Climb if necessary to avoid a collision.
- **take care when climbing** – whenever possible, check with your ground crew or another balloon that you are clear above before initiating a climb.



In general, other aircraft must give way to balloons. However, balloons must comply with the following in relation to all other aircraft, including other balloons (see CAR 161 to 163A or VFG pages 74 and 81):

- see and avoid other aircraft where possible
- any aircraft being overtaken has right of way

- aircraft in flight or on the ground give way to aircraft landing or on final approach
- do not take off unless there is no risk of collision with other aircraft
- a balloon on the ground must not be a hazard to other aircraft.

## Minimum heights

Balloons are exempt from CAR 157 which requires a minimum height of 500ft for aircraft (see VFG p271), and may fly at any height over sparsely populated areas consistent with safety and avoiding disturbance. However this does not give balloonists the right to land anywhere, to enter private property to retrieve balloons, or to disturb livestock or people. (See ABF Code of Conduct.)

A minimum height does apply:

### **Over a city, town or populous area**

Not below 1,000ft above ground level or any built object on the ground. The restriction includes a buffer zone of 300 metres surrounding the area.

Read CAAP 157 – 1(0) *Flight over populous areas*. A lower height is allowed within reason during take-off or landing, provided you have CASA permission to take off or land in a built-up area.

‘Populous area’ does not appear to be defined by CASA. It can be assumed to at least include built-up areas as indicated on survey maps or charts, and you should apply a conservative standard to other areas.

Always check that you have sufficient fuel before making the decision to overfly a populous area, just as you would for any other area unsuitable for landing.

### **Over some Sensitive Zones (SZ)**

SZ’s are areas where local knowledge or flying experience indicates that balloons definitely should not land, or should fly at a stated minimum height to avoid disturbance. Details of any SZ’s in your intended flying area should be obtained from your ABF State Representative and local balloonists. They are progressively being listed on the ABF website. (See Code section of this manual).

## Prohibited, Restricted and Danger Areas

These areas are shown on charts and elsewhere by the appropriate letter and identification number, eg restricted area R253 or danger area D208. Hours of activation are listed in ERSA PRD section – eg ‘HJ’ (daylight hours only) or ‘H24’ (all hours). AIP GEN 2.2 lists other abbreviations.

**P** (Prohibited) – you may not fly in this airspace at any time. There are currently no prohibited areas in mainland Australia.

**R** (Restricted) – you may only fly with prior approval or when restrictions are not in force. If ERSA says the area is ‘activated by NOTAM’, check current NOTAMs. Note that a restriction listed in ERSA may be *deactivated* by a NOTAM.

**D** (Danger) – Flight is not restricted but you should be alert to the potential danger as listed in ERSA (eg, busy traffic in a flying training area, or explosives at a quarry).

If an R or D area lies within controlled airspace (see Airspace Classification later in these notes), you may not enter it unless you are approved to fly in that airspace and have an airways clearance.

### **Air Traffic Services (ATS)**

Air Traffic Services are provided to assist aircraft in different ways, and include:

**Air Traffic Control Service (ATC)** – a service provided for the purpose of

- preventing collisions between aircraft, or between aircraft and obstructions, and
- expediting and maintaining an orderly flow of traffic.

Any area where ATC services are provided is called ‘controlled airspace’, which typically includes high traffic areas in and around major airports, and busy air routes.

**Flight Information Service (FIS)** is a lower level of service which

- provides advice and information to pilots for the safe and efficient conduct of flights, but
- does not give avoidance advice – pilots are responsible to see and avoid other aircraft.

FIS pre-flight briefing information has various levels of advice on a range of issues that may affect flight, including weather reports and forecasts, AIP SUP, AIC and NOTAM.

FIS is also available in flight on VHF radio (callsign ‘FLIGHTWATCH’) within defined flight information areas (FIAs), which are grouped into two Flight Information Regions (FIRs) based in Brisbane and Melbourne. The boundaries and frequencies for these are indicated on charts and listed in ERSA GEN and the Bureau of Meteorology website [www.bom.gov.au](http://www.bom.gov.au). They are different from the Area VHF boundaries and frequencies used to communicate with other aircraft. Balloons do not normally require FIS in flight.

**Search and Rescue Services (SAR)** assist in locating missing or overdue flights. ATS will initiate SAR action if they receive an urgency or distress message or a request for SAR from the pilot by radio. A balloon retrieve crew can also request search action, but they should only do this if there are serious concerns, as it could be expensive. The number for telephone alerting is 1800 815 257, shown in the phone book under Australian Maritime Safety Authority – Aviation Rescue.

In controlled airspace, ATS must be advised when a balloon lands or leaves the airspace, otherwise SAR will automatically be activated after a fixed waiting period.

## Airspace Classification

See AIP GEN 2.2

For aviation purposes the air is divided vertically and horizontally into blocks of 'airspace', rather like slices and layers of a cake. Different sections of airspace are designated as Class A, Class C, Class D, Class E or Class G according to their operational rules. There is currently no Class B or Class F airspace in Australia.

### Controlled airspace (Classes A, C, D and E)

On aviation charts the vertical boundaries of airspace are shown as coloured lines. For the horizontal boundaries only the lower limit (LL) of any block of airspace is shown on the chart. The upper limit is taken to be the same as the lower limit of the next layer of airspace. Eg 'A LL FL180, C LL 1500' on a chart indicates there is Class C airspace from 1,500ft AMSL to Flight Level 180, and Class A airspace above that (up to the limit of the chart).

**Class A** is typically above FL180 and VFR flights are not permitted there. **Classes C and D** are airport control zones and associated control areas. **Class E** airspace is mostly above 8,500ft AMSL.

To conduct private balloon operations in controlled airspace you must be endorsed for that specific airspace, have written CASA approval for the flight, and an airways clearance. See ABF Ops Manual Section III, 3.2.

Controlled airspace includes:

- **Control Zones (CTR)** – controlled airspace *starting from the ground surface up to a given altitude or flight level*. It is typically the airspace extending 5 to 8 nautical miles from a major airport.
- **Control Areas (CTA)** – controlled airspace *starting from a lower limit which is above the ground surface*. This includes the airspace which steps up in stages above a CTR. Each stage gets wider as you go up, rather like a wedding cake upside-down.
- **Military Controlled Airspace.**

### Non-controlled airspace (Class G)

All airspace not shown otherwise on charts is understood to be Class G. This may also be referred to as 'OCTA' (outside controlled airspace). Most private balloon flights are in Class G airspace.

Private balloon operations may be conducted in Class G airspace, subject to the conditions listed in CAO 95.54 and VFG pages 271-3 (or AIP ENR 5.5, 3).

When flying near any licensed uncontrolled aerodrome, a private balloon must remain outside a radius of 5km (3NM) or above 2,000ft AGL, unless the pilot is specifically approved in writing by CASA.

Licensed aerodromes are easily identified in ERSA, where the information on them is printed on a plain white background. Information on unlicensed aerodromes is on a shaded background.

**CTAF (Common Traffic Advisory Frequency)** refers to radio procedures in the vicinity of ‘non-towered’ aerodromes – ie, all aerodromes in Class G airspace, and also controlled aerodromes when the tower is not in operation. A listening watch must be maintained on the published CTAF frequency, and position reports made as appropriate to maintain safe operations.

CTAF procedures now apply at all aerodromes previously within an **MBZ (Mandatory Broadcast Zone)**. MBZ’s no longer exist. The term ‘CTAF’ now only refers to the required radio procedures, not to a section of airspace. Dimensions no longer apply, so aviation charts show only CTAF frequency but no boundaries. Be sure you refer to a *current* chart before flying! ‘CTAF (R)’ on the chart or in ERSA indicates all aircraft must use radio in the vicinity of the aerodrome – however balloons may be required to carry radio even when the ‘R’ is not shown.

## VHF radio

A serviceable VHF radio must be carried and used whenever a balloon is flying:

- within 10NM of an aerodrome with an instrument approach procedure
- within 10NM of an aerodrome with a published CTAF frequency
- above 5,000ft AMSL
- near cloud (see VMC notes above)
- at night, or
- in controlled airspace.

Refer to the diagram Balloons With Radio earlier in this section.

The operator must hold either a current CASA Flight Radiotelephone Operator Licence or an ABF Radio Operator Certificate (ROC). For details of the ROC see CAO 95.54, ABF Operations Manual III, 3.4, and the ROC section of this manual.

## Altimeter settings

For a detailed description see Altimetry in the NAV section of this manual.

For local balloon flights the altimeter should be set to the QNH of a nearby airport (or to the launch field elevation which is virtually the same setting). If this is not available, set the Area QNH. QNH settings are given in aviation forecasts, and available from the control tower when requesting an airways clearance.

See VFG pages 70-71 for altimeter setting procedures for flights over longer distances or above 10,000ft AMSL. You should know these procedures and terms. Flight

Levels (FL) approximate to hundreds of feet in altitude, eg FL110 is roughly equivalent to 11,000ft AMSL.

## Oxygen

Atmospheric oxygen decreases at higher altitude. Lack of oxygen affects judgement and performance, and can lead to loss of consciousness and death.

A pilot must use supplemental oxygen above 10,000ft AMSL (see CAO 20.4.6.1).

Passengers in an un-pressurised aircraft must have supplemental oxygen continuously available above FL140, ie approx 14,000ft (see CAO 20.4.6.5).

## Passengers and Cargo

A balloon pilot must brief passengers at appropriate stages of the flight, including a detailed briefing on landing procedures prior to take-off. Loose gear should be stowed securely before landing.

For essential minimum briefing checklists see Briefings in the A&A section of this manual.

## Alcohol and drugs

See CAR 256 and VFG page 11.

Operating crew must not have an impaired capacity to act due to alcohol or drugs. In particular they must not consume alcohol within 8 hours before flight, or on board an aircraft. 'Operating crew' includes balloon pilots. Although balloon ground crew are not covered by this rule they should be able to carry out their roles to an appropriate standard of safety.

No person may board a balloon when intoxicated.

## Reportable Accidents and Incidents

See ABF Ops Manual VIII, 1.8 and AIP ENR 1.14. *Note that VFG pages 28-30 have been superseded by changes in AIP.*

### **Australian Transport Safety Bureau (ATSB)**

ATSB incorporates the former Bureau of Air Safety Investigation (BASI) and its responsibilities include investigating aviation accidents. ATSB investigations are independent of CASA and do not assign blame.

**Balloon accidents and incidents must be reported to ATSB and also to the ABF** (see below). All reports are confidential, and may be used for safety education without

giving identifying details. Reporting helps prevent similar occurrences in future, through improvements to equipment, operational systems, training and information.

### Classification

Aviation accidents and incidents are divided into:

#### Immediately Reportable Matters

- eg death or serious injury, aircraft missing or seriously damaged
- must be reported as soon as reasonably practicable by telephone
- written report must follow within 72 hours

#### Routine Reportable Matters

- these include injuries which are not considered serious, fuel running dangerously low, or the use of any emergency procedure
- written report required within 72 hours.

Further examples of reportable matters are given in AIP. The examples above refer to private balloon flights – the rules are slightly different for commercial flights.

### Reports

Two separate written reports of balloon safety incidents are required:

1. The pilot in command, the balloon owner and the balloon operator are all responsible to ensure that a report is submitted to ATSB. They do not need to send in separate reports. ATSB telephone reports can be made on 1800 011 034. Written report forms and further information are available online at [www.atsb.gov.au](http://www.atsb.gov.au).
2. ABF members are also responsible for reporting balloon accidents and incidents to the ABF. ABF Incident Report forms can be obtained from the ABF Administrator or Safety Officer, or online at [www.abf.net.au](http://www.abf.net.au).

### Confidential Aviation Incident Report

A separate report called a Confidential Aviation Incident Report (CAIR report) may be submitted to ATSB by any person, even if they were simply a witness to an occurrence. The identity of the reporter is kept confidential.

### Maintenance

Maintenance of a balloon (which includes any equipment that becomes airborne as part of it) must be conducted in accordance with the manufacturer's maintenance manual and with CASA maintenance regulations for balloons. 'Maintenance' means all work done, including inspections, tests, general maintenance and occasional repairs, however minor. Note that balloons are Class B aircraft.

Under CASR Part 47, the **registered operator** of a balloon (for private balloons this is usually the owner) is **responsible for knowing what maintenance is required and making sure that it is done on time, by a suitably authorised person, and entered in the balloon logbook.** It is not acceptable to assume that the person doing the

maintenance has done everything that is required. A separate maintenance release document is not required for a balloon - the balloon logbook serves this function.

The registered operator should obtain a copy of:

- the manufacturer's maintenance manual (this is specified in the balloon logbook statement) and any relevant Service Bulletins
- CAR 1988 Part 4 (Airworthiness)
- CASR Part 39 LTA (Lighter Than Air) which contains the Airworthiness Directives (ADs) for balloons and airships. New ADs are sent free to the registered operator, and are also available on the CASA website
- CASA Instrument of Authorisation 566/03 (pilot maintenance), and
- Any other CASA maintenance requirements.

**Airworthiness Directives (AD's)** are published by CASA when an unsafe condition exists or is likely to exist or develop in an aircraft. Balloon ADs are titled 'AD/BAL/...' followed by a reference number. They may refer to specific sizes or makes of balloon, and may require either a one-off inspection and action or periodic maintenance at specified intervals. The balloon manufacturer may issue similar **Service Bulletins (SB's)**. Both are mandatory and when carried out must be recorded in the balloon logbook as for any other maintenance.

It is good ballooning practice to maintain ancillary items equally well, including your inflation fan, tether ropes, radios and trailer. Safe and enjoyable ballooning relies on all of these. Maintenance of these items is not recorded in the balloon logbook.

If a balloon becomes **unairworthy** for any reason (eg, damage or defect, or a scheduled inspection or maintenance being overdue), the C of R holder, registered operator and pilot are all responsible for making sure that this is recorded in the logbook and the balloon is not flown until the necessary work is done. Any defects must be reported to CASA as detailed in CAR 1988 Part 4B.

#### **Maintenance by a balloon pilot**

CASA Instrument 566/03 lists minor maintenance items that may be carried out by any licensed balloon pilot. This document has replaced Schedule 8 of the CAR 1988 for maintenance of balloons. **No person may carry out any maintenance work, however, unless he is both approved and competent to do it.** For example, state gas regulations may require a gasfitter's qualification for maintenance of gas equipment.

A balloon pilot is approved to carry out the pre-flight inspection of a balloon to see that it is complete, correctly rigged, and ready for flight. The pilot should enter the preflight inspection in the balloon logbook, eg '*Preflight inspection in accordance with Kavanagh Balloons Flight Manual (signature and date)*'. It may be acceptable to make this entry after the flight, when the flight time is also entered.

#### **Balloon Maintenance Authority (MA) holders**

Balloon MAs are approved by CASA. Most of them are balloon pilots. There is no formal training requirement and they may have limited practical experience. Intending MA holders are required to pass a CASA exam – for details contact the ABF Operations Manager. MA holders are approved to carry out the scheduled

inspections of a balloon, usually required every 12 months or 100 hours of flying, whichever comes first. They may also perform any maintenance that is not specifically excluded in Schedule 7 of the CAR 1988. So for example they may not do repairs to the burner system other than seal replacement or the cleaning of jets. MA holders are not authorised to supervise maintenance done by another person.

### **Certificate of Approval holders**

The holder of a CASA Certificate of Approval for balloon maintenance is entitled to run a workshop, including supervising other staff, to do the kinds of maintenance approved in their certificate. For example this could include all work on balloons or be limited to work on envelopes only. As specified in Schedule 7 of the CAR 1988, **major maintenance and structural repairs** can only be done under a Certificate of Approval. Due to privacy legislation CASA does not release the names of individuals who are balloon MAs or certificate holders, but these may be available from the ABF or its regional clubs or other balloon pilots.

### **Other CASA authorisations**

CASA may authorise certain people to carry out specific kinds of maintenance. For example, AD/BAL/3 authorises ten yearly inspections and testing of balloon fuel cylinders to be carried out by a 'test station certificated in accordance with the requirements of AS 2337.1', the Australian Standard that applies to work on all LPG cylinders. Other examples are holders of an aircraft weight control authority or welding authority.

### **Logbook entries**

The balloon logbook is the maintenance record of a balloon. All maintenance must be entered in it, and the authorised person who has performed the work must sign the entry, before the balloon's next flight. The person doing the maintenance is responsible for the quality of the work they sign for. Legal requirements for logbooks are detailed in Schedule 6 of the CAR 1988, para 2.5 in particular, and in CAO 100.5.

### **Flight time**

In both balloon and pilot logbooks, flight time is measured ***from take-off to final landing, less any time spent on the ground during the flight***. When tethering a balloon it is usual to record the whole hot inflated time in a separate column; tether time is not flying time, and should not be included in the pilot's total flying hours, but it is included in the balloon time in service. The balloon logbook should record the time for each separate flight, and the total time in service (TTIS). The current standard is to **write flight time in tenths of hours**, to the nearest 6 minutes, using a decimal point, eg 0.3 hours to show 18 minutes. An earlier system showed hours and minutes, to the nearest 5 minutes, separated by a colon, eg 0:30 for 30 minutes. Either is acceptable but entries should be consistent.

**YOUR FEEDBACK PLEASE!**

*If you have any corrections or suggested improvements to these study notes please advise the ABF Operations Manager.*