Australian Government

Civil Aviation Safety Authority

visual flight guide

VERSION 3 OCTOBER 2009

CASA Aviation Safety Communications

Tel 131 757

The Visual Flight Guide aims to help VFR pilots fly safely anywhere in Australia. The information contained in the Guide has been carefully collected and presented in an easy to understand and use format. The information contained in the Guide is likely to be subject to change without notice over time. It should therefore be seen as an educational tool only.

You can find a more regularly updated version of the VFR Flight Guide on the CASA website at **www.casa.gov.au**

Medical Certificate
Due:

Flight Review
Due:

TO CARRY PASSENGERS

3 Take-offs and Landings in past 90 days
Due:

NIGHT VFR

1 Flight of 1 Hour Duration in 12 Mths.
Due:

1 Take-off and Landing in 6 Months
Due:

3 Take-offs and Landings at Night in past 90 days
Due:

(TO CARRY PASSENGERS)

pilot recency check

CURRENT

page number

Medical? 5
- NO → **Do not fly solo**
- YES ↓

Flight review? 8
- NO → **Complete before flying in command**
- YES ↓

Maps and charts? 10,118
- NO → **Obtain before flight planning**
- YES ↓

Weather forecast and NOTAM 89,123 95
- NO → **Obtain forecast**

Website	www.airservicesaustralia.com
Briefing	1800 805 150
PC Access	0198 304 767
	Direct dial
Helpdesk	1800 801 960

THEN

- YES ↓

FLIGHT PLAN

- 88,91 • Choose suitable route and complete calculations
- 212 • Appropriate height
- 76,121 • Avoiding Controlled Airspace
- 104,107 • Flight fuel
- 116 • Last light
- 98 • Weight and balance calculations
- 98 • Take-off and landing performance.
- 152 • Survival equipment.

Check CTA and restricted area boundaries.

pilot recency check

SARTIME flight or CTA

NO → **Leave flight note with a responsible person**

THEN

YES

Submit SARTIME notification if OCTA Submit Domestic/CAO notification if in CTA/CTR

YES

Fax	1800 805 150
Briefing	1800 805 150
PC Access	0198 304 767 Direct Dial
Helpdesk	1800 801 960

Radio to ATS on appropriate frequency

YES

CHECK AIRCRAFT AND PERSONAL DOCUMENTS 14

Required Documents

- Pilot's licence
- Medical
- Aircraft flight manual
- Aircraft maintenance release

YES

PLAN FOR CONTINGENCIES 91

- Deteriorating weather
- Radio failure
- Diversions
- Departure procedures (eg. "Clearance not available, remain OCTA")

YES

AIRCRAFT PRE-FLIGHT INSPECTION 158

- Daily inspection or pre-flight inspection as per ACFT system of maintenance or pilot operating handbook.
- Maintenance release signed
- FUEL: Check for correct grade, quantity, and contamination.

safety promotion products

Please refer to the CASA online store for all the latest product materials available.

WWW.CASA.GOV.AU/ONLINESTORE

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introduction

This VFR Flight Guide (VFG) has been designed primarily for VFR pilots in domestic operations. Material relating to commercial operations has therefore been omitted unless it contributes to the understanding of a particular topic.

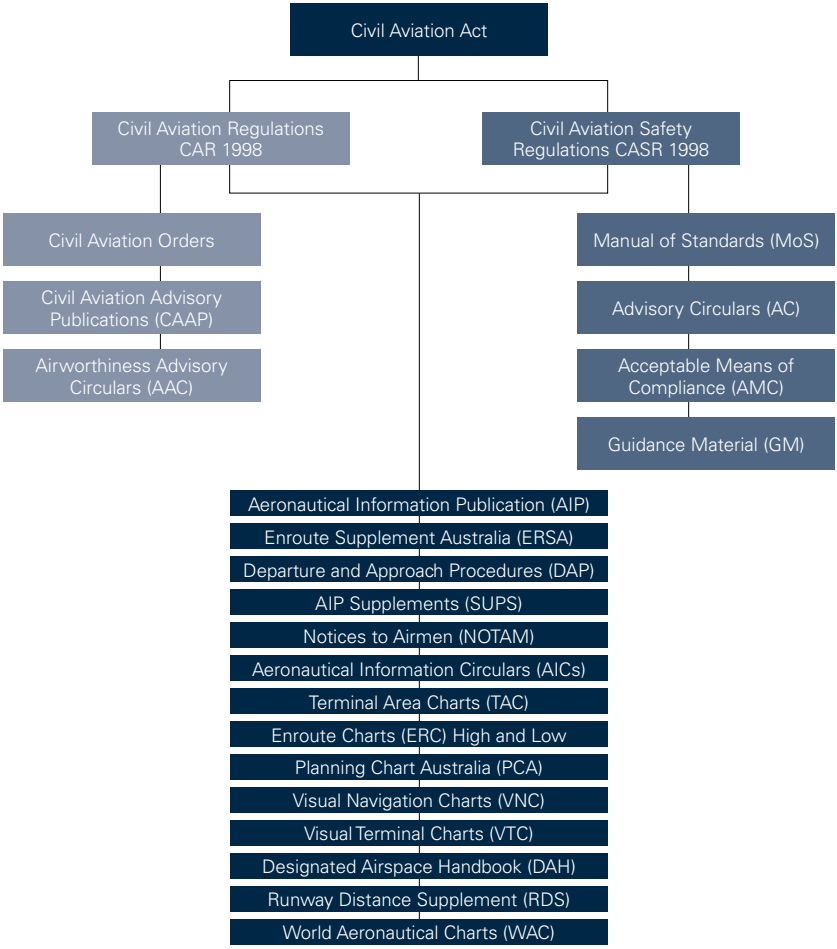
For ease of understanding, the wording has been modified considerably from that of the source documents. Since the precise wording of a regulation may be required by some readers, appropriate references to the source documents have been provided throughout the text where appropriate.

A section is included for helicopter pilots that explains differences between fixed wing and rotary wing operations. A Night Visual Flight Rules (NVFR) section is also included for appropriately rated pilots.

Much new information has been added to this version of the Guide particularly in the area of electronic flight planning, and much of the material has been rewritten and relocated. The index has been considerably expanded.

the rules structure

The following is the structure of the various rules, regulations and guidance material.



The Civil Aviation Act is the act which established the Civil Aviation Safety Authority (CASA) with functions relating to civil aviation, in particular the safety of civil aviation.

The Civil Aviation Regulations 1988 (CARs) are the regulations made under the above Act and which are currently in transition to the Civil Aviation Safety Regulations 1998.

the rules structure

The Civil Aviation Safety Regulations 1998 (CASRs) are currently being rewritten and will ultimately incorporate the 1988 regulations. The numbering system for the"Parts" of these regulations generally follows the U.S. Federal Aviation Regulations.

The Civil Aviation Orders are the second tier legislation.

Aeronautical Information Publication (AIP) is a publication containing aeronautical information of a lasting nature. The AIP book is the basic document and this is supplemented by:

- **Enroute Supplement Australia (ERSA)** containing aerodrome and other operational data.
- **Departure and Approach Procedures (DAP EAST & DAP WEST)** primarily for IFR operations.
- **AIP Supplement (SUP)** temporary changes to the information contained in the AIP which are published by means of special pages.
- **Notice to Airman (NOTAM)** a notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.
- **Aeronautical Information Circular (AIC)** a notice containing information that does not qualify for the origination of a NOTAM, or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative or legislative matters.
- **Terminal Area Chart (TAC)**
- **En Route Chart (high and low) (ERC-H & ERC-L)**
- **Planning Chart Australia (PCA)**
- **Visual Navigation Chart (VNC)** 1:500,000 with airspace detail
- **Visual Terminal Chart (VTC)** 1:250,000 with airspace detail
- **Designated Airspace Handbook (DAH)**

World Aeronautical Charts (WAC) are charts to a 1 : 1 000 000 scale which show topographical details but not details of airspace organization.

Civil Aviation Publications (CAAPs) are numbered in accordance with the regulations to which they refer. They describe methods, but not necessarily the only method of complying with the particular regulation.

the rules of structure

Manual of Standards (MOS) a document for CASA internal use in interpretation of various regulations.

medical certificate

FLIGHT CREW LICENCE (CAR 5.04)

Generally speaking, unless you have obtained permission from CASA, you must not perform any duty authorised by your licence unless you hold a current medical certificate (CAR 5.04 - CAR 5.07).

For private operations the minimum requirement is a class 2 medical certificate.

The period in which a medical certificate remains in force is dependent on the age of the pilot but may be varied for other reasons (CASR 62.205).

OBLIGATION TO TELL CASA OF CHANGES IN MEDICAL CONDITION (CASR 67.265 - CASR 62.270)

If your ability to act efficiently is, or is likely to be impaired, due to illness or injury, no matter how minor, you must not fly.

Additionally, if you hold a student licence , a private pilot licence or radiotelephone operator licence and the impairment lasts for 30 days or more, you must not fly until a designated aviation medical examiner (DAME) certifies that the impairment no longer exists. (The above period is reduced to 7 days for commercial pilots).

Suspension of medical certificate due to pregnancy is contained in CASR 67.235.

CAUTION: OVER THE COUNTER OR PRESCRIBED MEDICATION/DRUGS MAY REDUCE YOUR ABILITY TO FUNCTION PROPERLY WHILE FLYING.

student pilot licence

DURATION OF LICENCE

Student and private licences remain in force until suspended or cancelled. (CAR 269)

LICENCE REQUIREMENTS

WHAT DOES A STUDENT PILOT LICENCE AUTHORISE A PERSON TO DO? (CAR 5.66)

A student pilot licence authorises you to fly a training aircraft as pilot in command and to operate the aircraft's radio for the purposes of the flight. The permission of an authorised instructor is required for all student flights and the student must conduct the flight in accordance with any conditions

WHERE MAY AN INSTRUCTOR PERMIT A STUDENT TO FLY AS PILOT IN COMMAND? (CAR 5.69)

An authorised flight instructor must not permit a student pilot to fly an aircraft as pilot in command except:

- in a traffic pattern (circuit); or
- within the student pilot area limit provided that the student has flown 2 hours solo in the traffic pattern in an aircraft of the same category (CAR 5.67 aeroplane, helicopter, gyroplane or airship); or
- along a route specified by the instructor for the purpose of solo cross country training.

MAXIMUM CONSECUTIVE SOLO HOURS THAT A STUDENT MAY FLY (CAR 5.70)

A student who has not passed the general flying progress flight test (GFPT) is not permitted to fly solo for more than 3 consecutive hours without undertaking dual flying. If the GFPT has been passed, a maximum of 15 solo hours is permitted without further dual flying.

All of the flights specified above apply to only one category of aircraft (meaning CAR 5.67 aeroplane, helicopter, gyroplane or airship)

RECENT EXPERIENCE REQUIRED BEFORE A STUDENT CONDUCTS A SOLO FLIGHT (CAR 5.71)

A student who has not passed the GFPT is not permitted to conduct a solo flight unless the student has flown solo or undertaken dual flying in the previous 30 days in an aircraft of that category.

A student who has passed the GFPT is not permitted to conduct a flight as pilot in command unless the student has flown solo or undertaken dual flying in the previous 90 days in an aircraft of that category.

CARRYING OF PASSENGERS BY A STUDENT WHILE FLYING AS PILOT INCOMMAND (CAR 5.72)

A student is not permitted to fly as pilot in command in an aircraft in which a passengers is carried unless

- the flight takes place solely within the student pilot area limit; and
- the student pilot has passed a general flying progress flight test, and a basic aeronautical knowledge examination, for aircraft of the category used for the flight.

private pilot licence

WHAT DOES A PRIVATE LICENCE (AEROPLANE) AUTHORISE A PERSON TO DO ? (CAR 5.78)

As the holder of a private licence (aeroplane) you are authorised to fly an aeroplane as pilot in command or co-pilot while the aeroplane is engaged in private operation (page 10) or in as pilot in command in flying training operations.

REGULAR FLIGHT REVIEW REQUIREMENT (CAR 5.81)

As the holder of a private licence (aeroplane) you must not fly as pilot in command unless, within the period of two years immediately preceding the day of the proposed flight, you have:

- satisfactorily completed an aeroplane flight review and the person conducting the review has made an appropriate entry in your pilot log book; or
- passed a flight test for the issue of an aeroplane pilot licence; or
- passed a flight test for issue or renewal of an aeroplane pilot rating; or
- satisfactorily completed an aeroplane proficiency check; or
- satisfactorily completed aeroplane conversion training provided it is given by an instructor or person qualified to conduct aeroplane flight reviews

RECENT EXPERIENCE REQUIREMENTS (CAR 5.82)

As a private pilot, you must not act as pilot in command carrying passengers by day unless you have carried out 3 take-offs and landings either dual or solo in the previous 90 days.

If the above flight is to be undertaken at night the above 3 take-offs and landings must be at night.

PERSONAL LOG BOOKS (CAR 5.51 - CAR 5.53)

You must have a personal log book that is suitable:

- for the entry of flight crew ratings, aircraft endorsements and any other privilege; and
- for recording the matters required by regulation 5.52 (see below) to be recorded in a personal log book; and
- for recording any other matter that CASA directs must be recorded in a personal log book.

Your personal log book must contain:

- Your full name and address, date of birth and aviation reference number; and
- Details of each flight; and

private pilot licence

- Time spent practicing simulated flight in an approved simulator; and
- Any other details such as endorsements, renewal of ratings, completion of tests and any other matter directed by CASA.

The above requirements apply to holders of a all flight crew licences, special pilot licences or certificates of validation.

It is an offence to make a false or misleading statement in your personal log book. (CAR 283)

You must retain your personal log book for as long as you hold a flight crew licence. (CAR 5.53)

PRODUCTION OF LICENCE ETC. (CAR 5.56)

CASA may request you to produce your licence, logbook or medical certificate and if so, you must produce it without delay. If you do not have immediate access to the document, you must produce it at a place nominated by CASA within 7 days.

pilot in command

RESPONSIBILITY OF PILOT IN COMMAND BEFORE FLIGHT (CAR 233)

An aircraft shall not commence a flight unless evidence has been furnished to the pilot in command and the pilot has taken such action as is necessary to ensure that:

- the instruments and equipment required for the particular type of operation to be undertaken are installed in the aircraft and are functioning properly;
- the gross weight of the aircraft does not exceed the limitations fixed by or under CAR 235 and is such that flight performance in accordance with the standards specified by CASA for the type of operation to be undertaken is possible under the prevailing conditions;
- any directions of CASA for loading of the aircraft given under CAR 235 have been complied with;

- the fuel supplies are sufficient for the particular flight;
- the required operating and other crew members are on board and in a fit state to perform their duties;
- if applicable the air traffic control instructions have been complied with;
- the aircraft is safe for flight in all respects;
- the latest of the aeronautical maps, charts and other aeronautical information and instructions, are carried in the aircraft and are readily accessible to the pilot.

DESIGNATION OF A PILOT IN COMMAND (CAR 224)

For each flight the operator (owner, flying school, or hire organization) must designate one pilot to act as pilot in command.

The pilot in command is responsible for:

- the start, continuation, diversion and end of the flight; and
- the operation and safety of the aircraft during flight; and
- the safety of persons and cargo carried on the aircraft; and
- the conduct and safety of members of the crew.

As pilot in command you must discharge these responsibilities in accordance with:

- any information, instructions or directions issued under the Civil Aviation Act or Regulations; and
- the operations manual provided by the aircraft operator if applicable.

You also have final authority as to the disposition of the aircraft while you are in command and for the maintenance of discipline by all persons on board.

POWERS OF PILOT IN COMMAND (CAR 309)

The pilot in command of an aircraft, with such assistance as is necessary and reasonable, may:

- take such action, including the removal of a person from the aircraft or the placing of a person under restraint or in custody, by force, as the pilot considers reasonably necessary to ensure compliance with the Act or these Regulations in or in relation to the aircraft; and

- detain the passengers, crew and cargo for such period as the pilot onsiders reasonably necessary to ensure compliance with the Act or these Regulations in or in relation to the aircraft.

A person who, on an aircraft in flight, whether within or outside Australian territory, is found committing, or is reasonably suspected of having committed, or having attempted to commit, or of being about to commit, an offence against the Act or these Regulations may be arrested without warrant by a member of the crew of the aircraft in the same manner as a person who is found committing a felony may, at common law, be arrested by a constable and shall be dealt with in the same manner as a person so arrested by a constable.

RESTRICTION OF ADVERTISING OF COMMERCIAL OPERATIONS (CAR 210)

A person shall not give any public notice, by newspaper advertisement, broadcast statement or any other means of public announcement to the effect that a person is willing to undertake by use of an Australian aircraft any commercial operations unless the last-mentioned person has obtained an Air Operator's Certificate authorising the conduct of those operations.

classification of operations

PRIVATE OPERATIONS CAR 2 (7) (D)

The following are regarded as private operations:

- the personal transportation of the owner of the aircraft;
- aerial spotting where no remuneration is received by the pilot or the owner of the aircraft or by any person or organisation on whose behalf the spotting is conducted;
- agricultural operations on land owned and occupied by the owner of the aircraft;
- aerial photography where no remuneration is received by the pilot or the owner of the aircraft or by any person or organisation on whose behalf the photography is conducted;

classification of operations

- the carriage of persons or the carriage of goods without a charge for the carriage being made other than the carriage, for the purposes of trade, of goods being the property of the pilot, the owner or the hirer of the aircraft;
- the carriage of persons, but not in accordance with a fixed schedule between terminals, provided that:
  - public notice of the flight has not been given by any form of public advertisement or announcement; and
  - the number of persons on the flight, including the operating crew, does not exceed 6; and
  - no payment is made for the services of the operating crew; and
  - the persons on the flight, including the operating crew, share equally in the costs of the flight; and
  - no payment is required for a person on the flight other than a the cost sharing payment above;
- the carriage of goods otherwise than for the purposes of trade;
- conversion training for the purpose of endorsement of an additional type or category of aircraft in a pilot licence; or
- any other activity of a kind substantially similar to any of those specified in subparagraphs (i) to (viii) (inclusive).

carriage of persons

CARRIAGE OF PASSENGERS IN SEATS AT WHICH DUAL CONTROLS ARE FITTED (CAO 20.16.3)

In all aircraft for which the Certificate of Airworthiness specifies a minimum crew of one pilot, a person may occupy a seat at which fully or partially functioning dual controls are fitted, if the pilot gives adequate instruction to that person to ensure that the controls are not interfered with in flight and there is satisfactory communication available at all times between the pilot and that person.

PROHIBITION OF CARRIAGE OF PASSENGERS ON CERTAIN FLIGHTS (CAR 249)

An aircraft (aeroplane, helicopter, gyroplane or airship) that carries a passenger shall not engage in any of the following types of flying:

- flying training given to a person who has not passed a general flying progress flight test for aircraft of the category concerned;
- practice of emergency procedures in the aircraft;
- low flying practice;
- testing an aircraft or its components, power plant or equipment.

An aircraft while engaged in paragraph (D) may carry engineering and maintenance personnel who are required, as part of their duties, to be present in the aircraft during the flight for the purpose of flight observation or of maintenance of the aircraft, including any aircraft component installed in the aircraft.

INTOXICATED PERSONS NOT TO ACT AS PILOTS ETC. OR TO BE CARRIED ON AIRCRAFT (CAR 256)

A person shall not, while in a state of intoxication, enter any aircraft.

A person shall not act as a member of an operating crew or be carried for that purpose if his or her capacity to act is in any way impaired by the consumption or use of any alcoholic liquor, drug, pharmaceutical or medicinal preparation or other substance. (CAR 256)

A person shall not act as, or perform any duties or functions preparatory to acting as, a member of the operating crew of an aircraft if the person has, during the period of 8 hours immediately preceding the departure of the aircraft consumed any alcoholic liquor.

A person who is on board an aircraft as a member of the operating crew, or as a person carried in the aircraft for the purpose of acting as a member of the operating crew, shall not consume any alcoholic liquor.

carriage of persons

SMOKING IN AIRCRAFT (CAR 255)

A person must not smoke:

- in a part of an aircraft in which a notice is permanently displayed indicating that smoking is prohibited at all times or without specifying a period during which smoking is prohibited;
- anywhere in an aircraft during take-off, landing or refuelling or during a period:
  - in which a notice is temporarily displayed indicating that smoking is prohibited; or
  - which is specified in a permanently displayed notice as a period during which smoking is prohibited.

OFFENSIVE AND DISORDERLY BEHAVIOUR (CAR 256AA)

A person in an aircraft must not behave in an offensive and disorderly manner.

UNAUTHORISED PERSONS NOT TO MANIPULATE CONTROLS (CAR 228)

A person shall not manipulate the controls of an aircraft in flight unless the person is:

- the pilot assigned for duty in the aircraft; or
- a student pilot assigned for instruction in the aircraft.

documents to be carried

An Australian aircraft shall, when flying in Australian airspace, carry:

- unless CASA otherwise approves, its maintenance release and any other document approved for use as an alternative to the maintenance release;
- unless CASA otherwise approves, the licences and medical certificates of the operating crew;
- the flight manual (if any) for the aircraft;

Subject to paragraph (8) below, the operator of an aircraft must not permit a live animal to be in the aircraft unless:

- the animal is in a container and is carried in accordance with this regulation; or
- the animal is carried with the written permission of CASA and in accordance with any conditions specified in the permission.

Requirement 1 does not apply to a dog accompanying a visually impaired or hearing impaired person as a guide or an assistant if the dog is:

- carried in the passenger cabin of the aircraft; and
- placed on a moisture-absorbent mat as near to the person as practicable; and
- restrained in a way that will prevent the dog from moving from the mat.

More than one animal must not be kept in the same container if doing so would be likely to affect adversely the safety of the aircraft.

A container must be so constructed that:

- an animal kept in the container cannot escape from the container; and
- any water or excreta in the container is not likely to escape from the container in normal flying conditions; and
- the container will withstand being damaged in a way that may allow an animal, or water or excreta, in the container to escape.

A container in which an animal is kept must not be in the passenger cabin of an aircraft.

If:

- an animal is carried in an aircraft in a container; and
- if the animal is not restrained it could move around inside the container in a way that may alter the distribution of the load of the aircraft; and
- the safety of the aircraft may be affected adversely by that movement; the animal must be restrained in the container to prevent that movement.

The means of restraint must be strong enough to withstand being damaged in a way that may allow the animal to escape.

carriage of animals

An animal must not be carried on an aircraft if carrying the animal would be likely to affect a person on the aircraft in a way that may affect adversely the safety of the aircraft.

In this regulation, animal means any member of the animal kingdom other than man.

firearms

CARRIAGE OF FIREARMS (CAR 143)

A person, including a flight crew member, shall not, except with the permission of CASA, carry a firearm in, or have a firearm in his or her possession in, an aircraft other than an aircraft engaged in charter operations or regular public transport operations.

DISCHARGE OF FIREARMS IN OR FROM AN AIRCRAFT (CAR 144)

A person, including a flight crew member, shall not, except with the permission in writing of CASA and in accordance with such conditions (if any) as are specified in the permission, discharge a firearm while on board an aircraft.

refuelling

CHECKING FUEL AND OILS

The pilot in command of an aircraft shall ensure that the aircraft is not flown unless the aviation fuel, aircraft engine lubricating oil, aircraft engine power augmentation fluid and aircraft hydraulic system fluid used in connection with the servicing or operation of the aircraft complies with the specification and grade required or approved for the purpose by CASA. The pilot in command may assume that the above fluids already on the aircraft comply with the required specification and grade. All ground fuel stock shall be carefully checked for the presence of undissolved water before the fuelling operation is commenced. This precaution is particularly important when handling fuel from drum stocks.

Attention is drawn to the necessity of using a positive method, such as suitable water-detecting paste or paper, in testing for the presence of free water since sensory perceptions of colour and smell, if used alone, can be quite misleading. In the case of turbine fuels, attention is also drawn to the necessity of watching for signs of cloudiness or other indication of the presence of suspended water droplets which will not necessarily be detected by the means mentioned in Note 2.

All fuel shall be strained or filtered for the removal of free or suspended water and other contaminating matter before entering the aircraft tanks. Attention is drawn to the special standards of filtration which may be specified by the manufacturers of certain types of engines. eg. turbine engines and direct-injection piston engines.

LOCATION OF AIRCRAFT

During fuelling operations, the aircraft and ground fuelling equipment shall be so located that no fuel tank filling points or vent outlets lie:

- within 5 metres (17 ft) of any sealed building;
- within 6 metres (20 ft) of other stationary aircraft;
- within 15 metres (50 ft) of any exposed public area;
- within 15 metres (50 ft) of any unsealed building in the case of aircraft with a maximum take-off weight in excess of 5700 kg (12,566 lb) and
- within 9 metres (30 ft) of any unsealed building in the case of aircraft with a maximum take-off weight not exceeding 5700 kg (12,566 lb).

Notwithstanding the contents of the above paragraph, limited fuelling operations for maintenance purposes may be carried out in certain hangars under the following conditions:

- refuelling or defuelling of gasoline or wide-cut gasoline type turbine fuel is not permitted;
- overwing fuelling is not permitted;
- these operations shall not be permitted in hangars occupied by two or more tenants; and
- the operator shall obtain approval from CASA for the detailed procedures under which these operations may be performed. These procedures shall be described in the maintenance manual and shall include: the circumstances under which refuelling or defuelling in hangars or maintenance area is permitted, and the maximum volume of fuel involved.

For the above purpose, a sealed building is one which all the external part within 15 metres (50 ft) of an aircraft's fuel tank filling points or vent outlets or ground fuelling equipment is of non-flammable materials and has no openings or all openings are closed.

Where the fuelling equipment is not mobile, the aircraft shall be so placed that it can be rapidly moved to a place of safety, and a means of ensuring that this can be done shall be readily available.

Note: The following operations are not deemed to constitute fuelling operations:

- the drainage of a small quantity of fuel from a fuel system drain point; and
- the transfer of fuel from tank to tank within an aircraft making use exclusively of lines and equipment permanently installed in the aircraft.

PASSENGERS ON BOARD DURING REFUELLING

The operator of an aircraft with a maximum seating capacity of less than 20 may allow fuel that is not:

- avgas; or
- an aviation turbine grade which does not contain an anti-static additive;
- to be loaded on to the aircraft while a passenger is on board if:
- the passenger's medical condition is such that he or she cannot leave the aircraft without assistance.

If:

- fuel is being loaded onto an aircraft in accordance with the paragraphs above; and
- either:
  - fuel vapour is found inside the aircraft; or
  - for any other reason it is not safe to continue loading
- the aircraft's operator must ensure that the loading of the fuel stops immediately.

AIRCRAFT SAFETY PRECAUTIONS DURING FUELLING OPERATIONS

All engines in the aircraft, including any auxiliary power units, shall be stopped with their ignition switches in the 'OFF' position, except where CASA is satisfied that the operation of such an engine or auxiliary power unit will not present a hazard and where a statement to that effect, together with any special conditions for operation, is included in relevant documentation.

When an external electrical supply is used, the connections between that supply and the aircraft electrical system shall be made and securely locked before the fuelling operation is connected and shall not be disconnected until the operation has been completed, except that connectors, which provide control to ensure effective engagement before external power can be supplied to the aircraft, need not be locked.

A person shall not, and the pilot in command and the operator shall take reasonable steps to ensure that a person does not, during fuelling operations:

- operate or perform maintenance work on the aircraft's radar equipment except that where the fuel is kerosene, operation or maintenance may be carried out provided the radar transmitter is de-activated, or
- except where the fuel involved is kerosene, carry out maintenance on any electrical, electronic or radio systems within the aircraft or operate such equipment other than the aircraft's interior lighting or electrical apparatus necessary for the fuelling process.

The aircraft and all items of fuelling equipment (including drums, funnels and other loose items of equipment, where used) shall be connected in such a way as to ensure that they are of the same electrical potential and, where a suitable earth point is available at the fuelling site, both the aircraft and the equipment shall be effectively connected to that point:

- where the fuelling operation is performed by a barge to a seaplane, the barge shall be effectively connected to the aircraft in such a way as to ensure that the barge, the fuelling equipment and the aircraft are at the same electrical potential.

All footwear worn by aircraft servicing personnel and persons operating fuelling equipment shall be of a non-sparking type and such persons shall not carry any matches, cigarette lighters or other objects which could represent an ignition hazard.

Except where automatic shut-off devices limit the capacity of an aircraft fuel tank, the operator and the pilot in command shall ensure that sufficient airspace remains in each fuel tank to allow for anticipated fuel expansion.

When a fuelling operation on an aircraft has been completed, the pilot in command and the operator of the aircraft shall ensure that all fuel and oil tank caps are securely refitted.

Aircraft oil tanks shall not be drained or filled when the aircraft is inside a hangar or other building unless the oiling equipment used complies with the provisions of Appendix I of CAO 20.9, if applicable.

SAFETY PRECAUTIONS EXTERNAL TO AN AIRCRAFT DURING FUELLING OPERATIONS

The area in which fuelling operations are carried out shall be clearly placarded as a `No Smoking' area and the limits of this area shall be a sealed building or at least 15 metres (50 ft) from the aircraft or ground fuelling equipment.

Where mobile fuelling equipment is used, the equipment shall be so placed that it can be rapidly moved in the event of fire.

A person shall not, and the pilot in command and the operator shall take reasonable steps to ensure that a person does not, during fuelling operations:

- smoke or use a naked flame within 15 metres (50 ft) of the aircraft and ground fuelling equipment;
- except in the case of aircraft, operate an internal combustion engine or any electrical switch, battery, generator, motor or other electrical apparatus within 15 metres (50 ft) of the aircraft's fuel tank filling points or vent outlets, and ground fuelling equipment unless the engine, switch, generator, motor or apparatus complies with the provisions of Appendix I to CAO 20.9 and has been inspected.

Two or more fire extinguishers of approved type and capacity shall be

positioned within 15 metres (50 ft) but not less than 6 metres (20 ft) from the aircraft and the fuelling equipment except where two or more fire extinguishers are carried on the fuelling equipment. Where so carried the fire extinguishers shall be fitted with quick release brackets, be readily available from either side of the equipment and be located as far as is practicable from the vehicle fuel tanks and fuelling points.

ACTION IN THE EVENT OF A FIRE HAZARD

A fuelling operation shall be suspended and the Airport Fire Service notified when any fuel of a quantity likely to create a fire hazard is spilled on or within 15 metres (50 feet) of the aircraft or ground fuelling equipment, including the bilge of a fuelling barge, and the operation shall not recommence until the fire hazard is removed.

A fuelling operation shall be stopped as soon as it becomes apparent that an infringement exists of any of the relevant requirements of CAO 20.9. When any fuel of a quantity likely to create a fire hazard is spilled on or within 15 metres (50 ft) of the aircraft or ground fuelling equipment, the pilot in command or, in his absence, the operator shall ensure that:

- passengers remaining on board or in the process of embarking or disembarking are removed to a point at least 15 metres (50 ft) from the spilled fuel;
- mobile power units, vehicles and power operated loading devices operating within 15 metres (50 ft) of the spilled fuel are shut down;
- maintenance work of any nature on or within the aircraft is suspended and not recommenced until the spilled fuel has been removed.

engine ground operation

STARTING AND RUNNING OF ENGINES (CAR 230)

A person must not:

- start the engine of an aircraft; or
- permit the engine of an aircraft to be run,

except that:

the engine may be started or run if the control seat is occupied by an approved person or by a person who may, under CAR Part V (flight crew licencing), fly the aircraft; or if the aircraft is an aeroplane that is having maintenance carried out on it, or that is being used for the provision of maintenance training, the engine may be started or run if the control seat is occupied by a person who:

- holds an aircraft maintenance engineer licence, or an airworthiness authority, covering maintenance of the aircraft's engine; and
- has sufficient knowledge of the aircraft's controls and systems to ensure the starting or running does not endanger any person or damage the aircraft.

The pilot in command or in his absence any other person responsible for starting or ground operation of an aircraft shall ensure that:

- In the case of land aircraft, passenger loading equipment to permit rapid evacuation of passengers and crew is kept immediately available during the starting of engines.
- In the case of seaplanes, water transport of a capacity sufficient to enable rapid evacuation of passengers and crew is immediately available during the starting of engines.

Where any fuel or other flammable material is spilled within 15 metres (50 ft) of an aircraft, the aircraft engines shall not be started or operated until the fire hazard has been removed.

An aircraft engine shall not be started or operated:

- within 5 metres (17 ft) of any sealed building;
- within 8 metres (25 ft) of other aircraft;
- within 15 metres (50 ft) of any exposed public area; and
- within 8 metres (25 ft) of any unsealed building in the case of an aircraft with a maximum take-off weight not exceeding 5700 kg (12,566 lb).

MANIPULATION OF PROPELLER (CAR 231)

In spite of CAR 225 (pilots at controls page 23) and CAR 230 (above) and paragraph 2 below, the pilot in command of an aircraft which requires an operating crew of only one pilot may manipulate the propeller of the aircraft

for the purposes of starting the aircraft if:

- assistance is not readily available for that purpose;
- adequate provision is made to prevent the aircraft moving forward; and
- no person is on board the aircraft.

A person who is the holder of the certificate of registration for, or the operator, hirer or pilot in command of, an Australian aircraft must not permit a person to manipulate the propeller of the aircraft to start the engine unless the firstmentioned person is satisfied that the person who is to manipulate the propeller knows the correct starting procedures for the aircraft and can manipulate the propeller safely.

AIRCRAFT NOT TO BE TAXIED - EXCEPT BY PILOT (CAR 229)

An aircraft shall not be taxied anywhere on an aerodrome by a person other than a licensed pilot whose licence is endorsed for the particular type of aircraft concerned or a person approved by CASA in accordance with the terms and conditions of the approval.

PILOTS AT CONTROLS (CAR 225)

The pilot in command must ensure that 1 pilot is at the controls of an aircraft from the time at which the engine or engines is or are started prior to a flight until the engine or engines is or are stopped after the termination of a flight.

When 2 or more pilots are required to be on board an aircraft, the pilot in command must ensure that 2 pilots remain at the controls at all times when the aircraft is taking off, landing and during turbulent conditions.

DUAL CONTROLS (CAR 226)

A control seat of an aircraft equipped with fully or partially functioning dual controls shall not be occupied in flight except by a person:

- who holds an appropriate pilot licence in respect of the type of aircraft and the class of operations in which the aircraft is flown; or
- who is a student pilot assigned for instruction in the aircraft; or
- who is authorised by CASA.

SEAT BELTS AND SAFETY HARNESSES (CAO 20.16.3)

seating

At least one pilot crew member shall wear a seat belt or harness at all times during flight.

Except in the case of sick or injured persons (subsection 14) and parachutists (subsection 16) safety harnesses, or seat belts shall be worn by all persons at the times:

- during take-off and landing;
- during an instrument approach;
- unless CASA otherwise directs—when the aircraft is flying at a height of less than 1,000 feet above the terrain; and
- at all times in turbulent conditions.

SEAT BELTS AND SAFETY HARNESSES (CAR 251)

Seat belts and safety harnesses shall be adjusted to fit the wearer without slack.

ADJUSTMENT OF SEATS (CAO 20.16.3)

All seats (with the exception of those specified in the paragraph below) shall be adjusted to their upright position for take-off and landing.

When it is desirable through illness or other incapacity that a passenger's seat remains in the reclined position during take-off or landing, that seat, notwithstanding the provision of the above paragraph, may be left reclined during take-off or landing if it is forward facing, there is no person occupying the seat immediately behind, and it will not impede the egress of any person in an emergency evacuation.

EXITS AND PASSAGEWAYS NOT TO BE OBSTRUCTED (CAR 254)

Unless CASA otherwise approves, this regulation applies to all passageways and exits in an aircraft that are for use by passengers or crew.

When an aircraft is in flight, the pilot in command must ensure that all passageways and exits to which this regulation applies are kept free from obstruction.

When an aircraft is in flight, the pilot in command must ensure that all exits to which this regulation applies are fastened in a way that permits their immediate use in an emergency.

pre take off

TESTING OF RADIO APPARATUS (CAR 242)

Unless exempt, before an aircraft is taxied on the manoeuvring area of an aerodrome for the purpose of moving to the take-off position, the pilot in command shall check that the radio apparatus fitted to the aircraft and to be used in flight is functioning correctly.

If the check indicates any malfunctioning of any portion of the radio apparatus the aircraft shall not be flown until the apparatus has been certified by a person licensed or approved for the purpose as being in proper working order.

LISTENING WATCH (CAR 243)

When an aircraft is equipped with radio apparatus for use during flight, the pilot in command must maintain a listening watch, or must ensure that a listening watch is maintained, at all times commencing immediately prior to the time at which the aircraft commences to move on the manoeuvring area prior to flight and lasting until the aircraft is brought to a stop at the apron or other point of termination of the flight.

Where the means of communication between Air Traffic Control and an aircraft under its control is a voice communication channel, the pilot in command and any other pilot for the time being operating the controls of the aircraft shall personally maintain a listening watch on the appropriate radio frequency.

MOVEMENT ON MANOEUVRING AREA (CAR 246)

Immediately prior to take-off, the pilot in command shall manoeuvre the aircraft so that he or she is able to observe traffic on the manoeuvring area of the aerodrome and incoming and outgoing traffic, in order that he or she may avoid collision with other aircraft during the take-off.

pre take off

SAFETY PRECAUTIONS BEFORE TAKE-OFF (CAR 244)

Immediately before taking-off on any flight, the pilot in command of an aircraft shall:

- test the flight controls on the ground to the full limit of their travel and make such other tests as are necessary to ensure that those controls are functioning correctly;
- ensure that locking and safety devices are removed and that hatches, doors and tank caps are secured; and
- ensure that all external surfaces of the aircraft are completely free from frost and ice.

TESTS BEFORE AND DURING THE TAKE-OFF RUN (CAR 245)

CASA may give directions specifying the tests to be carried out by the pilot in command of an aircraft before the commencement of, and during, a take-off run in order to be satisfied that the engine and associated items of equipment are functioning correctly within the permissible limits of performance.

Before the commencement of, and during, a take-off run, the pilot in command of an aircraft shall:

- carry out all tests required to be carried out in relation to the aircraft as above;
- test all flight instruments, and, in particular, all gyroscopic flight instruments, that it is possible to test so as to ensure that they are functioning correctly;
- ensure that all gyroscopic flight instruments are correctly set and uncaged; and
- perform such checks and tests as are required by the flight manual or other document for, the aircraft.

If an inspection, check or test made under the above indicates any departure from the permissible limits or any malfunctioning in any particular (not being a departure or malfunctioning that is a permissible unserviceability), the pilot in command shall not commence the take-off or, if the pilot has commenced the take-off, shall abandon the take-off or take such other action as the pilot considers appropriate to ensure the safety of the aircraft and of persons on board the aircraft.

pre take off

PRE-FLIGHT ALTIMETER CHECK (AIP ENR 1.7)

A pre-flight altimeter check is required at sites of known elevation and where an accurate QNH is available. The VFR altimeter accuracy requirement is ±100FT or 110FT at sites above 3,300FT.

Further details are given in the ALTIMETRY section on pages 213 -214 and in AIP ENR 1.7.

in flight

METEOROLOGICAL CONDITIONS OBSERVED EN ROUTE (CAR 247)

The pilot in command shall report, in the approved form and at such times as requested by a meteorological observer, the meteorological conditions observed en route.

When any meteorological condition, hazardous to flight, is encountered en route, the pilot in command shall report the condition as soon as possible, giving such details as appear pertinent to the safety of other aircraft.

NAVIGATION LOGS (CAR 78)

The pilot in command of an aircraft shall keep a log of such navigational data as is equired to enable him or her to determine the geographical position of the aircraft at any time while the aircraft is in flight.

ACROBATIC FLIGHT (CAR 155)

An aircraft:

- shall not be flown in acrobatic flight at night;
- shall not be flown in acrobatic flight except in V.M.C.; and
- shall not be flown in acrobatic flight of a particular kind unless the certificate of airworthiness of, or the flight manual for, the aircraft specifies that the aircraft may perform that type of acrobatic flight.

For the purposes of the above, straight and steady stalls or turns in which the angle of bank does not exceed 60 degrees shall be deemed NOT to be acrobatic flight.

Except with the permission in writing of CASA, a person shall not engage in acrobatic flight in an aircraft:

- at a height lower than 3000 feet above the highest point of the terrain, or any obstacle thereon, within a radius of 600 metres of a line extending vertically below the aircraft; or
- over a city, town, populous area, regatta, race meeting or meeting for public games or sports.

Before engaging in acrobatic flight, the pilot of an aircraft shall take such action as is necessary to ensure that:

- any loose articles are removed from the aircraft or made secure in the aircraft;
- all locker and compartment doors of the aircraft are fastened;
- the safety harness or seat belt of any vacant seat is made secure so as to avoid the fouling of the controls of the aircraft;
- the dual controls (if any) of the aircraft are removed from the aircraft or rendered inoperative, unless the control seats are occupied in accordance with CAR 226 (page 23) or the dual control seat is vacant; and
- every person in the aircraft is secured with correctly adjusted safety harness or seat belt.

FLYING OVER PUBLIC GATHERINGS (CAR 156)

Except with the permission, in writing, of CASA and in accordance with the conditions specified in the permit, an aircraft shall not be flown over any regatta, race meeting or public gathering.

Nothing in the above shall apply to an aircraft passing over a regatta, race meeting or public gathering in the process of:

- arriving at or departing from an aerodrome in the course of its normal navigation for so doing; or
- passing from place to place in the ordinary course of navigation.

LOW FLYING (CAR 157)

An aircraft must not fly over:

- any city, town or populous area, at a height lower than 1000 feet; or
- any other area at a height lower than 500 feet.

A height specified in the above is the height above the highest point of the terrain, and any object on it, within a radius of:

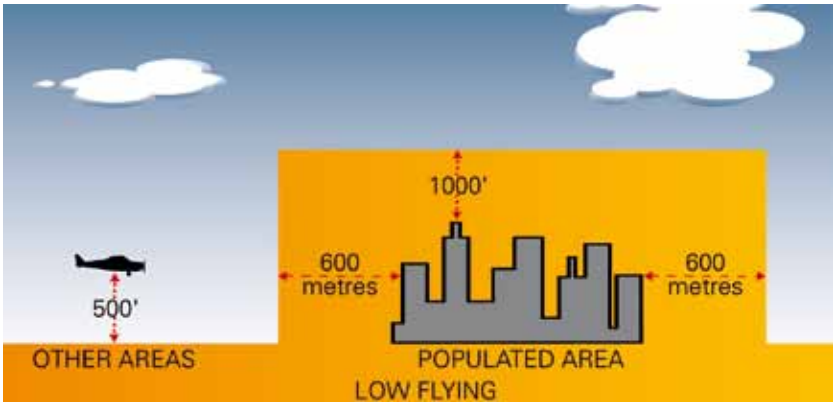
- in the case of an aircraft other than a helicopter—600 metres; or
- in the case of a helicopter—300 metres; from a point on the terrain vertically below the aircraft.

Paragraph 1(A) does not apply in respect of a helicopter flying at a designated altitude within an access lane details of which have been published in the AIP or NOTAMS for use by helicopters arriving at or departing from a specified place.

Paragraph 1. (above) does not apply if:

- through stress of weather or any other unavoidable cause it is essential that a lower height be maintained; or
- the aircraft is engaged in private operations or aerial work operations, being operations that require low flying, and the owner or operator of the aircraft has received from CASA either a general permit for all flights or a specific permit for the particular flight to be made at a lower height while engaged in such operations; or
- the pilot of the aircraft is engaged in flying training and flies over a part of a flying training area in respect of which low flying is authorised by CASA under CAR 141(1); or
- the pilot of the aircraft is engaged in a baulked approach procedure, or the practice of such procedure under the supervision of a flight instructor or a check pilot; or
- the aircraft is flying in the course of actually taking-off or landing at an aerodrome; or
- the pilot of the aircraft is engaged in:
  - a search; or
  - a rescue; or
  - dropping supplies in a search and rescue operation; or

- the aircraft is a helicopter:
  - operated by, or for the purposes of, the Australian Federal Police or the police force of a State or Territory; and
  - engaged in law enforcement operations; or
- the pilot of the aircraft is engaged in an operation which requires the dropping of packages or other articles or substances in accordance with directions issued by CASA.



REPORTING OF DEFECTS (CAR 248)

At the termination of each flight, or in any urgent case, during the currency of the flight, you must report, all defects in the aircraft, aerodromes, air routes, air route facilities or airway facilities which have come to your notice.

Where a defect in the aircraft is reported in accordance with the above paragraph, the operator of the aircraft shall take such action in relation thereto as is required under these Regulations.

INTRODUCTION

The Australian Transport Safety Bureau (ATSB), is responsible for the investigation of all civil aircraft accidents and incidents within Australia. The postal address for ATSB is:

PO Box 967
Civic Square,
CANBERRA ACT 2608

Tel: 1800 011 034, or
02-6230 4408 (61-2-6257 4150 if calling from overseas
Fax: 02-6247 6434 (61-2-6247 6434 if sending from overseas).

The fundamental objective of air safety investigation is the prevention of accidents and incidents. Such investigations aim to determine all the factors involved and to use this information as the basis for enhancing safety in aviation.

The results of an investigation are required to be made known through a report which may constitute:

- a formal report,
- safety action statements, or
- safety recommendations.

Publication of the report may occur on the ATSB website (www.atsb.gov.au) and in ATSB publications.

ACCIDENT

Broadly stated the definition of an aircraft accident is: "An occurrence associated with the operation of an aircraft in which:

- any person suffers death or serious injury
- the aircraft incurs substantial damage or structural failure; or
- the aircraft is missing or inaccessible."
  (*Transport Safety Investigation Act 2003*).

INCIDENT

An occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of the operation of the aircraft (Part 2A [S.19AC] of the Air Navigation Act 1920). In practice, this definition is broadly interpreted and the incident reporting system accepts any reports, requests, complaints and suggestions which relate to aviation safety.

NOTIFICATION OF ACCIDENTS

The pilot in command, the owner, the operator and the hirer (if any) are each responsible for ensuring the quick notification of an accident to ATSB is furnished by the quickest means available. A further requirement is that a written report, preferably using the Air Safety Incident Report (ASIR) format, be submitted to ATSB as soon as practicable after the accident. The minimum information required in the report includes:

- aircraft make, model and registration;
- names of the owner and operator;
- full name of the pilot in command;
- date and time of the accident;
- last point of departure, point of intended landing and nature of the flight;
- location of the accident;
- number of persons on board and numbers and names of the injured;
- nature and cause of the accident, as far as it is known;
- description of damage to the aircraft; and
- description of the terrain at the accident site in terms of accessibility.

Note 1: Immediate notification may be made verbally to the nearest ATS unit or the local police, who in turn will notify ATSB. The written report (ASIR) should be forwarded directly to the ATSB Field Office in the state or territory in which the accident occurred.

Note 2: A standard ASIR form may be obtained by contacting ATSB on freecall phone number 1 800 011 034 (Primary Notification Number), or 1 800 020 616 (Information number & Secondary Notification Number) or downloaded from the ATSB website.

INCIDENTS

The pilot in command, the owner, the operator and the hirer (if any) are each responsible for ensuring that a written notification of an incident, preferably on an ASIR, is forwarded to ATSB within 72 hours of the incident.

BIRD STRIKE

Bird Strike is a collision between a bird, or a number of birds, and an aircraft. All bird strikes in Australia are incidents under Part 2A (S19AC) of the Air Navigation Act 1920. The reporting of a bird strike, including a "near miss" or a hazardous situation, is mandatory, preferably using an ASIR.

INVESTIGATION

The investigator of an accident or incident is empowered to demand such evidence, documents and components as is required (see para. 2A (Division 3) of the Air Navigation Act 1920).

Copies of flight plans, logs and briefing documents should be retained by the pilot for 14 days after a flight in case they may be required by the investigator.

CUSTODY

When an accident occurs, the aircraft is deemed to come into the custody of the Director of ATSB and it must not be removed or interfered with except with the permission of the Director or authorised representative (Part 2A (Division 7) (of the Air Navigation Act 1920). However, under Part 2A (Division 7) of the Air Navigation Act, the extrication of persons, animals or mails is permissible. Further, rescuers are permitted to take such action as is necessary, to…'protect the wreckage from further damage, and to prevent danger to aircraft , other transport and the public'. Goods and baggage may only be removed from the wreckage under the supervision of the police or other authorised officer. Additionally, on the case of an aircraft which has come from outside Australia, the consent of a Customs Officer is required. On completion of the investigation of an accident, the aircraft will be released to the owner.

general

INTRODUCTION (AIP GEN 3.4)

Use of standard phrases for radio telephony communication between aircraft and ground stations is essential to avoid misunderstanding the intent of messages and to reduce the time required for communication.

Phraseologies contained in this section are generic, and, although primarily reflecting a controlled airspace environment, pilots operating OCTA should use these generic phrases unless specific OCTA phrases are shown.

Where circumstances warrant, and no phraseology is available, clear and concise plain language should be used to indicate intentions.

LANGUAGE (CAR 184)

English language must be used for all air-ground RTF communications within Australian FIRs unless use of an alternative language has been arranged with ATS prior to any specific flight.

SYMBOL AND PARENTHESES CONVENTIONS USED

In the following radiotelephone examples, words in parentheses "()" indicate that specific information, such as a level, a place, or a time, etc., must be inserted to complete the phrase, or alternatively, that optional phrases may be used. Words in square parentheses "[]" indicate optional additional words or information that may be necessary in specific instances.

The following symbols indicate phraseologies which may differ from those used in an international aviation environment, but are necessitated by Australian requirements.

- ● Unique to Australia (ICAO Silent)
- ▲ Military Specific Phraseologies

Phraseologies show the text of message components without callsigns. They are not intended to be exhaustive, and when circumstances differ, pilots, ATS, Air Defence personnel, and other ground personnel will be expected to use appropriate subsidiary phraseologies which should be clear, concise and designed to avoid any possible confusion.

For convenience the phraseologies are grouped according to types of air traffic service. However, users should be familiar with and use, as necessary, phraseologies from groups other than those referring specifically to the type of air traffic service being provided. All phraseologies must be used in conjunction with callsigns (aircraft, ground vehicle, ATC or other) as appropriate.

Phraseologies for the movement of vehicles, other than tow-tractors on the manoeuvring area, are not listed separately as the phraseology associated with the movement of aircraft is applicable. The exception is for taxi instructions, in which case the word "PROCEED" will be substituted for the word "TAXI" when ATC communicates with vehicles.

words and phrases

TRANSMISSION FORMAT

When initiating a transmission to ATS, pilots will commence the transmission with the callsign of the unit being addressed followed by the aircraft callsign. A read-back of an ATS message will be terminated with the aircraft's callsign.

When making a broadcast at a non-controlled aerodrome or in E or G airspace, the transmission must commence with the location followed by "TRAFFIC" eg: "BUNDABERG TRAFFIC."

READ-BACK REQUIREMENTS

For other than a route clearance as indicated below, the key elements of clearances, instructions or information must be read back ensuring sufficient details as included to clearly indicate compliance.

The following clearances, instructions and information will be read back;

- an ATC route clearance in its entirety, and any amendments;

  Note: as minimum, the accuracy of a route clearance read-back shall be confirmed by ATS transmitting the aircraft's callsign.

- en route holding instructions;
- any holding point specified in a taxi clearance;
- any clearances or instructions to hold short of, enter, land on, take off on, or backtrack on any runway;
- any LAHSO instructions;
- assigned runway, altimeter settings directed to specific aircraft, SSR codes,radio and radio navigation aid frequency instructions;

Note: An "expectation" of the runway to be used is not to be read back.

- Level instructions, direction of turn, heading and speed instructions.

  Note: Reported level figures of an aircraft should be preceded by the words "FLIGHT LEVEL" when related to standard pressure and may be followed by the word "FEET" when related to QNH.

CONDITIONAL CLEARANCES

Phrases such as "behind landing aircraft" or "after departing aircraft", will only be used for movements affecting the active runway(s) when the aircraft or vehicles concerned are seen by the appropriate controller, pilot or vehicle driver. In all cases, a conditional clearance will be given in the following order and consist of:

- identification;
- the condition (specify); and
- the clearance, eg:
  ATS: " (aircraft callsign) CESSNA ON SHORT FINAL, BEHIND THAT AIRCRAFT LINE UP"

  Pilot: "BEHIND THE CESSNA LINING UP (aircraft callsign)"

  Note: This implies the need for the aircraft receiving the conditional clearance to identify the aircraft or vehicle causing the conditional clearance.

ROUTE TERMINOLOGY

The phrase "FLIGHT PLANNED ROUTE" may be used to describe any route or portion thereof that is identical to that filed in the flight notification and sufficient routing details are given to definitely establish the aircraft on its route.

AMENDED ROUTE OR LEVEL

Whenever a situation arises whereby an aircraft is assigned a route and/or level other than that expected according to the flight notification and any subsequent revisions requested by the pilot, ATS should prefix the route and/or level information with the term "AMENDED" to alert the pilot that the information and/or clearance are other than may be expected, eg:

- ATS: (aircraft callsign) CLIMB TO AMENDED LEVEL SIX THOUSAND, FIVE HUNDRED"

  Pilot: "CLIMB TO AMENDED LEVEL SIX THOUSAND, FIVE HUNDRED

(aircraft callsign).

- ATS: "(aircraft callsign) RECLEARED TO ADELAIDE AMENDED ROUTE (amended route details and level)"

  Pilot: "RECLEARED TO ADELAIDE AMENDED ROUTE (amended route details and level) (aircraft callsign)".

PHONETIC ALPHABET

Radiotelephony pronunciation of the Phonetic Alphabet shall be as follows:

A	ALPHA	AL fah	N	NOVEMBER	no VEM ber
B	BRAVO	BRAH voh	O	OSCAR	OSS cah
C	CHARLIE	CHAR lee	P	PAPA	pah PAH
D	DELTA	DELL tah	Q	QUEBEC	keh BECK
E	ECHO	ECK ho	R	ROMEO	ROW me oh
F	FOXTROT	FOKS trot	S	SIERRA	see AIR rah
G	GOLF	GOLF	T	TANGO	TANG go
H	HOTEL	hoh TELL	U	UNIFORM	YOU nee form
I	INDIA	IN dee A	V	VICTOR	VIK tah
J	JULIETT	JEW lee ETT	W	WHISKY	WISS key
K	KILO	KEY loh	X	X-RAY	ECKS ray
L	LIMA	LEE mah	Y	YANKEE	YANG key
M	MIKE	MIKE	Z	ZULU	ZOO loo

NUMERALS

Radiotelephony pronunciation of numbers shall be in the phonetic form as follows:

0	ZE-RO	5	FIFE	DECIMAL	DAY SEE MAL
1	WUN	6	SIX	HUNDRED	HUN dred
2	TOO	7	SEV en	THOUSAND	TOU SAND
3	TREE	8	AIT		
4	FOW er	9	NIN er		

words and phrases

TRANSMISSION OF NUMBERS

All numbers used in the transmission of altitude, cloud height, visibility and runway visual range (RVR) information, which contain whole hundreds and whole thousands, must be transmitted by pronouncing each digit in the numbers of hundreds or thousands followed by the word HUNDRED or THOUSAND as appropriate, eg:

ALTITUDES

- 800 "EIGHT HUNDRED"
- 1,500 "ONE THOUSAND FIVE HUNDRED"
- 6,715 "SIX SEVEN ONE FIVE"
- 10,000 "ONE ZERO THOUSAND"

CLOUD HEIGHT

- 2,200 "TWO THOUSAND TWO HUNDRED"
- 4,300 "FOUR THOUSAND THREE HUNDRED"

VISIBILITY

- 200 "TWO HUNDRED"
- 1,500 "ONE THOUSAND FIVE HUNDRED"
- 3,000 "THREE THOUSAND"

RUNWAY VISUAL RANGE

- 700 "SEVEN HUNDRED"

All other numbers must be transmitted by pronouncing each digit separately, eg:

FLIGHT LEVELS

- FL 180 "FLIGHT LEVEL ONE EIGHT ZERO"
- FL 200 "FLIGHT LEVEL TWO ZERO ZERO"

HEADINGS

- 150 "ONE FIVE ZERO"
- 080 "ZERO EIGHT ZERO"
- 300 "THREE ZERO ZERO"

WIND DIRECTION

- 020° "ZERO TWO ZERO DEGREES"
- 100° "ONE ZERO ZERO DEGREES"
- 210° "TWO ONE ZERO DEGREES"

WIND SPEEDS

- 70KT "SEVEN ZERO KNOTS"
- 18KT, gusting 30 "ONE EIGHT KNOTS GUSTING THREE ZERO"

MACH NUMBER

- 0.84 "DECIMAL EIGHT FOUR"

ALTIMETER SETTING

- 1000 "ONE ZERO ZERO ZERO"
- 1027 "ONE ZERO TWO SEVEN"

Note: For the transmission of numbers in aircraft callsigns, refer to "FLIGHT NUMBER CALLSIGNS" (on page 65)

STANDARD WORDS AND PHRASES

The following words and phrases are to be used in radiotelephony communications, as appropriate, and have the meaning given:

ACKNOWLEDGE	"Let me know that you have received and understood the message.
AFFIRM	Yes.
APPROVED	Permission for proposed action granted.
BREAK	I hereby indicate the separation between portions of the message (to be used where there is no clear distinction between the text and other portions of the message).
BREAK BREAK	I hereby indicate separation between messages transmitted to different aircraft in a very busy environment.
CANCEL	Annul the previously transmitted clearance.
CHECK	Examine a system or procedure (no answer is normally expected).
CLEARED	Authorised to proceed under the conditions specified.
CONFIRM	Have you correctly received the following…? or Did you correctly receive this message?
CONTACT	Establish radio contact with…
CORRECT	That is correct.

words and phrases

CORRECTION	An error has been made in this transmission (or message indicated) the correct version is…
DISREGARD	Consider that transmission as not sent.
GO AHEAD	Proceed with your message.
HOW DO YOU READ	What is the readability of my transmission? The readability scale is: 1. Unreadable 2. Readable now and then 3. Readable but with difficulty 4. Readable 5. Perfectly readable
I SAY AGAIN	I repeat for clarity or emphasis.
MONITOR	Listen out on (frequency).
NEGATIVE	"No" or "Permission is not granted" or "That is not correct".
OVER	My transmission is ended and I expect a response from you (not normally used in VHF communication).
OUT	My transmission is ended and I expect no response from you (not normally used in VHF communication).
READ BACK	Repeat all, or the specified part, of this message back to me exactly as received.
RECLEARED	A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof.
REPORT	Pass me the following information.
REQUEST	I should like to know or I wish to obtain.
ROGER	I have received all of your last transmission (under NO circumstances to be used in reply to a question requiring READ BACK or a direct answer in the affirmative or negative).

SAY AGAIN	Repeat all or the following part of your last transmission.
SPEAK SLOWER	Reduce your rate of speech.
STANDBY	Wait and I will call you.
VERIFY	Check and confirm with originator.
WILCO	I understand your message and will comply with it.
WORDS TWICE	As a request: Communication is difficult. Please send every word or group of words twice. As information: Since communication is difficult every word or group of words in this message will be sent twice.

sartime and sarwatch

SARTIME & SARWATCH

SARTIME (AIP GEN 3.4-27)

Circumstances	Phraseologies *Denotes pilot transmission
1. **SARTIME advice**	•a. *SARTIME FOR DEPARTURE (or **ARRIVAL**) [location] (time)
2. **Flight & Arrival Reports** form of acknowledgement for SAR cancellation	•a. *(position/location) **CANCEL SARTIME** •b. (position/location) **SARTIME CANCELLED**
3. **TBA SARTIME** nominating a SARTIME when flight notification indicated TBA	•a. ***SARTIME FLIGHT PLAN AMENDMENT** •b. **STAND BY** or **GO AHEAD** •c. **SARTIME FOR ARRIVAL** (destination aerodrome) **IS** (SARTIME to replace TBA) or **SARTIME FOR DEPARTURE** (destination aerodrome) **IS** (SARTIME to replace TBA)
4. **AMENDING SARTIME** amending a previously notified SARTIME if the unit by which arrival will be reported is different from that previously notified	•a. ***SARTIME FLIGHT PLAN AMENDMENT** •b. **STAND BY** or **GO AHEAD** •c. **AMENDED SARTIME IS** (new SARTIME) **TO** (unit to which arrival will be reported) •d. **VICE** (unit previously notified) (3.4-27 5.4.14)

SARWATCH (AIP GEN 3.4-28)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Departure Reports** to initiate a SARWATCH when communication on the grounds is not available	•a. *AIRBORNE (location)
1. **Flight & Arrival reports** form of acknowledgement to CANCEL SARWATCH when the ATS unit accepting the arrival report is other than the unit addressed	•a. *(position) CANCEL SARWATCH [ADVISE (unit) if appropriate] •b. SARWATCH CANCELLED [WILCO (unit)] •c. [location] SARWATCH TERMINATED •d. RODGER (identity of the unit acknowledging)

GENERAL PHRASES (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Description of levels** (subsequently referred to as "(level)")	a. **flight level** (number) or b. (number) [**feet**]
2. **LEVEL CHANGES AND RATES**	a. **climb** (or **descend**) followed as necessary by ; i. **to** (level)
when there is an expectation that the aircraft will maintain the level or to eliminate confusion, the instruction "AND MAINTAIN" shall be included	ii. **to and maintain** (level) iii. **to reach** (level) **at** (or **by**) (time or significant point) iv. **report leaving** (or **reaching** or **passing** or **approaching**) (level) v. **at** (number) **feet per minute** [**minimum** (or **maximum**)]
when rate is required to be in accordance with "STANDARD RATE" specifications	vi. **at standard rate**
	b. **step climb** (or **descent**) (aircraft identification) **above** (or **beneath**) **you**
	c. **request level change from** (name of unit) **at** (time or significant point)
	d. **stop climb** (or **descent**) **at** (level)
	e. **continue climb** (or **descent**) **to** [**and maintain**] (level)
	f. **expedite climb** (or **descent**) [**until passing** (level)]
	g. **expect climb** (or **descent**) **at** (time or location)
pilot requesting a change of level	h.* **request climb** (or **descent**) [**at** (time **or** location)] `[to (level)]
to require action at a specific time	i. **immediately** j. **after passing** (significant point)
or place	k. **at** (time or significant point)

general phrases

GENERAL PHRASES (AIP GEN 3.4)(CONTINUED)

to require action when convenient	l. **when ready** (instruction)
when a pilot is unable to comply with a clearance or instruction	m. ***unable to comply**
when a pilot is assigned and required to maintain separation with a sighted aircraft	•n. **maintain separation with** (or **pass behind** or **follow**) (aircraft type or identification) [instructions or restriction]
3. **Maintenance of Specified levels** Note : The term "MAINTAIN" must not be used in lieu of "DESCEND"or "CLIMB" when instructing an aircraft to change level	a. **maintain** (level) [**to** (significant point)] [condition]
4. **Use of Block Levels**	•a. ***request block level** (level) **to** (level) •b. **cleared block** (level) **to** (level)
cancelling block level clearance	•c. **cancel block clearance climb** (or **descend**) **to and maintain** (level)
5. **Specification of Cruising Levels**	a. **cross** (significant point) **at** (or **above**, or **below**) (level) b. **cross** (significant point) **at** (time) **or later** (or **before**) **at** (level) c. **cruise climb between** (levels) (or **above**) (level)

FREQUENCY MANAGEMENT (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Transfer of Control and/or Frequency Change**	a. **contact** (unit callsign) (frequency)
Note: An aircraft may be requested to "STANDBY" on a frequency when the intention is that the ATS unit will initiate communication, and to "MONITOR" a frequency when information is being broadcast **on** it.	b. *(frequency) c. **at** (or **over**) (time or place) **contact** (unit callsign) (frequency) d. **if no contact** (instructions) e. ***request change to** (frequency) (service) f. **frequency change approved** g. **monitor** (unit callsign) (frequency) h. ***monitoring** (frequency) i. **remain this frequency**
an IFR pilot changing to the CTAF frequency	j. ***changing to** (location) **CTAF** (frequency)
when a pilot/ATC broadcasts general information	k. ***all stations** (appropriate information)
When a pilot broadcasts location specific general information	l. ***all stations** (location) (information) (location)
2. **Flights Contacting Approach Control**	
not radar identified or procedural tower	•a *(distance) **miles** [**DME**] [**radial**)VOR radial) or (compass quadrant from aerodrome, eg: **south/south east**, etc)] followed as necessary by: i. **maintaining** (or **descending**) **to** (level)
if visual approach can be made	ii. **visual**

frequency management

FREQUENCY MANAGEMENT (AIP GEN 3.4) (CONTINUED)	
3. **Change of Callsign** to instruct an aircraft to change callsign	a. **change your callsign to** (new callsign) [**until further advised**]
to advise an aircraft to revert to the callsign indicated in the flight notification to ATS.	b. **revert to flight plan callsign** (callsign) [**at** (significant point)]
4. **After landing**	a. **contact ground** [frequency] b. **when vacated contact ground** [frequency]

traffic information

Circumstances	**Phraseologies** ***Denotes pilot transmission**
1. **Traffic Information** pilot request for traffic information	a. ***request traffic**
to pass traffic information	•b. **no reported [IFR] traffic**
	c. [**IFR**]**traffic** (relevant information) [**report sighting**]
	d. [**additional**][**IFR**] **traffic** (direction) **bound** (type of aircraft) (level) **estimated** (or **over**) (significant point) **at** (time)
to acknowledge traffic information	e. ***looking** f. ***traffic in sight** g. ***negative contact** [reasons]
interception of relevant traffic information transmitted by other aircraft or ATS facility	h. ***copied** (callsign of traffic intercepted)
2. **Advice of Military Aircraft Conducting Abrupt Vertical Manoeuvres**	**abrupt vertical manoeuvres at** (position) **up to** (level)
3. **Advice of Military Low Jet Operations Known to be taking Place**	**military low jet operations** (relevant information)

METEOROLOGICAL INFORMATION (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Meteorological Conditions** Note: Wind is always expressed by giving the mean direction and speed and any significant variations.	a. **wind** (number) **degrees** (number) **knots** b. **wind at** (height/altitude/flight level) (number) **degrees** (number) **knots** c. **visibility** (distance) [direction] d. **runway visual range** (or **RVR**) [**runway** (number)] (distance) e. **present weather** (details) f. **cloud** (amount, [type] and height of base) (or **sky clear**)
Note: CAVOK pronounced CAV-O-KAY	g. **CAVOK** h. **temperature** [**minus**] (number) (and/or **dewpoint** [**minus**] (number)) i. **QNH** (number) [units] j. **moderate** (or **severe**) **icing** (or **turbulence**) [**in cloud**] (area)
unless responding to a request for turbulence or icing information	k. **report flight conditions** •l.* **IMC** (or **VMC**)

REPORTS AND INFORMATION (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Additional Reports**	a. **report passing** (significant point)
to request a report at a specified place or distance	b. **report** [**GPS**] (distance) **from** (name of **DME** station) **DME** (or reference point) c. **report passing** (three digits) **radial** (name of VOR) **VOR**
to request a report of present position	d. **report distance from** (significant point) e. **report distance from** (name of DME station) DME
when descending a non-DME equipped aircraft to LSALT above CTA steps	f. **report passing control area steps for further descent**
the pilot will give this only when satisfied that the CTA step has been passed, allowing for navigational tolerances.	•g.* **inside** (distance of a CTA step as shown on ERC) **miles**

REPORTS AND INFORMATION (AIP GEN 3.4) (CONTINUED)

2. **Aerodrome Information**	a. **runway** (number) (condition) b. **landing surface** (condition) c. **caution** (**work in progress**) (**obstruction**) (position and any necessary advice) d. **braking action reported by** (aircraft type) **at** (time) **good** (or **medium**, or **poor**) e. **runway** (or **taxiway**) **wet** [or **damp**, **water patches**, **flooded** (depth)]
3. **Information to Aircraft** Wake turbulence Jet blast on apron or taxiway Propeller-driven aircraft slipstream Helicopter downwash	a.**caution** i. **wake turbulence** ii. **jet blast** iii. **slipstream** iv. **downwash**
4. **Pilot initiated Waiver or Wake Turbulence Separation Standards**	a.***accept waiver**

CLEARANCES (AIP GEN 3.4)

Circumstances	**Phraseologies** ***Denotes pilot transmission**
1. **Clearances**	a. ***request clearance**
where the clearance is relayed by a third party eg pilot/FS (ATC excepted)	b. (name of unit) **clears** (aircraft identification) c. **cleared to** d. **recleared** (amended clearance details)
when subsequent restrictions/requirements are imposed in addition to previous restrictions/requirements to be complied with.	e. **further requirement** f. **[re]enter control area** (or **zone**) [**via** (significant point)] **at** (level) [**at** (time)] g. **leave control area** (or **zone**) **at** (level) (or **climbing** or **descending**) h. **join** (specify) **at** (significant point) **at** (level) [**at** (time)]

CLEARANCES (AIP GEN 3.4) (CONTINUED)

2. **Indication of Route and Clearance Limit**	a. **from** (place) **to** (place) b. **to** (place) followed as necessary by: i. **direct** ii. **via** (route and/or reporting points) iii. **via flight planned route** iv. **via** (distance) **arc** (direction) **of** (name of DME station) **DME** c. (level or route) **not available due** (reason) **alternative[s] is/are** (levels or routes) **advise**
issuing a specific clearance limit	•d. **clearance limit** (place/aid)
Issuing a SID	•e. (identifier) **departure**
when pilot requests, or ATC anticipated, a visual departure in lieu of a SID	•f. **expect visual departure**
3. **When a Clearance has been Cancelled**	a. **cancel clearance** •b. ***cancel clearance**
4. **Requesting Clearance**	
when notification of flight details had not been submitted to ATS	•a ***flight details** [**inbound** or **for** (**departure** or **transit**)]
flight details to be passed after ATS response	•b. *(aircraft type)(position)(route in controlled airspace and next estimate)(preferred level)
If clearance cannot be issued immediately (upon request)	•c. **expect clearance at** (time or place)
if giving warning of clearance requirement	•d. *expect clearance request (aircraft type) **VFR** (if appropriate) **for** (destination) **via** (point outside controlled airspace at which clearance will be requested) **estimate** (estimate at destination) **at** (altitude proposed for entry to controlled airspace).

APPROACH AND AREA CONTROL SERVICES (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Departure instructions**	a **track** (three digits) **degrees** [**magnetic**] **to** (or **from**) (significant point) [**until** (time) (or **reaching**) (fix or significant point or level)]
2. **Approach Instructions**	•a. **cleared DME** (or **GPS**) **arrival** [**sector** (identifying letter of the sector)]
	b. ***request** [**straight-in**] (type of approach) **approach** [**runway** (number)]
	c. **cleared** (type of approach) **approach** [**runway** (number)]
	d. **commence approach at** (time)
Where a temporary level restriction is to be imposed. (Application to civilian aircraft only during practice approaches in VMC, and to military aircraft)	e. **track via** (type of approach) **approach** [runway (number)] **not below** (level)
Pilot to advise when able to conduct a visual approach	f. **report visual**
	g. **report runway** [lights] **in sight**
	h. **report** (significant point) [***outbound*** or **inbound**]
Visual approach by night	i. **when established** (position) **cleared for visual approach**

APPROACH AND AREA CONTROL SERVICES (AIP GEN 3.4) (CONTINUED)

3. **Holding instructions** Visual Published holding procedure over a Waypoint, facility or fix	a. **hold visual [over]** (position) b. **hold at** (waypoint, facility or fix) (level) **expect approach** (or **further clearance**) **at** (time)
When pilot requires an oral description	c. ***request holding instructions** of holding procedure based on a facility
ATC response	d. **hold at** (waypoint, facility or fix) (callsign and frequency, if necessary) (level) **inbound track** (three digits) **degrees right** (or **left**) **hand pattern, outbound time** (number) **minutes** (additional instructions, if necessary) e. **hold on the** (three digits) **radial of the** (name) **VOR/TACAN** (callsign and frequency, if necessary) **at** (distance) **and** (distance) **DME** (level) **inbound track** (three digits) **degrees right** (or **left**) **hand pattern** (additional instructions, if necessary)
4. **Expected Approach Time**	a. **no delays expected** b. **expected approach time** (time)

VICINITY OF THE AERODROME (AIP GEN 3.4)

Circumstances	Phraseologies *Denotes pilot transmission
1. **Identification of Aircraft**	a. **SHOW LANDING LIGHT**
2. **Acknowledgment by Visual Means**	a. **acknowledge by moving ailerons** (or **rudder**) b. **acknowledge by rocking wings** c. **acknowledge by flashing landing lights**

starting and initial clearance

STARTING AND INITIAL CLEARANCE ISSUE

Circumstances	Phraseologies *Denotes pilot transmission
1. **Starting Procedures** to request permission to start engines	a. *[aircraft location] **request start** b. *[aircraft location] **request start information** (ATIS identification)
ATC response	c. **start approved** d. **start at** (time) e. **expect start at** (time) f. **expect departure** (time) **start at own discretion**
2. **When Clearance Delivery is in Operation**	•a. *(flight number, if any) **to** (aerodrome of first intended landing), **request clearance**
if runway other than runway nominated is required	b. ***require runway** (number)
3. **To request Aerodrome data for Departure** When no ATIS broadcast is available	a. ***request departure information** b. **runway** (number), **wind** (direction and speed), **QNH** (detail) **temperature** (detail) [**visibility for take-off** (detail) (or **RVR**) (detail)]

TAXI PROCEDURE

Circumstances	Phraseologies *Denotes pilot transmission
1. **Taxi procedures** for departure at a controlled aerodrome	a. *[flight number][aircraft type] [wake turbulence category if "heavy"][**POB**] **received** (**ATIS** identification) [**squawk** (**SSR** code) [aircraft location][flight rules, if IFR][**to** (aerodrome of destination)] **request taxi** [intentions]
for departure at a non-controlled aerodrome	b. **all stations** (location) (aircraft type) [**POB**] [IFR (if operating IFR)] **taxiing** (location) **for** (destination or intentions) **runway** (number)
where detailed taxi instructions are required	c. *[aircraft type][wake turbulence category if "heavy"] **request detailed taxi instructions**
	d. **taxi via** (specific routine to be followed) **to holding point** [identifier][**runway** (number)][**time** (minutes)]
	e. ***holding point** (identifier), **runway** (number)
where aerodrome information is not available from an alternative source such as ATIS	f. **taxi to holding point** [identifier] (followed by aerodrome information as applicable) [**time** (minutes)]
	g. **holding point** (identifier)
for arrival at a controlled aerodrome	h. *(aircraft callsign) [parking area or bay number]
	i. **taxi to** [**terminal** or other location; eg **general aviation area**] [**stand** (number)]

taxi procedures

TAXI PROCEDURE (CONTINUED)	
Circumstances	**Phraseologies** ***Denotes pilot transmission**
2. **Intersection Departures** When a pilot requests an intersection departure	a. ***request intersection departure from** (taxiway identifier) b. **intersection departure approved hold short of** (position)
When a pilot is offered an intersection departure	•c. **intersection departure available from** (position) (distance) **remaining** (if this information is not readily available to the pilot) **hold short (**position)
3. **Specific routing**	a. **take** (or **turn**) **first** (or **second**) **left** (or **right**) b. **taxi via** (identification of taxiway) c. **taxi via runway** (number)
4. **Manoeuvring on Aerodrome** General	a. ***request backtrack** b. **backtrack approved** c. **backtrack runway** (number) d. *[aircraft location] **request taxi to** (destination on aerodrome) e. **taxi straight ahead** f. **taxi with caution** (reason) g. **give way to** (description of other aircraft or vehicle h. ***giving way to** (traffic) i. **taxi into holding bay** j. **follow** (description of other aircraft or vehicle) k. **vacate runway** l. ***runway vacated** m. **expedite taxi** [reason] n. ***expediting**
Note: The pilot must, when requested, report "RUNWAY VACATED" when the aircraft is well clear of the runway	

AERODROME MOVEMENTS

Circumstances	Phraseologies *Denotes pilot transmission
1. Holding Note: The procedure words ROGER and WILCO are insufficient acknowledgment of the instructions HOLD, HOLD POSITION and HOLD SHORT OF (position). In each case, the acknowledgment must be the phraseology HOLDING or HOLDING SHORT, as appropriate.	a. **hold** (direction) **of** (position, runway number, etc) b. **hold position** c. hold short of (position) d. ***holding** e. ***holding short**
2. To Cross a Runway Note: If the Control tower is unable to see the crossing aircraft (eg. night, low visibility etc) the instruction should always accompanied by a request to report when the aircraft has vacated and is clear of the runway.	a. ***request cross runway** (number) b. **cross runway** (number) **[report vacated]** AIP GEN 3.4 c. ***crossing runway** (number) d. **expedite crossing runway** (number) **traffic** (aircraft type) (distance) **miles final**

RUNWAY OPERATIONS

Note: The runway should be stated when the caller wishes to emphasise, on frequency, the runway to be occupied, or there is the possibility of confusion during multiple runway operations.

Circumstances	Phraseologies *Denotes pilot transmission
1. Preparation for Take-off	a. **report when ready [for departure]** b. **are you ready for immediate departure?** c. ***ready**
if unable to issue take-off clearance	d. **wait** [reason]

RUNWAY OPERATIONS (CONTINUED)

2. **Clearance To Enter Runway and Await Take-Off**		
When the pilot desires to enter the runway and assume take-off position for checks before departure	a.	***request line-up** [**require** (required number of seconds delays in lined-up position before departure) **seconds on runway**]
	b.	**line up** [**and wait**][**runway** (number)][**be ready for immediate departure**]
Conditional clearances	c.	(condition) **line up** [**runway** (number)]
Acknowledgment of a conditional clearance	d.	*(condition) **lining up** [**runway** (number)]
3. **Take-off clearance**	a.	**cleared for take-off** [**report airborne**]
when there is a possibility of confusion	b.	**runway** (number) **cleared for take-off**
when take-off clearance has not been complied with.	c.	**take off immediately or vacate runway**
	d.	**take off immediately or hold short of the runway**.
When LAHSO are in use	e.	*(aircraft type) **landing on crossing runway will hold short - runway** (number) **cleared for take-off**
when a radar SID has been issued	f.	**assigned heading right** (or left) (three digits) (plus any altitude restriction) [**runway** (number)] **cleared for take-off**
	*g.	**left** (or **right**) (three digits) (plus any altitude restriction) **runway** (number) **cleared for take-off**
When a radar SID has been issued with a heading which approximates the runway bearing (rounded off to the nearest 5°) the instruction will not include a direction of turn	•h.	**assigned heading** (degrees) **cleared for take-off**
	•i.	***heading** (three digits) **cleared for take-off**

RUNWAY OPERATIONS (CONTINUED)

4. **Take-off Clearance Cancellation**	a.	**hold position, cancel, I say again cancel take-off** (reason)
	b.	***holding**
to stop a take-off in emergency conditions	c.	**stop immediately** (repeat aircraft callsign) **stop immediately**
	d.	***stopping runway** (number)

AFTER TAKE-OFF

Note: All "level" reports to Radar must be to the nearest 100FT.

Circumstances		Phraseologies *Denotes pilot transmission
1. **Tracking After Take-Off**	a.	***request right** (or **left**) **turn** [**when airborne**]
	b.	**left** (or **right**) **turn approved**
	c.	**after passing** (level)(instructions)
heading to be followed	d.	**continue on** (magnetic direction of runway) (instructions)
when a specific track is to be followed	e.	**track** (magnetic direction of runway) (instructions)
	f.	**climb straight ahead** (instructions)
2. **Airborne Report - Radar** unrestricted turn to track	a.	***turning left** (or **right**) **passing** (level) (**climbing to** (level)
Heading specified by ATC	b.	***turning left** (or right) (three digits) **passing** (level) **climbing to** (level)or
	c.	***maintaining runway heading passing** (level) **climbing to** (level)
Confirmation of an assigned Radar SID heading when established contact with ATC and unable to execute turn immediately due to procedural requirements	d.	**assigned heading left** (or **right**) (three digits) **passing** (level) **climbing to** (level)
When assigned heading approximates runway bearing	e.	***heading** (three digits) **passing** (level) **climbing to** (level)

after take off

AFTER TAKE-OFF (CONTINUED)	
3. **Departure Report - Non-radar** when notifying departure report to a control tower	a. ***departed** (time) **tracking** (track being flown) [**from** (reference aid used to establish track) or **via SID** (identifier)] **climbing** to (level) **estimating** (first reporting point **at** (time) or
Contacting non-radar unit other than departure aerodrome	b. **departed** (location) (time in minutes) **tracking** [**to intercept**] (track) **climbing to** (level) **estimating** (first reporting point **at** (time)
4. **Departure Reports** Departing a non-towered aerodrome	Departure reports no longer required at non-towered aerodromes.

arrival at aerodrome

Circumstances	**Phraseologies** ***Denotes pilot transmission**
1. **Entering an Aerodrome Traffic Circuit**	a. *[aircraft type] (position) (level) (intentions)
When ATIS Information is available	b. *[aircraft type[(position)(level) **information** (ATIS identification) (intentions)
	c. **join** (instruction) **runway** (number) **QNH** (detail)[**traffic** (detail) [**track** (requirements)
2. **In the Circuit**	a. *(position in circuit, eg **downwind/final**)
	b. **number** (sequence number) **follow** (aircraft type and position)[additional instructions if required]
	c. ***base** (or crosswind)
	d. ***final** (or **long final**)
Nearing position at which approach must be aborted of not cleared to land	e. ***short final**

ARRIVAL AT AERODROME (CONTINUED)

3. **Approach Instructions** Note: The report "LONG FINAL" is made when aircraft turn on to final approach at a distance greater than 4NM from touchdown or when an aircraft on a straight-in approach is 8NM from touchdown. In both cases a report, "FINAL" is required at 4NM from touchdown.	a. **make short approach** b. **make long approach** (or **extend downwind**) c. **report base** (or **final** or **long final**) d. **continue approach**
4. **Landing**	a. **cleared to land** (or **touch and go**)
Multiple runway operations	b. **runway** (number) **cleared to land** (or **touch and go**)
Where the aircraft cannot be sighted by ATC	•c. [**runway** (number)] **not in sight - cleared to land**
Pilot requesting option for touch and go, full stop, stop and go, or overshoot	•d. *(position in circuit) **request the option**
Advising the pilot the option to touch and go, full stop, stop and go, or overshoot	e. [**runway** (number) **cleared for the option** f. **make full stop**
When runway is occupied an ATC assessment is that the runway will not become available	g. **at the minima go around**
5. **When Landing Approved and LAHSO Are in Use**	•a. (aircraft type) **departing** (or **landing**) **on crossing runway, hold short runway** (number) **cleared to land runway** (number)
required readback	b. ***hold short runway** (number) **cleared to land runway** (number)
6. **Delaying Aircraft**	a. **orbit right** (or **left**) [**from present position**]

arrival at aerodrome

ARRIVAL AT AERODROME (CONTINUED)	
7. **Pilot request for Low Approach or Pass** to make an approach along a runway descending to an agreed minimum level	a. ***request low approach** (reasons) b. **cleared low approach** [runway (number)] [(altitude restriction)] [(go around instructions)]
to fly past the control tower or other observation point for the purpose of visual inspection by persons on the ground	c. ***request low pass** (reasons) d. **cleared low pass** [**runway** (number)] [(altitude restriction)] [(go around instructions)]
8. **Missed Approach** To discontinue an approach [multiple runway operations]	a. **go around** [additional information] b. ***going around** c. ***going around runway** (number)

traffic information

Circumstances	Phraseologies *Denotes pilot transmission
1. **Identification of Aircraft**	a. ***report heading*** [**and flight level** (or **altitude**)] b. **for identification turn left** (or **right**) **heading** (three digits) c. **identified** [(position)] d. **not identified** [reason] [**resume** (or **continue**) **own navigation**]
2. **Provision of Service**	a. **radar control terminated** [due to (reason)] b. **radar service terminated** (instructions) c. **resume own navigation** (position of aircraft)(specific instructions) d. **will shortly lose identification** (appropriate instructions or information) e. **identification lost** [reasons] (instructions)

radar phraseologies

RADAR PHRASEOLOGIES GENERAL (CONTINUED)	
3. **Radar Position Information** to request traffic, position and/or navigation information	a. ***request** i. **radar assistance** (reason) ii. **position by radar** [**with reference to** (aid or location) iii. **traffic** (or **position** or **navigation**) **advisory** [**by radar**] iv. (specific radar service) b. **position** (distance) (direction) **of** (significant point) (or **over** or **abeam** (significant point)

radar communication

Circumstances	Phraseologies *Denotes pilot transmission
1. **Communications**	a. [**if**] **radio contact lost** (instructions) b. **if no transmissions received for** (number) **minutes** (or **seconds**) (instructions) c. **reply not received** (instructions) if
If loss of communications is suspected	d. **if you read** manoeuvre instructions or **squawk** (code or **ident**) e. (manoeuvre or **squawk**) **observed, position** (position of aircraft), **will continue to pass instructions**
2. **Aircraft Directional Indicator Failure** when notified by pilot	*a. **compass failure acknowledged, radar service will continue using no-compass procedures, confirm familiar**
When suspected by ATC	*b. **confirm heading**
If heading response appears at variance with the track of the radar return	*c. **suspect your compass has failed, radar service will continue using no-compass procedures, confirm familiar**

radar manoeuvres

RADAR COMMUNICATION AND NAVIGATION (CONTINUED)

In case of unreliable directional instruments on board aircraft	d. **make all turns rate one** (or **rate half** or (number) **degrees per second**) **execute instructions immediately upon receipt** e. **turn left** (or **right**) **now** f. **stop turn now**

RADAR MANOEUVRES

Circumstances	**Phraseologies** ***Denotes pilot transmission**
1. **General Manoeuvres**	a. **leave** (significant point) **heading** (three digits) [**inbound**] [**at** (time)] b. **continue heading** (three digits) c. **continue present heading** d. **fly heading** (three digits) e. **turn left** (or **right**) (number) **degrees** (or **heading** (three digits)[reason] f. **orbit left** (or **right**) [reason]
For avoiding action	g. **turn left** (or **right**) **immediately** [(number) **degrees**] or [**heading** (three digits)] **to avoid** [**unidentified**] **traffic** (bearing by clock-reference and distance) h. **stop turn heading** (three digits)
When instructing an aircraft to turn 180° or more and in order to emphasise the direction of turn	i. **turn left** (or **right**) - **I say again** - **left** (or **right**) **heading** (three digits) [reason]
when necessary to specify a reason for a manoeuvre, the following phraseologies should be used:	i. **due traffic** ii. **for spacing** iii. **for delay** iv. **for downwind** (or **base**, or **final**)
2. **Aircraft Vectoring by Radar Service**	*a. **request vectors** [**to** (or **from**) (aid, location or reason)] b. **do you want vectors?**

speed control

SPEED CONTROL

Circumstances	Phraseologies *Denotes pilot transmission
1. **Speed** Note: All speed communications shall relate to **INDICATED AIRSPEED** unless otherwise stipulated. Where applicable, Mach Number may be nominated as the basis of a speed statement.	a. ***speed** (number) **knots** (or MACH number) b. **report speed** or (**climb** or **cruise**] **MACH number**] c. **maintain** (number) knots (or **MACH** (number) until (location) d. **maintain present speed** e. **increase** (or **reduce**) **speed to** (or **by**) (number) **knots** f. **reduce to minimum approach speed**
when aircraft is required to reduce speed to the minimum position in a clean configuration	g. **reduce to minimum clean speed**
When aircraft speed is pilot's discretion	h. **no [ATC] speed restrictions**
when ATC speed restrictions no longer apply and the aircraft is required to resume profile speeds in accordance with procedural requirements.	i. **resume normal speed**

traffic information

Circumstances	Phraseologies *Denotes pilot transmission
1. **Traffic Information**	a. **traffic** (number) **o'clock** (distance) (direction of flight) [(any other pertinent information] i. **unknown** ii. **slow moving** iii. **fast moving** iv. **closing** v. **opposite** (or **same**) **direction** vi. **overtaking** vii. **crossing left to right** (or **right to left**)
Aircraft type to be passed if known	viii. (type) ix. (level) x. **climbing** (or **descending**)
	b. **clear of traffic** [appropriate instructions]

secondary surveillance radar

SECONDARY SURVEILLANCE RADAR (SSR)

Circumstances	Phraseologies *Denotes pilot transmission
1. **To instruct Setting of Transponder** The word "code" is not used in transmissions	a. **squawk** (code) [**ident** if required] b. ***[squawk]** [code] [**ident** if instructed by ATS]
To request:	
reselection of the assigned mode and code	c. **recycle** [(mode)] (code) d. ***recycling** [(mode)] (code)
confirmation of Mode A code selection	e. **confirm squawk** (code) f. ***squawking** (code)
operation of the IDENT feature	g. **squawk ident** h. **squawk normal**
temporary suspension of transponder operation	i. **squawk standby**
emergency code selection	j. **squawk mayday**
termination of transponder operation	k. **stop squawk**
transmission of pressure altitude	l. **squawk charlie**
pressure setting check and confirmation of level	m. **check altimeter setting and confirm level**
termination of pressure altitude transmission because of faulty operation	n. **stop squawk charlie, wrong indication**
altitude check	•o. **verify [level]** (level)
2. **Advice on Traffic Level Where the Mode C Data Has not been verified**	a. **unverified level** (level)

GROUND STATION CALL SIGNS (AIP GEN 3.4)

ATS CALL SIGNS	ATS units are identified by the name of the location followed by the service available as follows:
CENTRE	En route area control, including RIS and FIS.
APPROACH	Approach control where provided as a separate function.
DEPARTURES	Departure control where provided as a separate function.
FINAL/DIRECTOR	Radar control providing vectors onto final approach.
TOWER	Aerodrome control or aerodrome and approach control where these services are provided from an aerodrome control tower, eg Coffs Harbour.
GROUND	Surface movement control.
CLEARANCE DELIVERY	Clearance delivery to departing aircraft.
RADAR RIS,	where provided as a separate function in terminal areas.
FLIGHTWATCH	Flight Information Service.

The name of the location or the service may be omitted provided that satisfactory communication has been established.

AIRCRAFT CALL SIGNS

Improper use of callsigns can result in pilots executing a clearance intended for another aircraft. Callsigns should never be abbreviated on an initial contact or at any time when other aircraft callsigns have similar numbers/sounds or identical letters/numbers.

eg: CHARLIE WHISKY ZULU - WHISKY CHARLIE ZULU.

Pilots must be certain that aircraft identification is complete and clearly identified before taking action on an ATC clearance. ATS will not abbreviate callsigns of air carrier or other civil aircraft having authorised callsigns. ATS may initiate abbreviated callsigns of other aircraft by using the prefix and the last three digits/letters of the aircraft identification after communications are established.

call signs

The pilot may use the abbreviated callsign in subsequent contact with ATS. When aware of similar/ identical callsigns, ATS will take action to minimise errors by:

- emphasising certain numbers/letters
- repeating the entire callsign
- repeating the prefix, or
- asking pilots to use a different callsign temporarily.

Pilots should use the phrase "VERIFY CLEARANCE FOR (complete callsign)" if doubt exists concerning proper identity.

Civil aircraft pilots should state the aircraft type , model or manufacturer's name, followed by the digits/letters of the registration number, when using GAAP and CTAF procedures.

Bonanza CHARLIE ALPHA ECHO.

Cherokee ALPHA BRAVO CHARLIE.

Aircraft operating within the Australian FIR will use the abbreviated form consisting of the last three characters of the registration unless conforming with an alternative approved format, eg:

VH-DFL DELTA FOXTROT LIMA

Foreign registered aircraft operating within the Australian FIR will use the abbreviated form consisting of the first character and last three characters of the registration unless conforming with an alternative approved format, eg:

N35826 NOVEMBER EIGHT TWO SIX

The prefix "HELICOPTER" before the callsign must be used by rotary wing aircraft when first establishing contact on any frequency, eg:

VH-BFK HELICOPTER BRAVO FOXTROT KILO.

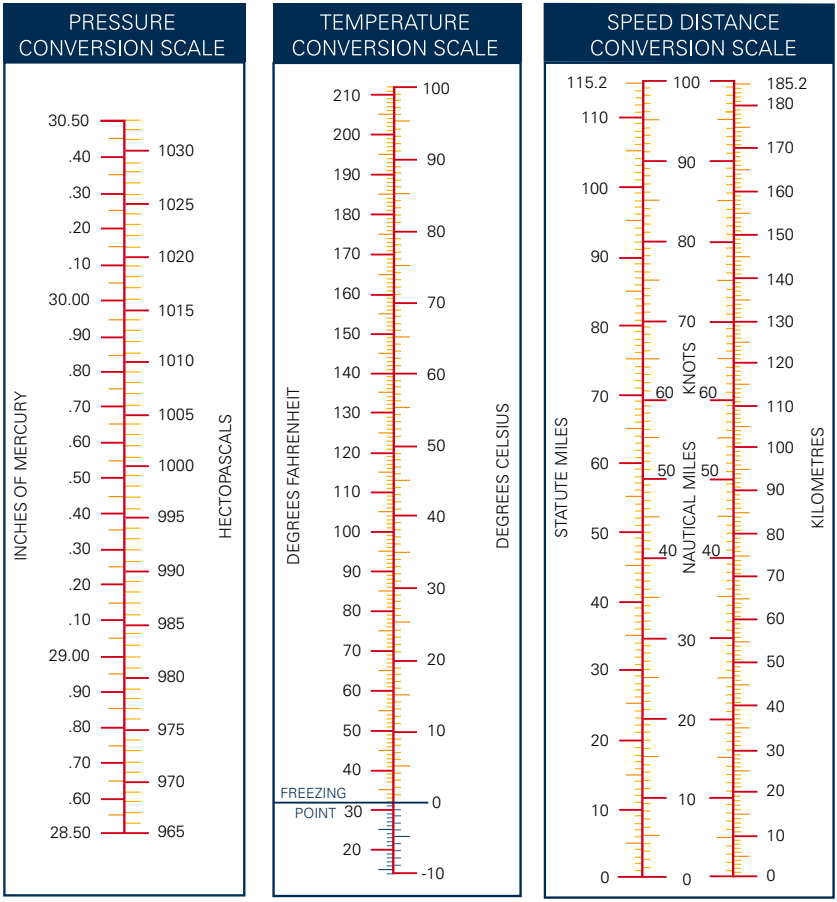
GROUND VEHICLES

Ground vehicles shall be identified by the type; eg, car, truck, tractor, tug etc or an ATS approved format, followed by the assigned vehicle number spoken in group form, eg:

TRUCK 12 "TRUCK TWELVE"

CAR 23 "CAR TWENTY THREE"

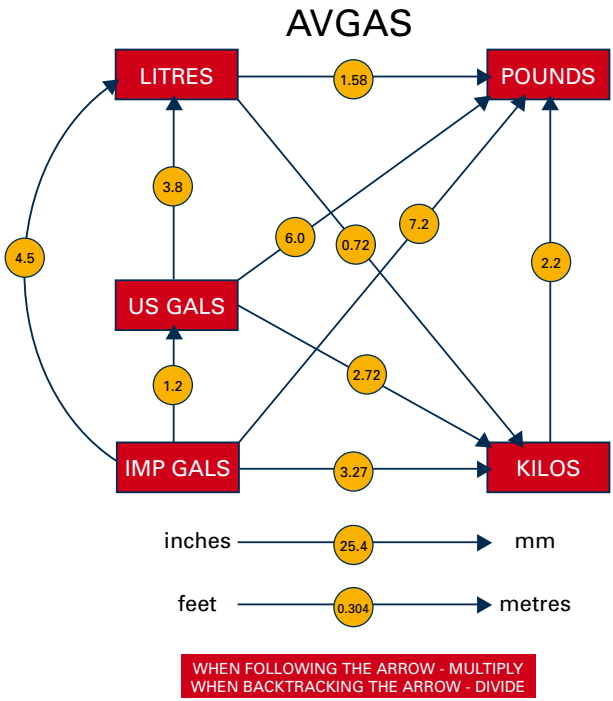
CONVERSIONS - NAVIGATION (AIP ERSA GEN-CON)



conversions – navigation

TO CONVERT	INTO	MULTIPLY BY
DISTANCE		
Metres	Feet	3.281
Feet	Metres	0.3048
VOLUME		
Imperial Gallons	Litres	4.546
Litres	Imperial Gallons	0.22
WEIGHT		
Kilograms	Pounds	2.2046
Pounds	Kilograms	0.4536

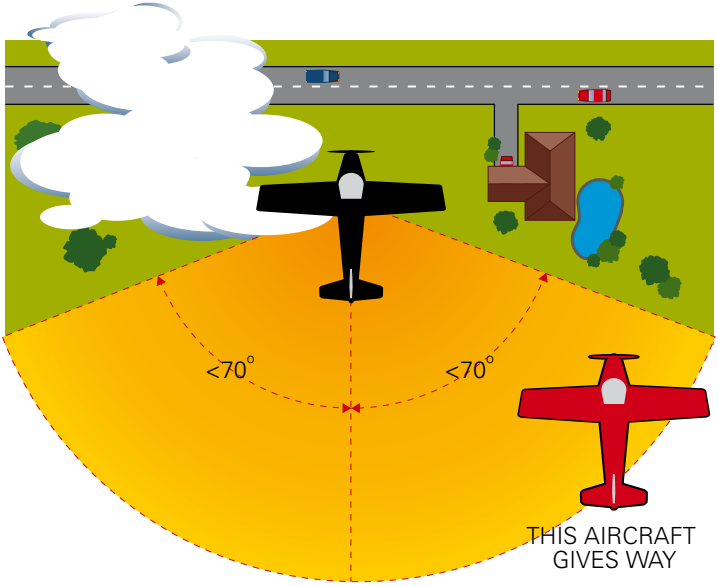
conversions – mass and volume



overtaking

OVERTAKING (CAR 160)

An "overtaking aircraft" means an aircraft that approaches another aircraft from the rear on a line forming an angle of less than 70° with the plane of symmetry of the latter, that is to say, an aircraft that is in such a position with reference to another aircraft that at night it would be unable to see either of the forward navigation lights of the other aircraft.



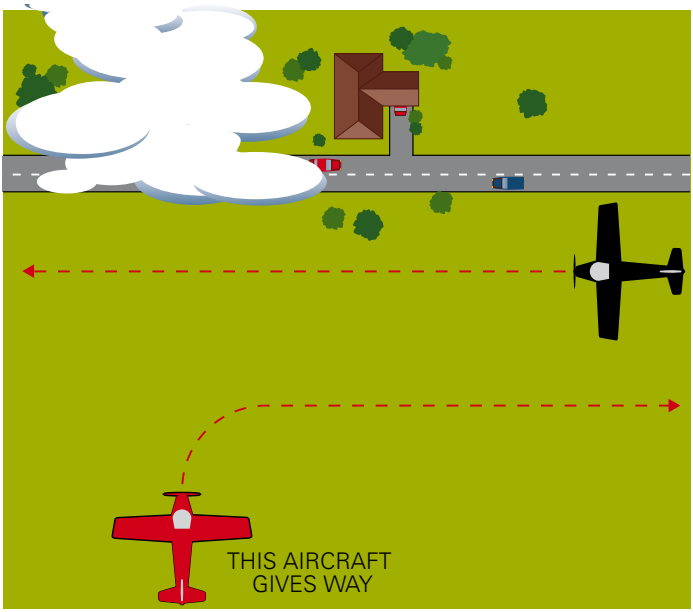
right of way

RIGHT OF WAY (CAR 161)

An aircraft that is required to keep out of the way of another aircraft shall avoid passing over or under the other, or crossing ahead of it, unless passing well clear.

An aircraft that has the right of way shall maintain its heading and speed, but nothing in the rules shall relieve the pilot in command of an aircraft from the responsibility of taking such action as will best avert collision.

right of way

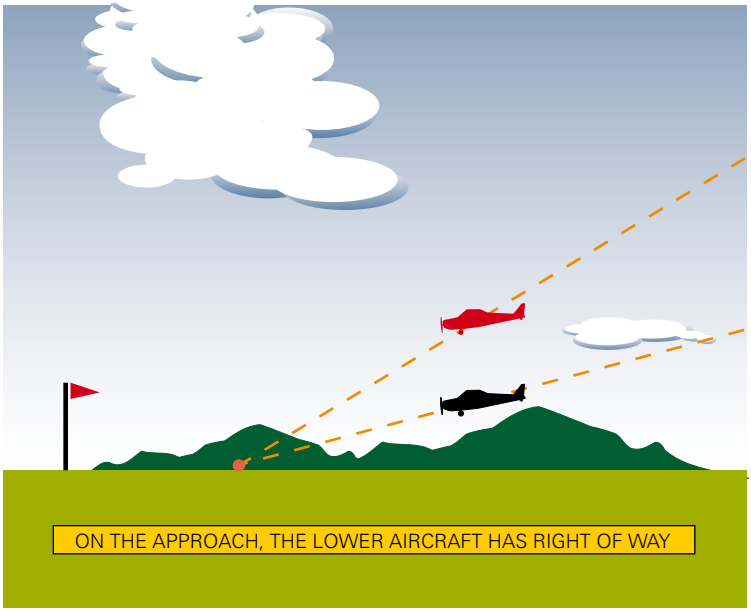


When two aircraft are on converging headings at approximately the same height, the aircraft that has the other on its right shall give way, except that:

- power-driven heavier-than-air aircraft shall give way to airships, gliders and balloons;
- airships shall give way to gliders and balloons;
- gliders shall give way to balloons; and
- power-driven aircraft shall give way to aircraft that are seen to be towing other aircraft or objects. (CAR 162)

When two aircraft are approaching head-on or approximately so and there is danger of collision, each shall alter its heading to the right.

An aircraft that is being overtaken has the right-of-way and the overtaking aircraft, whether climbing, descending, or in horizontal flight, shall keep out of the way of the other aircraft by altering its heading to the right, and no subsequent change in the relative positions of the two aircraft shall absolve the overtaking aircraft from this obligation until it is entirely past and clear.



ON THE APPROACH, THE LOWER AIRCRAFT HAS RIGHT OF WAY

An overtaking aircraft shall not pass the aircraft that it is overtaking by diving or climbing.

An aircraft in flight, or operating on the ground or water, shall give way to other aircraft landing or on final approach to land.

When two or more heavier-than-air aircraft are approaching an aerodrome for the purpose of landing, aircraft at the greater height shall give way to aircraft at the lesser height, but the latter shall not take advantage of this rule to cut-in in front of another that is on final approach to land, or overtake that aircraft.

Notwithstanding anything contained in the paragraph above, power-driven heavierthan- air aircraft shall give way to gliders.

An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft.

An aircraft that is aware that another aircraft is compelled to land shall give way to that aircraft.

see and avoid

SEE AND AVOID (CAR 163A)

When weather conditions permit, the flight crew of an aircraft must, regardless of whether an operation is conducted under the Instrument Flight Rules or the Visual Flight Rules maintain vigilance so as to see and avoid other aircraft.

day VFR equipment

DAY VFR EQUIPMENT (CAR 174A AND CAO 20.18)

The flight and navigational instruments required for flights under the Visual Flight Rules are:

- an airspeed indicating system;
- an altimeter, with a readily adjustable pressure datum setting scale graduated in millibars;
- a direct reading magnetic compass; or
  - a remote indicating compass and a standby direct reading magnetic compass; and
- an accurate timepiece (clock or watch) indicating the time in hours, minutes and seconds.

Note that aircraft, other than helicopters, engaged in VFR charter or aerial work operations also require:

- a turn and slip indicator; (agricultural aeroplanes may be equipped with a slip indicator only) and
- an outside air temperature indicator when operating from an aerodrome at which ambient air temperature is not available from ground-based instruments.

In addition, as set out below, aircraft flown under the V.F.R. at night require:

- a landing light;
- illumination for all instruments and equipment, used by the flight crew that is essential for the safe operation of the aircraft;
- lights in all passenger compartments;
- an electric torch for each crew member; and
- such other equipment as CASA directs in the interests of safety.

In respect of an aircraft that is not equipped as above, CASA may give permission, subject to such conditions (if any) as are specified in the permission, for the aircraft to be flown under the V.F.R by day or by night.

SERVICEABILITY (CAO 20.18)

All instruments and equipment fitted to an aircraft shall be serviceable prior to takeoff unless (CAO 20.18):

- flight with unserviceable instruments or equipment has been approved by CASA, subject to such conditions as CASA specifies; or
- the unserviceability is permitted under the provisions of a permissible unserviceability schedule.

Where flight is conducted with unserviceable instruments or equipment under the provisions of paragraph 10.1 of CAO 20.18, the unserviceable instruments or equipment shall be prominently placarded 'UNSERVICEABLE' or removed from the aircraft.

Note: Where an instrument or piece of equipment performs more than one function, it is permissible to placard as unserviceable only the function(s) which are unserviceable.

A charter, aerial work or private operator may elect to have a permissible unserviceability schedule. In the case of charter or aerial work operators, the permissible unserviceability schedule shall be incorporated in the operator's operations manual.

VFR navigation

NAVIGATION OF AIRCRAFT ON VFR FLIGHT (CAR 174D)

The following apply in respect of flight under the VFR (AIP ENR 1.1):

- The pilot in command must navigate the aircraft by visual reference to the ground or water, or by using any of the IFR methods specified in AIP ENR 1.1, except that when operating at or below 2,000FT above the ground or water, the pilot in command must be able to navigate by visual reference to the ground or water.
- When navigating by visual reference to the ground or water, the pilot in command must positively fix the aircraft's position by visual reference to features shown on topographical charts at intervals not exceeding 30 minutes. When flying over the sea, visual reference features may include rocks and reefs and fixed man-made objects which are marked on suitable charts and are readily identifiable from the air.

Note: Flight above more than 4/8 of cloud, or over featureless land areas, or over the sea, may preclude visual position fixing at the required intervals and may therefore make visual navigation impracticable.

- When navigating by visual reference in controlled airspace the pilot must notify ATC if the aircraft's track diverges by more than one (1) nautical mile from the track approved by ATC, or, if navigating by reference to radio navigation aids, by more than the tolerances given in AIP ENR 1.1.
- VFR flight on top of more than 4/8 cloud is available provided that:
  - VMC can be maintained during the entire flight, including climb, cruise and descent.
  - For VFR flight on top, the visual position fixing requirements of section (B) or the other navigational requirements of AIP ENR 1.1 must be met
  - Prior to conducting a VFR flight on top of more than 4/8 cloud, the pilot in command must ensure that current forecasts and observations (including those available in-flight observations) indicate that conditions in the area of, and during the period of, the planned descent below the cloud layer will permit the descent to be conducted in VMC.

The position at which descent below cloud is planned to occur must be such as to enable continuation of the flight to the destination and, if required, an alternate aerodrome in VMC (see Notes 1 and 3 - below).

- When navigating by reference to radio navigation systems, the pilot in command must obtain positive radio fixes at the intervals and by the methods prescribed in AIP ENR 1.1.
- The pilot in command of a VFR flight wishing to navigate by means of radio navigation systems or any other means must indicate in the flight notification only those radio navigation aids with which the aircraft is equipped and the pilot is qualified to use (see Note 2)
- VFR aeroplanes operating above FL200 must be equipped with an altimeter calibrated to IFR standards. CASA approval is required for the flight.

Note 1: A pilot must not undertake a VFR flight on top of more than 4/8 cloud unless the aircraft is equipped with serviceable flight and navigation instruments as specified in CAO 20.18 Appendix IV (IFR and Night VFR).

Note 2: "Qualified" means the holder of an instrument rating or NVFR rating which is endorsed for the particular navigation aid or any private or higher category pilot who has received in-flight instruction from a qualified instructor in the use of the radio navigation aid as the sole means of navigation, and who is competent to navigate by use of the aid.

Note 3: Pilots are warned against initiating VFR-on-top when weather conditions are marginal. Before committing their flight to operating VFR-on-top they should be confident that meteorological information used is reliable and current, and clearly indicates that the entire flight will be able to be conducted in VMC.

TIME

During flight pilots must maintain a time reference accurate to within +- 30 seconds. (AIP ENR 1.1)

VFR navigation

TRACK KEEPING (AIP ENR 1.1)

Tolerances are applied to tracks to assess containment areas for the purposes of ensuring navigational integrity, separation from other aircraft, terrain and obstacle clearance and avoidance of specified airspace. Although allowing for the errors inherent in the navigation systems used, these tolerances are based on the assumption that the pilot will maintain track as closely as possible.

The pilot in command must, at all times, take positive action to regain track as soon as a deviation from the correct track is recognised.

AVOIDING CONTROLLED AIRSPACE (AIP ENR 1.1)

When operating VFR in E or G airspace, the following tolerances should be applied to the planned tracks in order to avoid controlled airspace.

0-2,000 AGL	± 1NM (day)	± 2NM (night)
2,001-5,000 AGL	± 2NM (day)	± 3NM (night)
5,001-10,000 AGL	± 4NM (day)	± 5NM (night)
Gliders should apply	± 5NM	
From 10,001 to FL 200 all VFR aircraft should apply		± 8NM

OPERATING NEAR OTHER AIRCRAFT (CAR 163)

An aircraft must not be flown so close to another aircraft as to create a collision hazard.

An aircraft must not be operated on the ground in such a manner as to create hazard to itself or to another aircraft.

FORMATION FLYING (CAR 163AA)

Aircraft must not be flown in formation unless:

- each of the pilots in command is qualified to fly in formation; and
- the formation is pre-arranged between the pilots in command; and
- the formation flight is conducted either:
  - under the Visual Flight Rules by day; or
  - under an approval given by CASA.

Unless otherwise approved by CASA, a pilot in command is qualified for formation flight only if:

- the pilot has been certified by the holder of a flight instructor rating as being competent to fly in formation, being a rating that is appropriate to the category of aircraft to be flown in the formation; and
- the certification is entered in the pilot's log book.

For the purposes of this regulation, two or more aircraft are flown in formation if:

- they are flown in close proximity to each other; and
- they operate as a single aircraft with regard to navigation, position reporting and control.

In determining whether aircraft are in close proximity to each other, regard is to be had to the type of aircraft in the formation and the speed of those aircraft.

In spite of paragraph 3 above, aircraft are to be taken to be in formation:

- during any period when they are manoeuvring to achieve separation from each other in order to effect individual control; and
- during join-up and breakaway.

aircraft speeds

AIRCRAFT SPEEDS

Unless for safety reasons, civil aircraft must not be operated at indicated airspeeds greater than the following:

Airspace Classification	Flight Rules	Speed
Class C	IFR	N/A
	VFR	250KT IAS below 10,000FT AMSL
Class D	IFR & VFR	250KT IAS
Class E	IFR & VFR	250KT IAS below 10,000FT AMSL
GAAP CTR	IFR & VFR	250KT IAS
Class G	IFR & VFR	250KT IAS below 10,000FT AMSL

Speed limitations shown for VFR flights in class C and for IFR and VFR flights in classes D, E and G airspace are not applicable to military aircraft.

regulation of flight – priorities

REGULATION OF FLIGHT - ASSESSMENT OF PRIORITIES

ATC will regulate operations to minimise the possibility of conflict and, provided that safety is in no way jeopardised, will apply priorities as outlined in AIP ENR 1.4.

NON-CONTROLLED AERODROMES

RESPONSIBILITY FOR COMPLIANCE WITH RULES OF THIS DIVISION (CAR 164)

When operating an aircraft on or in the vicinity of an aerodrome the pilot in command shall be responsible for compliance by the aircraft with the following rules.

OPERATION ON AND IN THE VICINITY OF AN AERODROME (CAR 166)

"In the vicinity" is defined as within the radius of 10NM from the aerodrome.

The pilot in command of an aircraft which is being operated on or in the vicinity of an aerodrome shall:

- observe other aerodrome traffic for the purpose of avoiding collision;
- conform with or avoid the pattern of traffic formed by other aircraft in operation;
- when approaching an aerodrome, other than a controlled aerodrome, for the purpose of landing, join the pattern of traffic in use for the landing direction in the up-wind, cross-wind or down-wind leg, as the case may be;
- make all turns to the left when approaching for a landing or after taking-off, unless:
  - CASA has directed otherwise for a particular aerodrome; or
  - Air Traffic Control directs otherwise, either by radio, visual signal or signals displayed in the signal square;
- land and take-off, in so far as practicable, into the wind unless Air Traffic Control directs otherwise;
- before landing, descend in a straight line commencing at such a distance from the perimeter of an aerodrome as is common to the ordinary course of navigation for the aircraft type concerned, the commencement of that straight line not being nearer the perimeter of an aerodrome than 500 metres; and
- after take-off, not alter heading from the take-off heading at a height less than 500 feet above the terrain unless Air Traffic Control directs the alteration or unless the alteration is necessary due to the terrain.

Note that the provisions of paragraph (C) do not apply to an aircraft conducting an instrument approach in I.M.C. if the instrument approach procedure requires the aircraft to join the pattern of traffic at any other point.

The pilot in command of an aircraft that is being operated on or in the vicinity of an aerodrome shall not take the aircraft off from, or land the aircraft on, a part of the aerodrome outside the landing area of the aerodrome.

PROCEDURE AT CONTROLLED AERODROMES (CAR 167)

Where aerodrome control is in operation at an aerodrome, the pilot in command of an aircraft forming part of the aerodrome traffic shall:

- maintain a continuous listening watch on the radio frequency authorised for communications with aerodrome control service, or, if this is not possible, keep a watch for instructions which may be issued by visual signals; and
- obtain, either by radio or visual signals, prior authorisation for any manoeuvre preparatory to or associated with taxi-ing, landing or taking-off

AERODROMES AT WHICH THE OPERATION OF AIRCRAFT IS NOT RESTRICTED TO RUNWAYS

The rules to be followed by aircraft operation at such aerodromes can be found in CAR 168

USE OF AERODROMES (CAR 92)

An aircraft shall not land at, or take-off from, any place unless:

- the place is an aerodrome established under the Air Navigation Regulations; or
- the use of the place as an aerodrome is authorised by a licence granted under regulation 89C; or
- the place is an aerodrome for which an arrangement under section 20 of the Act is in force and the use of the aerodrome by aircraft engaged in civil air navigation is authorised by CASA under that section; or

- the place (other than in paragraph (a), (b) or (c)) is suitable for use as an aerodrome for the purposes of the landing and taking-off of aircraft; and, having regard to all the circumstances of the proposed landing or take-off (including the prevailing weather conditions), the aircraft can land at, or take-off from, the place in safety. Guidance as to the suitability of such aerodromes as may be found in CAAP 92-1 "Guidelines for Aeroplane Landing Areas".

PAVEMENT CONCESSIONS

A pilot planning a flight by an aircraft with tyre pressures and/or weight in excess of that permitted by AGA must ensure that a pavement concession is obtained.

Emergency Landings. When safety is involved, the nearest aerodrome which will permit a landing without danger to the aircraft may be used, irrespective of the damage that may be caused to the pavement.

Mercy Flights. Decisions should be made in accordance with the degree of urgency involved. Severe overloading of pavements is acceptable if the safety of patients, crew and aircraft is not thereby jeopardised.

CIRCUIT HEIGHT

By convention, the following circuit heights are flown;

- jets, 1500AFT AGL
- piston/turbo prop, 1000FT AGL; and
- helicopters, 800FT AGL

Circuit heights for aerodromes which have specific requirements are published in ERSA.

light and ground signals

LIGHT SIGNALS

ON GROUND		IN FLIGHT
Authorised to TAKE-OFF if pilot is satisfied that no collision risk exists		Authorised to LAND if pilot is satisfied that no collision risk exists
Authorised to TAXI if pilot is satisfied that no collision risk exists		RETURN for landing
STOP		GIVE WAY to other aircraft CONTINUE CIRCLING
TAXI CLEAR OF LANDING AREA in use		DO NOT LAND Aerodrome unsafe
Return to starting point on aerodrome		

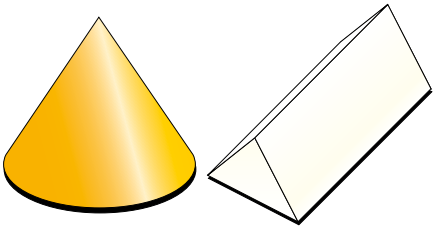
SYMBOLS NEAR WIND DIRECTION INDICATOR

AERODROME UNSERVICEABLE

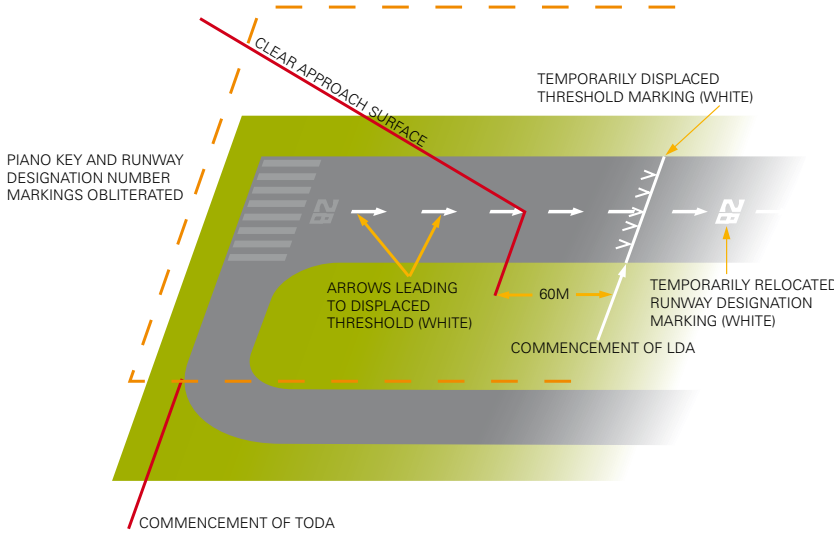
GLIDING OPERATIONS IN PROGRESS

OPERATIONS ARE CONFINED TO HARD SURFACE RUNWAYS, APRONS AND TAXIWAYS ONLY

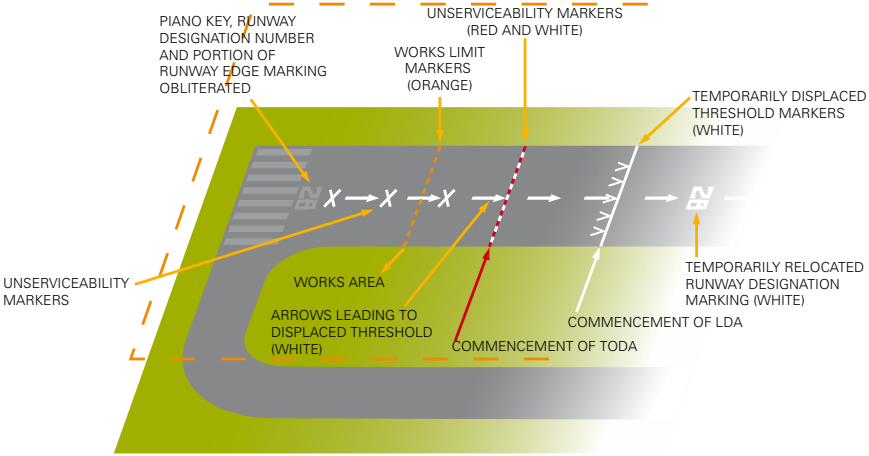
UNSERVICEABLE AREA MARKER



BOUNDARY MARKERS

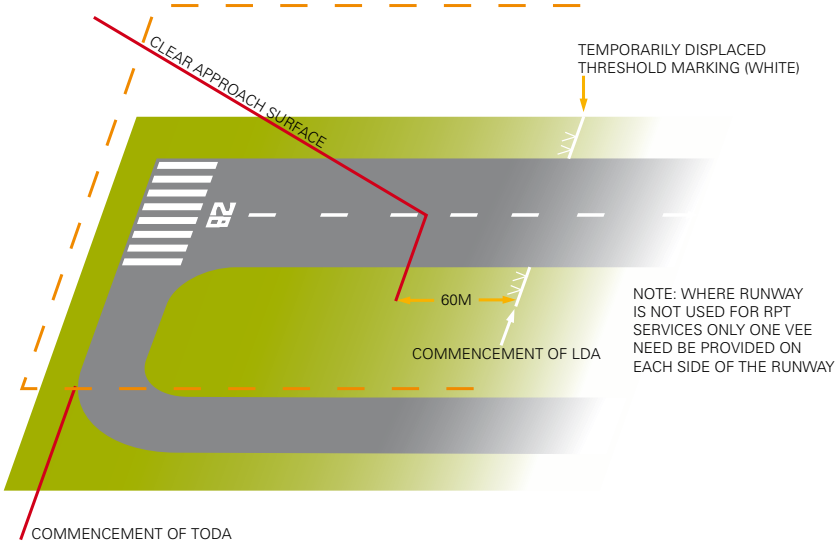


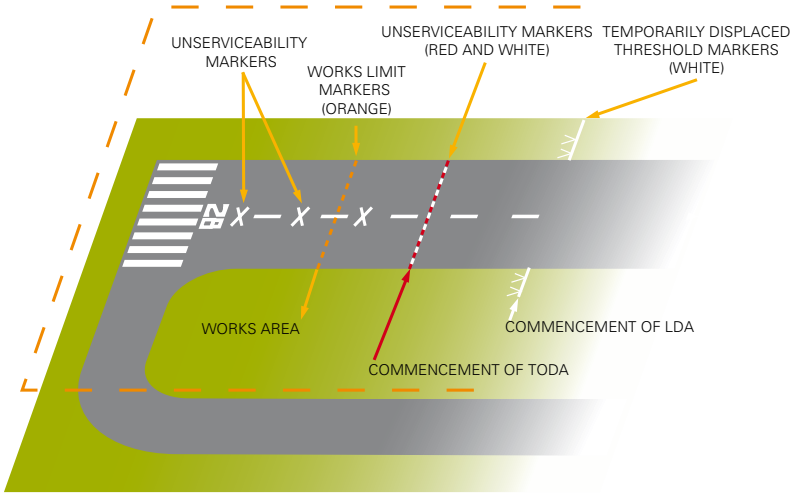
MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO OBSTACLE INFRINGEMENT OF THE APPROACH PATH FOR A PERIOD IN EXCESS OF 30 DAYS



MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO WORKS ON THE RUNWAY FOR A PERIODS IN EXCESS OF 30 DAYS

displaced threshold





MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO WORKS ON THE RUNWAY FOR A PERIOD OF 30 DAYS OR LESS

primary and secondary radar

Primary Radar is a system where the ground based antenna transmits a radar pulse then listens for the small amount of return energy that is reflected from an aircraft. The time delay between the transmission of the pulse and the receipt of the reflected return is a measure of the range.

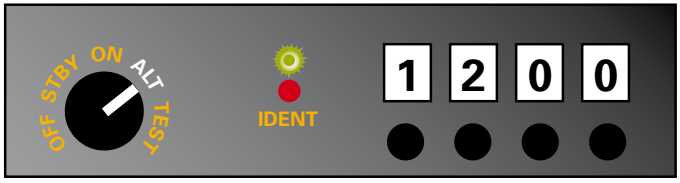
Secondary Radar requires an airborne transponder which responds to the receipt of pulse from a ground based antenna by transmitting a return signal. Because the transponder transmits a much stronger signal than that which is reflected off an aircraft in primary radar systems, greater range and reliability can be achieved with secondary radar and cheaper and more efficient ground equipment can be used. Additionally, information such as altitude and a code can be added to the returned signal from the transponder which is then displayed on the operator's screen.

A **Traffic Alert & Collision Avoidance System (TCAS)** is an airborne system which is capable of interpreting the transponder returns of nearby aircraft and displaying the positions of these aircraft on a cockpit display. TCAS can warn the crew of impending collisions and advise avoiding manoeuvres provided it receives the altitude information from nearby aircraft. For this reason, mode C (the ALT selection on a typical transponder) should always be selected by all aircraft outside controlled airspace.

TCAS is fitted to most commuter aircraft that operate in E and G airspace and in the non-controlled environment. It is therefore in everybody's interest for all transponder equipped aircraft OCTA to squawk code 1200 with ALT selected.

OUTSIDE CONTROLLED AIRSPACE SQUAWK 1200 MODE C (ALT)

VFR OCTA



transponder operation

STANDARD TRANSPONDER CODES

- 1200 VFR OCTA.
- 2000 Civil IFR flights in G airspace.
- 3000 Civil flights in A, C & D airspace or IFR flights in G airspace.
- 6000 Military flights in G airspace.
- 7500 Unlawful interference.
- 7600 Communications failure.
- 7700 Emergency.

Some important points in transponder operation

- Select standby (STBY) before changing codes otherwise there is the real possibility of transmitting a non-authorised code during the process.
- Do not press the IDENT feature unless requested by ATS. "Squawk" does not mean press the IDENT. "Squawk IDENT" is the request used for this purpose.
- "Squawk STBY" means switch to the STBY position
- "Squawk 5689" for example, means select STBY, then select code 5689, then squawk ALT.
- Transponders require a warm up before being selected ON or ALT. The STBY position is used to warm up the transponder.
- In the TEST position the reply light should come on while the selector is held in this position.
- The reply light comes on each time the transponder responds to an interrogation. This may be from ground based secondary radar or from a nearby TCAS equipped aircraft.
- In the ON position no altitude information is being transmitted.
- On occasions transponders may require "recycling" to restore correct encoding. To recycle, briefly select STBY then return to ALT.

Information on the operation of transponders in the ATC RADAR environment is given in Section 3 "ATC RADAR SERVICES" on page 225.

section 2 – pre-flight planning

pre-flight information

This pre-flight planning section of the VFG has been designed to bring together the necessary information from various documents in one place to enable the pilot in command to safely plan a flight. Some of the information has been repeated from other sections to enhance usability of the document.

PRE-FLIGHT INFORMATION (AIP GEN 3.3)

The pre-flight briefing service is primarily an automated service. Pilots are encouraged to obtain pre-flight briefing, either via the self-help electronic system or personal briefing. These services are listed in ERSA GEN, including the contact number for ATS and BOM staff for pilots who require a personal briefing.

Pilots must obtain an appropriate pre-flight briefing before departure from those places where suitable facilities exist. Where suitable facilities are not available, a briefing may be obtained from FLIGHTWATCH as soon as practicable after the flight commences. The service provided is normally limited to information considered essential for the safe conduct of the flight to the first point of intended landing where additional information can be accessed by telephone or facsimile.

Note: Pre-flight briefing will not normally be provided on ATC communication channels.

PLANNING OF FLIGHT BY PILOT IN COMMAND (CAR 239)

Before beginning a flight, the pilot in command shall study all available information appropriate to the intended operation, and, in the cases of flights away from the vicinity of an aerodrome, all IFR flights shall make a careful study of:

- current weather reports and forecasts for the route to be followed and at aerodromes to be used;
- the airways facilities available on the route to be followed and the condition of those facilities;
- the condition of aerodromes to be used and their suitability for the aircraft to be used; and
- the Air Traffic Control rules and procedures appertaining to the particular flight

Note: Full details on the briefing services provided are available in ERSA GEN.

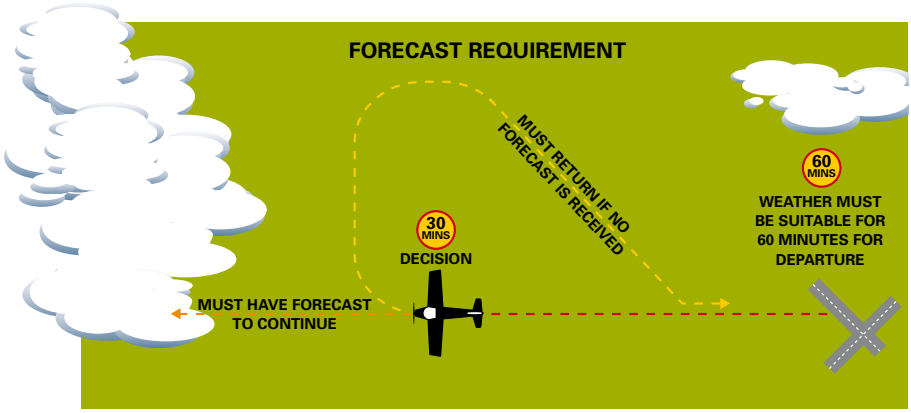
When meteorological conditions at the aerodromes of intended landing are forecast to be less than VFR minima of a 1,500 FT ceiling and a visibility of 8km (AIP ENR 1.1), the pilot in command shall make provision for an alternative course of action and shall arrange for the aircraft to carry the necessary additional fuel.

This alternate provision does not apply to day VFR flights within 50NM from the point of departure.

WEATHER FORECAST REQUIREMENTS (CAR 239)

Weather forecasts must be either a flight forecast or an area forecast with an aerodrome forecast for the destination and, when required, the alternate aerodrome.

For flights for which a forecast is required and cannot be obtained, the flight is permitted to depart provided the pilot is satisfied that the weather at the departure point will permit the safe return of the flight within one hour of departure. The flight is permitted to continue if a suitable forecast is obtained for the intended destination within 30 minutes after departure.(AIP ENR 1.1)



An alternate must be provided for flights more than 50 NM from point of departure when forecast conditions at the destination are below the VFR alternate minima of 1500 FT ceiling and 8KM (AIP ENR 1.1)

RADIO REQUIREMENTS (CAR 239)

CLASS	AIRSPACE	COM RQMNTS	REMARKS
NVFR	CLASS A,C,D&E	VHF	See para. '
VFR	CLASS A,C,D&E	VHF	See para. '
VFR	CLASS G 5000FT and above	VHF	Except GLIDERS at and below FL200 See para. 1
VFR	CLASS G - at those aerodromes where carriage of radio is required.	VHF	See paras 1, 4 & 5
VFR	CLASS G - below 3000FT AMSL or 1000FT AG	VHF	In reduced VMC. See paras 7 & 4
VFR/IFR	CLASS A,C,D,E&G Remote Area	HF	If no FLB/FLT carried
Gliders	CLASS G	VHF	Operations at aerodromes serviced by RPT. See para. ' 3

VHF communications systems must be capable of communication on all VHF frequencies required to meet the reporting and broadcast requirements of AIP ENR 1.1.

The communications systems must be fitted with frequencies appropriate to the area of operation as specified in the AIP ERSA. The frequencies appropriate fitted must be sufficient to enable continuous communication with ATS units for the planned duration of the flight or while operating within the specified area, taking into account the expected radio propagation conditions during the period of operation.

At least one item of the required radio equipment must be capable of maintaining continuous communication with ATS at all stages of the flight. The term "all stages of flight" includes ground operations at the aerodromes of departure and arrival, and cruising levels that could be required for any emergency and/or abnormal operation en route.

An Australian Communication Authority approved and licensed hand-held VHF radio may be used by pilots of:

- VFR PVT and AWK aeroplanes with a MTOW not exceeding:
  - in the case of an aeroplane other than a seaplane-544KG;

  - in the case of a seaplane with a single seat-579KG; and
  - in the case of a seaplane with two seats 614KG and 84
- gliders; and
- balloons

Additionally, approved hand-held radios may be used by pilots of these aircraft when operating in CLASS G. Pilots are responsible for ensuring that the equipment is able to be operated without adversely affecting the safety of the aircraft. The location of the antenna must be such that airframe shielding does not prevent twoway communication with all aircraft operating on the CTAF. Where the radio is not connected to the aircraft primary power supply, there must be ready access to back-up power.

Planning Chart Australia (AUS PCA) shows the areas in which an aircraft, flying at the altitudes indicated, could be expected to maintain continuous VHF communications with an ATS unit.

PT, CHTR and AWK aircraft are exempt from the requirements to carry HF radio communication with ATS when under some circumstances (AIP ENR 1.1).

Private aircraft without radio may be admitted to the CTRs for maintenance subject to the approval of the appropriate ATC unit. Pilots must comply with any conditions contained in the approval. (see AIP GEN 1.5)

alternatives due to weather

ALTERNATES DUE TO WEATHER CONDITIONS

GENERAL (CAR 239, 234 & CAAP 234)

A pilot in command must make provision for flight to an alternatative aerodrome, when required, in accordance with the following paragraphs.

When a flight is required to provide for an alternate aerodrome, any aerodrome may be so nominated for that flight provided that:

- it is suitable as a destination for that flight; and
- is not an aerodrome for which that flight would be required to provide for an alternate aerodrome.

alternatives due to weather

When an aerodrome forecast is "provisional", the pilot in command must make provision for a suitable alternate that has a firm forecast. (AIP ENR 1.1)

WEATHER CONDITIONS

Except when operating an aircraft under the VFR by day within 50NM of the point of departure, the pilot in command must provide for a suitable alternate aerodrome when arrival at the destination will be during the currency of, or up to 30 minutes prior to the forecast commencement of, the following weather conditions:

- cloud- more than SCT below the alternate minimum; or
- visibility - less than the alternate minimum; or
- visibility - greater than the alternate minimum, but the forecast is endorsed with a percentage probability of fog, mist, dust or any other phenomena restricting visibility below the alternate minima; or
- wind - a crosswind or downwind component more than the maximum for the aircraft.

Note: Wind gusts must be considered. (AIP ENR 1.1)

Note: In determining requirements for alternate aerodromes, forecast amounts of cloud below the alternate minima are cumulative. For determining equirements, the cumulative cloud amount is interpreted as follows:

FEW plus FEW is equivalent to SCT

FEW plus SCT is equivalent to BKN

SCT plus SCT is equivalent to BKN or OVC. (AIP ENR 1.1)

ALTERNATE MINIMA

For flight by aeroplanes under the VFR (day or night) and helicopters operating under the VFR at night, the alternate minima are a ceiling of 1,500 FT and a visibility of 8KM. (AIP ENR 1.1)

When operating a helicopter under the VFR, and the use of the helicopter VMC is permissible at the destination, the pilot in command must provide for a suitable alternate aerodrome when either of the following conditions is forecast at the destination:

- cloud - more than 4/8ths below a ceiling of 1,000FT; or
- visibility - less than 3,000M (AIP ENR 1.1)

When weather conditions at the destination are forecast to be as specified as above, but are expected to improve at a specific time, provision for an alternate aerodrome need not be made if sufficient fuel is carried to allow the aircraft to hold until that specified time plus 30 minutes. (AIP ENR 1.1)

When weather conditions at the destination are forecast to be above the values specified above, but additionally, intermittent or temporary deteriorations in the weather below those values are forecast, provision of an alternate need not be made if sufficient additional fuel is carried to allow the aircraft to hold for:

- 30 minutes for intermittent deterioration (INTER); and
- 60 minutes for temporary deterioration (TEMPO) (AIP ENR 1.1)

When thunderstorms or their associated severe turbulence or their probability is forecast at the destination, sufficient additional fuel must be carried to permit the aircraft to proceed to a suitable alternate or to hold for:

- 30 minutes when the forecast is endorsed INTER; or
- 60 minutes when the forecast is endorsed TEMPO (AIP ENR 1.1)

INTER and TEMPO holding fuel requirements are not cumulative therefore, when a forecast has a number of INTER or TEMPO deteriorations, holding fuel is required only for the most limiting requirement (AIP ENR 1.1).

When TAFs include a FM period, during which time an operational requirement will either become effective or be removed, the timing for the change in operational requirement is as follows:

- when the weather during the FM period is forecast to create an operational requirement, that operational requirement will become effective 30 minutes before the onset of the FM period.
- when the weather during the FM period is forecast to remove an operational requirement, that operational requirement will remain effective until 30 minutes after the onset of the FM time stated in the forecast that removes the operational requirement.

The additional fuel required by the above paragraphs must be carried when the ETA of the aircraft at its destination or alternate falls within the period of 30 minutes before the forecast commencement time to 30 minutes after the expected time of cessation of these deteriorations. (AIP ENR 1.1)

alternatives due to weather

Due to the continuous weather watch provided by TTF, the 30 minute buffers required by the above paragraphs do not apply. Flights which will be completed within the time of validity of the TTF may be planned wholly with reference to the destination TTF. (AIP ENR 1.1)

TTF may have either one visibility or two visibilities included in the report. Operational requirements will apply when:

- the sole visibility is less than the alternate minimum; or
- the higher visibility is less than the alternate minimum. (AIP ENR 1.1)

Flights which cannot use TTF will plan the flight on the current TAF until such time as the destination ETA falls within the validity periods of a TTF. (AIP ENR 1.1)

For flight by aeroplanes under the VFR (day or night) and helicopters operating under the VFR at night, the alternate minima are a ceiling of 1,500 FT and a visibility of 8KM. (AIP ENR 1.1)

For VFR helicopter operations by day, the alternate minima are the same as for night (above) unless the additional conditions specified on page 352 are met. When these additional conditions are met, the alternate requirements are as shown on page 353. (AIP ENR 1.1)

A flight permitted to operate under the VFR at night (see page 326) must provide for an alternate aerodrome within one (1) hour's flight time of the destination unless:

- the destination is served by a radio navigation aid (NDB/VOR) and the aircraft is fitted with the appropriate radio navigation system capable of using the aid, or
- the aircraft is fitted with an approved GNSS receiver and the pilot and aircraft meet the rquirements of AIP GEN 1.5 (AIP ENR 1.1)

alternatives due to facilities

For night VFR operations alternates are required based on airport lighting and navaids. Details of these requirements are given in the night VFR section on page 338.

NOTAM (AIR SERVICES REGULATION 4.12, AIP GEN 0.1)

There are 3 types of NOTAMs available to pilots in Australia. They are Head Office NOTAM, FIR NOTAM, and Location NOTAM.

NOTAM provide information that is of direct operational significance which may immediately affect aircraft operations. A NOTAM is issued in a format containing fields (A) to (G) as follows:

- Location identification, NOTAM number, subject reported, day/time of issue. (For details of NOTAM numbering for both domestic and international Australian NOTAM, refer to paragraphs below).
- Time of commencement of information contained in Field E. or Time of publication where prior notification is required. In this case, Field E commences with "WEF… (date/time)…".
- This date/time will then reflect the actual commencement time of the NOTAM information.
- Time of cessation of information.
- Times of periods of activity.
- Plain language text (ICAO codes are used in international NOTAMs).
- Lower limit.
- Upper limit.

In the domestic environment, NOTAM numbering is preceded by the letter "C" followed by the year; eg BRISBANE (YBBN) C22/94

For each location, a separate series of numbers is issued; thus the NOTAM is identified by both the location and the number, not the number alone.

In the international environment, Australia issues NOTAM against a series of registers. These registers are by individual FIRs, multiple FIRs, or Australian General. The series identifiers are as follows:

Brisbane	FIR N
Melbourne	FIR S
Australia General	FIR G
(AIP GEN 3.1)	

notice to airmen

A Pre-flight information service is provided from offices located in Brisbane and Melbourne. These offices provide NOTAM, meteorological and flight notification service from the following number: Telephone: 1 800 805 150

NOTAM EXAMPLES

HEAD OFFICE NOTAMS

HEAD OFFICE (YSHO)

DOC From: 08 040048 To: PERM C0104/98
RAAF AIP TERMINAL PACIFIC AND AUSTRALASIA VOL 1 AND 2 (AL44) ARE WITHDRAWN WIE. CTC RAAF AIS BY FAX (03-92826695) FOR INFORMATION IN IAP.

MET From: 04 200548 To: PERM C0036/99
WEF 9905210000 MELBOURNE DECTALK DECOMMISSIONED. AUSTRALIA WIDE INFO IS AVBL FM BRISBANE DECTALK ON TEL 1800 077276

PROC From: 05 032303 To: PERM C0043/99 Review C0042/99
RPT VISUAL STRAIGHT-IN AT NON-CONTROLLED AD AMEND AIP ENR 1.1 - 61 PARA. 59.4 BY DELETING EXISTING TEXT AND INSERTING:

REGULAR PUBLIC TRANSPORT AIRCRAFT COMPLYING WITH THE FOLLOWING CONDITIONS MAY MAKE STRAIGHT-IN VISUAL APPROACHES TO NON-CONTROLLED AERODROMES WITH AN ASSOCIATED CTAF:

A. THE AIRCRAFT MUST BE CREWED BY TWO PILOTS.

B. THE AIRCRAFT MUST BE EQUIPPED WITH VHF RADIO AND BE ABLE TO COMMUNICATE ON THE CTAF.

C. THE REQUIREMENTS OF SUB-PARA. 59.5 C. MUST BE MET.

FIR NOTAMS

SPA From: 07 130510 To: 10 130500 EST C1270/99
Review C0572/99
HJ Lower: SFC Upper: 10000FT AMSL
PJE WILL TAKE PLACE AT CHELMER
(.25NM S INDOOROOPILLY BRIDGE). WILL REMAIN CLR

ATS From: 07 190033 To: 10 200000 EST C1317/99 Review C0608/99
WILLIAMTOWN/TAREE AREA SSR LIMITED LOSS OF RADAR COVERAGE MAY OCCUR BLW F200 DLA/RESTR MAY OCCUR IN CTA RADAR INFORMATION SERVICE LIMITED

TRANSPONDER REPLY LIGHT MAY NOT BE POSITIVE INDICATION OF INTERROGATION BY CIVIL ATC SSR.

DOC From: 08 200345 To: PERM C1527/99 Review C1525/99
AMD AIP ERSA FAC C-55 DATED 17 JUN 1999 AND C-57 DATED 9 SEP 1999
AMD CABOOLTURE AIR TRAFFIC SERVICES FIS FLIGHTWATCH FREQ 128.15 TO READ 128.75

COM From: 08 300429 To: 10 010600 EST C1577/99 Review C1403/99
A/G FAC BRISBANE CENTRE 133.8 (SAINT GEORGE AREA) SUBJECT TO INTERFERENCE
ALTN FREQ BRISBANE CENTRE 134.4 OR 118.95
LJR From: 09 100000 To: 09 170800 C1660/99 Review C1650/99
9909100000 TO 9909100700 9909122000 TO 9909130800 9909132000 TO 9909140800 9909142000 TO 9909150800 9909152000 TO 9909160800 9909162000 TO 9909170800

LJR S QUEENSLAND N NEW S WALES MIL F111 JET ACFT OPR BLW 3000FT AGL ON THE FLW RTE DALBY (DESCENT) / DALBY 227042 / INGLEWOOD 010026 /INGLEWOOD 175023 / GOONDIWINDI 165030 / MOREE 040006 / MOREE 085012 /MOREE 115030 / INVERELL 160014 / ARMIDALE 360020 / ARMIDALE 355012 /POINT LOOKOUT 360020 / NORTH SOLITARY ISLAND /YAMBA 100011 / R622 ABRUPT VER MANOEUVRES UP TO 7000FT AGL WI 5NM RAD MOREE 040006 UP TO 7000FT AGL WI 5NM RAD ARMIDALE 360020

ATS From: 09 041400 To: 09 181400
YMMM C1586/99
TO ASSIST TRANSITION TO THE AUSTRALIAN ADVANCED AIR TFC SYSTEM(TAAATS) BTN SYDNEY AND ALICE SPRINGS (ATC FREQ 118.5, 133.5, 122.75 AND 128.2) PILOTS ATTENTION IS DRAWN TO AIP ENR1.1 - 11, PARAGRAPH 8.4 TO GIVE ATS NOTICE OF AN IMPENDING PSN REP BEFORE GOING AHEAD WITH THE PSN REP

LOCATION NOTAM ARCHERFIELD (YBAF)

AD From: 09 100532 To: 09 122300 EST C0176/99
RWY 04L/22R, RWY 04R/22L AND ALL GRASS AREAS NOT AVBL DUE SOFT WET SFC

WEIGHT AND BALANCE

CASA my give particular directions as to how estimate or determine the weight and centre gravity of a particular aircraft and may require changes to the published weight and centre of gravity limits.

These limitations are found in the aircraft flight manual or placard information and must be complied with during all stages of flight.

In determining the weight and centre of gravity limits CASA may take into consideration:

- the type of aircraft;
- the kind of operations to be carried out during the flight;
- the performance of the aircraft in configurations in which it is likely to be flown and with faults that are likely to occur;
- the meteorological conditions at the aerodrome at which the aircraft is to take off or land;
- the altitude of the aerodrome at which that aircraft is to take off or land;
- the aerodrome dimensions in the direction in which the aircraft is to take off or land;
- the material of which the surface of the aerodrome in the direction in which the aircraft is to take off or land is constituted and the condition and slope of that surface;
- the presence of obstacles in the vicinity of the flight path along which the aircraft is to take off, approach or land;
- the anticipated meteorological conditions over the intended route to be flown by the aircraft after take-off and over planned divergencies from that route; and
- the altitude of the terrain along and on either side of the intended route to be flown by the aircraft after take-off and of planned divergencies from that route.

An aircraft shall not take off, or attempt to take off, if its gross weight exceeds its maximum take-off weight or, if a lesser weight determined in accordance with a direction under subregulation (2) is applicable to the take-off, that lesser weight.

An aircraft shall not take off, or attempt to take off, if its gross weight exceeds, by more than the weight of fuel that would normally be used in flying to its next landing place or planned alternative aerodrome, its maximum landing weight or, if a lesser weight determined in accordance with a direction under subregulation (2) is applicable to the landing at that place or aerodrome, that lesser weight.

Except in an emergency, an aircraft shall not land if its gross weight exceeds its maximum landing weight or, if a lesser weight determined in accordance with a direction under subregulation (2) is applicable to the landing, that lesser weight.

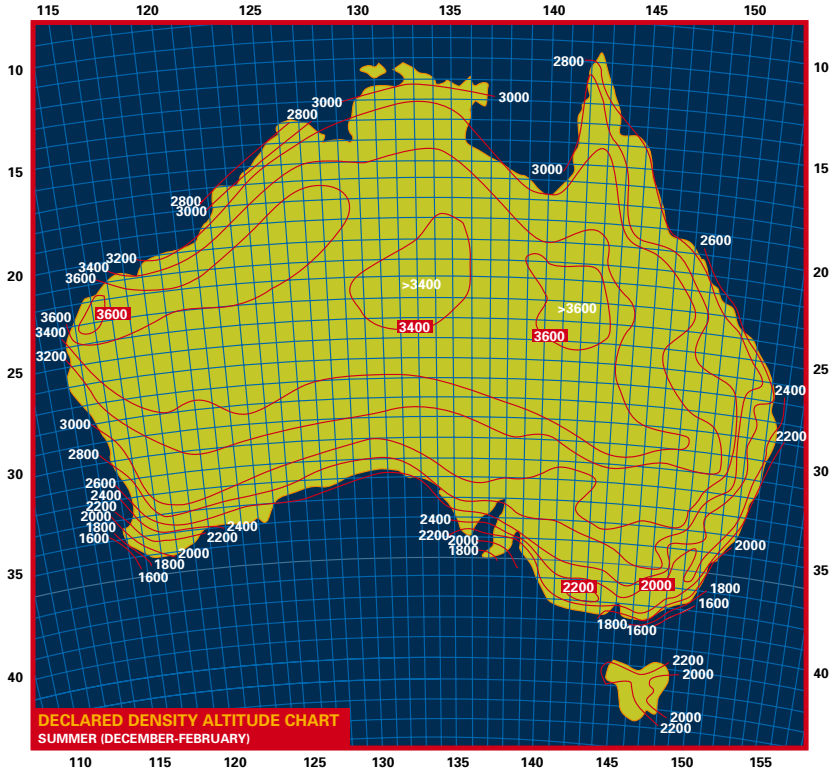
An aircraft shall not take off, or attempt to take off, unless any directions with respect to the loading of the aircraft given under this regulation have been complied with.

The pilot in command must ensure that the load of an aircraft throughout a flight shall be so distributed that the centre of gravity of the aircraft falls within the limitations specified in its certificate of airworthiness or its flight manual.

NOTE: CAAP 235 reiterates the safety precautions that should be used to ensure compliance with this regulation. It includes directions on how to determine runway clearance factors.

declared density chart

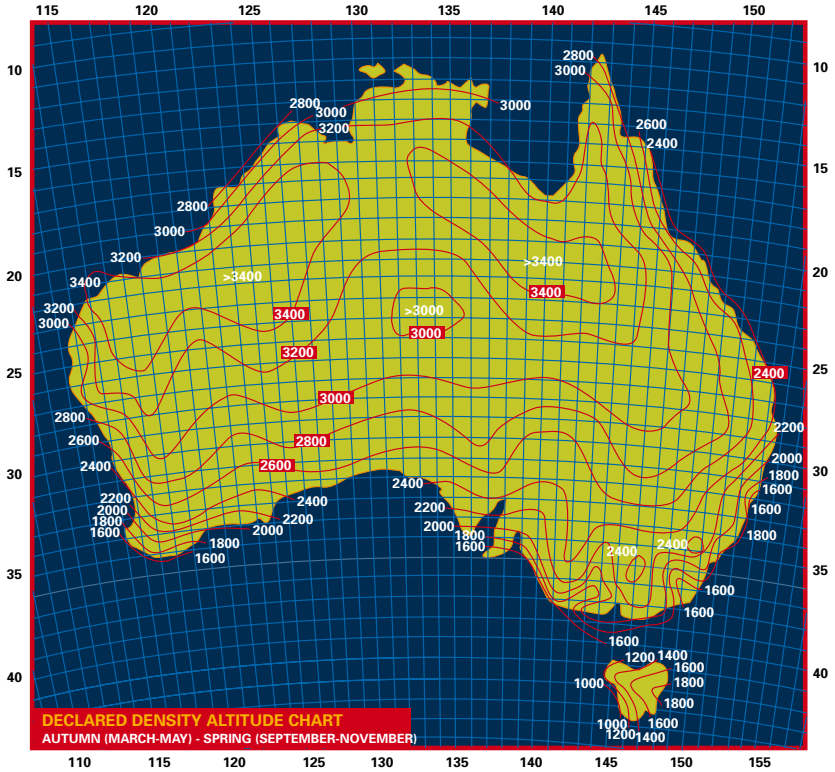
DECLARED DENSITY CHART (CAR 138, CAO 20.7.0)



INSTRUCTIONS FOR USE

Locate the position of the aerodrome by means of Latitude and Longitude.

To obtain the Seasonal Declared density Altitude, add the height above sea level of the aerodrome to the value read from this chart.

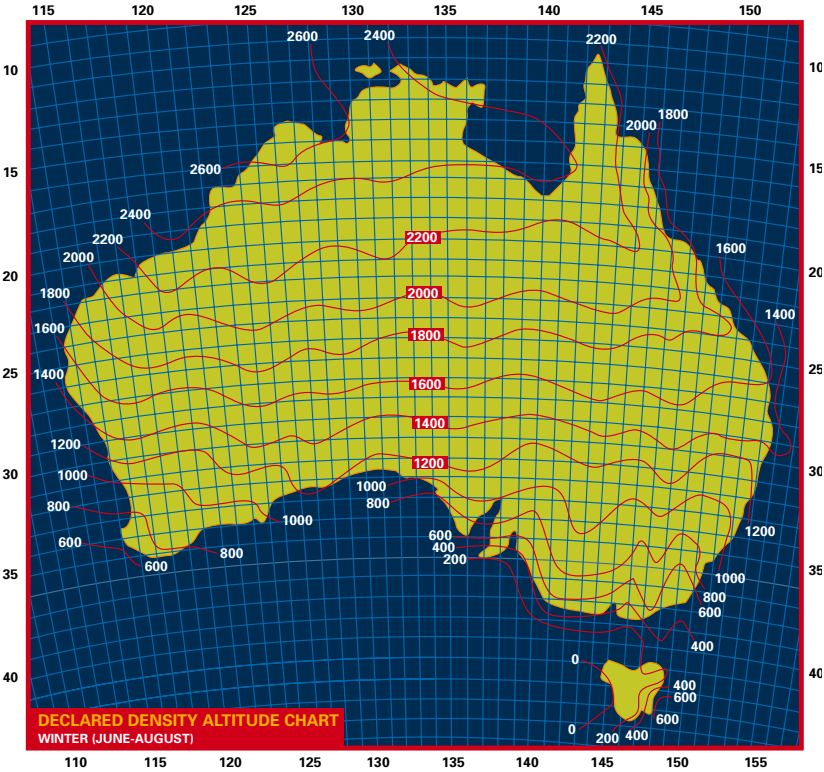


INSTRUCTIONS FOR USE

Locate the position of the aerodrome by means of Latitude and Longitude.

To obtain the Seasonal Declared density Altitude, add the height above sea level of the aerodrome to the value read from this chart.

declared density chart



INSTRUCTIONS FOR USE

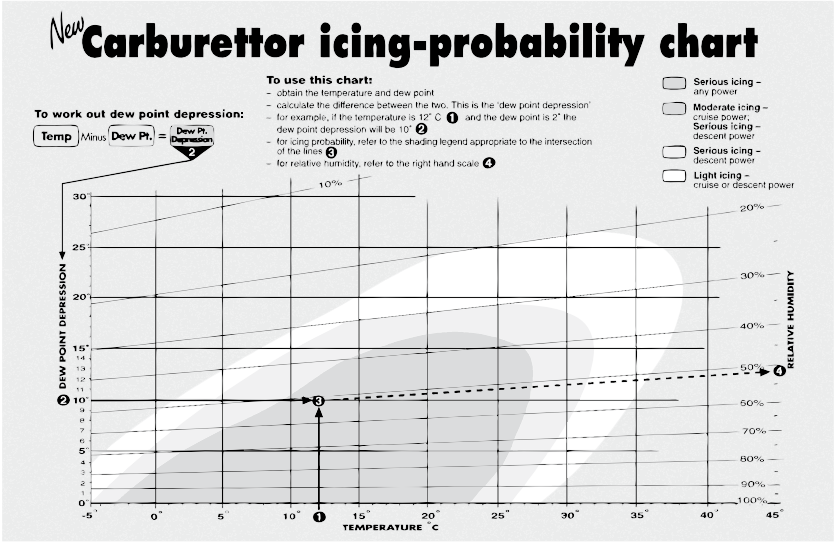
Locate the position of the aerodrome by means of Latitude and Longitude.

To obtain the Seasonal Declared density Altitude, add the height above sea level of the aerodrome to the value read from this chart.

ICING CONDITIONS AIRFRAME (CAR 238)

An aircraft shall not take-off for the purpose of making a flight during which the aircraft may fly into known or expected icing conditions unless the aircraft is adequately equipped with de-icing or anti-icing equipment of the type and quantities as directed by CASA.

carburettor icing



TO USE THE CHART

- obtain the wet and dry bulb temperatures
- enter the chart with the wet and dry bulb temperatures
- refer to the shading legend (above) appropriate to the intersection of the temperature lines
- from the intersection of the temperature lines, obtain the relative humidity on the curved scale, and the humidity ratio from the vertical scale.

carburettor icing

EXAMPLE SHOWN ON THE CHART

- wet bulb temperature 10°C
- dry bulb temperature 12°C
- from the intersection of the temperature lines the shading gives: MODERATE ICING: cruise power; SERIOUS ICING: descent power
- relative humidity 52 per cent
- humidity ratio 8.5gm water per kg air

fuel requirements

FUEL REQUIREMENTS (CAR 234)

The pilot in command of an aircraft must not commence a flight within Australian territory, or to or from Australian territory, unless he or she has taken reasonable steps to ensure that the aircraft carries sufficient fuel and oil to enable the proposed flight to be undertaken in safety.

An operator of an aircraft must take reasonable steps to ensure that an aircraft does not commence a flight as part of the operator's operations unless the aircraft is carrying sufficient fuel and oil to enable the proposed flight to be undertaken in safety.

For the purposes of these Regulations, in determining whether fuel and oil carried on an aircraft in respect of a particular flight was sufficient within the meaning of sub-regulations (1) and (2), a court must, in addition to any other matters, take into account the following matters:

- the distance to be travelled by the aircraft on the flight to reach the proposed destination;
- the meteorological conditions in which the aircraft is, or may be required, to fly;
- the possibility of:
  - a forced diversion to an alternative aerodrome; and
  - a delay pending landing clearance; and

  - air traffic control re-routing the flight after commencement of the flight; and
  - a loss of pressurisation in the aircraft; and
  - where the aircraft is a multi-engined aircraft—an engine failure;
- any guidelines issued from time to time by CASA for the purposes of this regulation.

GENERAL

Guidance concerning fuel to be carried is contained in Civil Aviation Advisory Publication (CAAP) 234-1, available from Airservices Publications Unit,

LOCKED BAG 8500,
CANBERRA ACT 2601

Telephone: 1300 306 630
Facsimile: (02) 6268 5111

fuel planning

FUEL PLANNING

PRE-FLIGHT PLANNING

CASA recommends that the following be undertaken (see CAAP 234-1)

- determine total fuel capacity and useable fuel (refer Aircraft Flight Manual)
- determine fuel consumption rates (refer Pilot's Operating Handbook)
- familiarise yourself with the aircraft's fuel systems
- check fuel availability enroute (note suppliers and operating hours)
- plan to arrive with all fuel reserves intact - never plan to use fixed or variable reserve fuel
- weight versus fuel. Keep in mind that you may not be able to carry full tanks
- check weather to determine holding and/or alternate fuel requirements

fuel planning

PRE-FLIGHT INSPECTION

Try to refuel on level ground to avoid inaccurate fuel measurements and unwanted fuel transfer.

Dip each tank to check the amount of fuel. If a tank cannot be dipped, fill at least one tank (weight permitting) so there is a known fuel quantity.

Cross-check fuel amounts by at least two separate methods. Use the lowest figure if they vary by more than 3% (mandatory for aircraft with MTOW in excess of 5700kg)

Ensure drains and vents are working properly

If using Avgas, rock the aircraft to move trapped water over the drain point before carrying out a fuel drain (refer aircraft manufacturer's recommendations)

Check for contaminants, particularly water; and correct fuel type

Ensure the fuel filler cap is secure and sealed

IN FLIGHT

At regular intervals (at least 30 minutes and at turning points) compare fuel remaining from gauges with planned figures and monitor tank selection.

Caution: Gauge readings as per aircraft's fuel calibration card

Use planned power settings and correct mixture leaning technique (at all altitudes)

POST FLIGHT

Compare usage figures with planned figures when next refuelling

FUEL RESERVE RECOMMENDATION

TYPE	CATEGORY	FLIGHT	VARIABLE RESERVE	FIXED RESERVE
PISTON	Private	VFR	not mandatory	45 minutes
	Charter	VFR	15%	45 minutes
TURBINE	PVT & AWK	VFR	NIL	30 minutes
	CHTR	VFR	10%	30 minutes

SCENARIO - PIPER LANCE

CATEGORY	Private	WIND	Nil
FROM	Mallacoota (YMCO)	CLIMB	110 KT
TO	Albury (YMAY) ETA 0500	CRUISE	150 KT
DISTANCE	160NM		

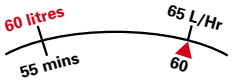
PIPER LANCE TYPICAL FUEL FLOW:

CLIMB 94 litres/hr CRUISE 65 litres/hr HOLDING 52 litres/hr

USE FIGURES FROM YOUR AEROPLANE'S PILOT OPERATING HANDBOOK

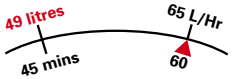
1 CLIMB

2 CRUISE

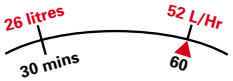


3 VARIABLE RESERVE

4 FIXED RESERVE



5 HOLDING



6 TAXI

NB: Allow appropriate fuel for aircraft (time calculation not applicable).

FUEL CALC.	Min	L/Kg?...
1 Climb	12	19
2 Cruise	55	60
Alternate	-	-
SUB TOTAL	67	79
3 Variable Reserve	10	12
4 Fixed Reserve	45	49
5 Holding	30	26
6 Taxi	-	10
FUEL REQUIRED	152	176
Margin	22	24
ENDURANCE	174	200
FROM	YMCO	

TIME (CHICAGO CONVENTION ON CIVIL AVIATION)

Australia uses Coordinated Universal Time (UTC) for all operations.
The term "Zulu" is used when ATC procedures require a reference to UTC,

eg: 0920 UTC "ZERO NINE TWO ZERO ZULU"

0115 UTC "ZERO ONE ONE FIVE ZULU"

To convert from Standard Time to UTC:

Eastern Standard Time	Subtract 10 hours
Central Standard Time	Subtract 9.5 hours
Western Standard Time	Subtract 8 hours.

Note: Daylight Saving is not applied universally across Australia and is not published in the AIP.

The 24-hour clock system is used in radiotelephone transmissions. The hour is indicated by the first two figures and the minutes by the last two figures,
eg: 0001 "ZERO ZERO ZERO ONE"

1920"ONE NINE TWO ZERO"

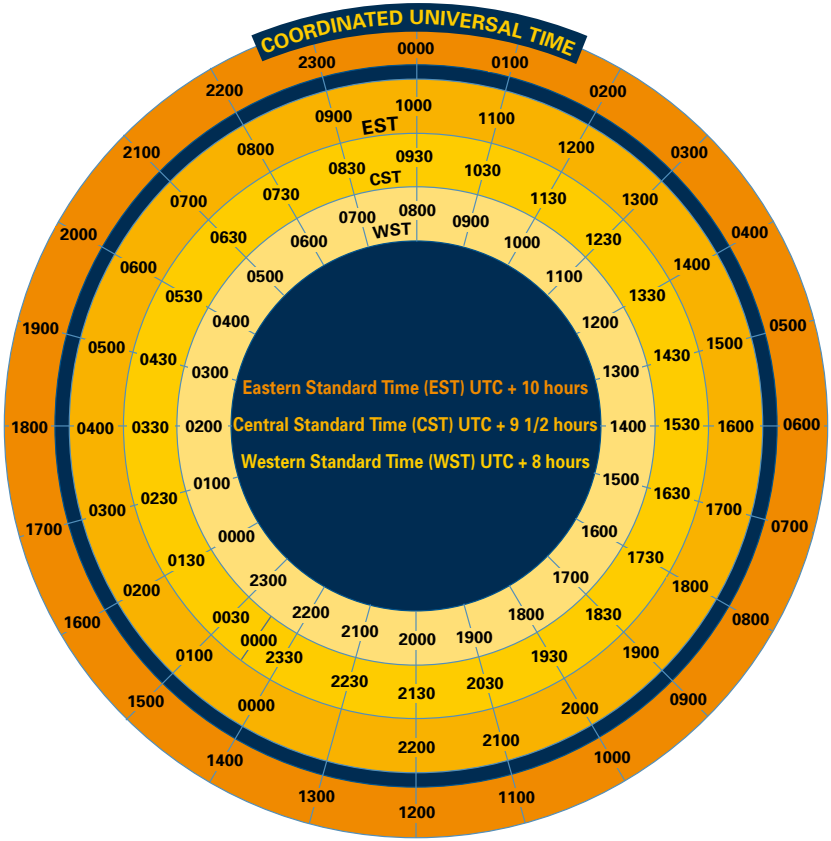
Time may be stated in minutes only (two figures) in radiotelephone communications when no misunderstanding is likely to occur. Current time in use at a station is stated to the nearest minute in order that pilots may use this information for time checks.

Control towers will state time to the nearest half minute when issuing a taxi clearance to a departing aircraft,

eg: 0925:10 "TIME, TWO FIVE"

0932:20 "TIME, THREE TWO AND A HALF"

2145:50 "TIME, FOUR SIX"



Date and time in civil aviation operations is indicated by a **date-time group**, which is a combination of the date and time in a single 6-figure group, or **when used in the text of NOTAM and in pre-flight information bulletins**, in a 8-figure group, made up as follows -

MMDDHHMM

Time used in these operations is UTC, the day beginning at 0000hrs and ending at 2400hrs. (AIP GEN 2.1)

Examples: Date-time group for 1630 UTC on 25 March, = 251630 March,
or 03251630

daylight and darkness

DAYLIGHT AND DARKNESS (AIP GEN 2.7)

"Night" is that period between the end of the evening civil twilight and the beginning of the morning civil twilight. For all intents an purposes, first light should be construed as the beginning of civil twilight and last light as the end of civil twilight. The terms "sunrise" and "sunset" have no relevance when calculating day light operating times for the VFR pilot.

To compute the beginning or end of daylight using the graphs contained in this section:

- enter the top or bottom of the scale at the appropriate date;
- move vertically up or down to the curve for the latitude of the place concerned (interpolating for intermediate latitudes if necessary);
- move horizontally to the left or to the right and read local mean time on the vertical scale at the side;
- to convert to UTC, subtract (in E longitudes) from the LMT obtained, the time increment corresponding to the longitude of the place concerned in the "Conversion of Arc to Time" table.
- to convert to EST, add 10 hours to UTC;
- to convert to CST, add 9.5 hours to UTC;
- to convert to WST, add 8 hours to UTC.

Example: To determine the end of daylight at Echuca (S36 09.0 E144 46.0) on 20th November. Using the graph, enter at 20th November at the top of the page and follow downwards to latitude 36° (by interpolation), then horizontally to the left and read off LMT = 1919. To convert to UTC, obtain the Arc of time by entering the "Conversion of Arc to Time" table, at longitude 144° (9 hours 36 minutes). Add the increment corresponding to 46' in the right hand column = 3'04' + 0936 = 0939

Subtract this from the LMT found: 1919- 0939 = 0940UTC.
To find EST add 10 hours to UTC = 1940 EST.

Users of these graphs should note that the parameters used in compiling the Daylight and Darkness Graphs do not include the nature of the terrain surrounding a location, or the presence of other than a cloudless sky and unlimited visibility at that location.

Consequently, the presence of cloud cover, poor visibility or high terrain to the west of an aerodrome will cause daylight to end at a time earlier than that extracted from the appropriate graph. Allowance should be made for these factors when planning a flight having an ETA near the end of daylight.

NAIPS automatically computes first light and last light. This information can be provided through pilot access, as part of a telephone briefing, or from LIGHTWATCH. (AIP GEN 2.7)

LOCAL TIME

Local Time in Australia falls into three separate zones:

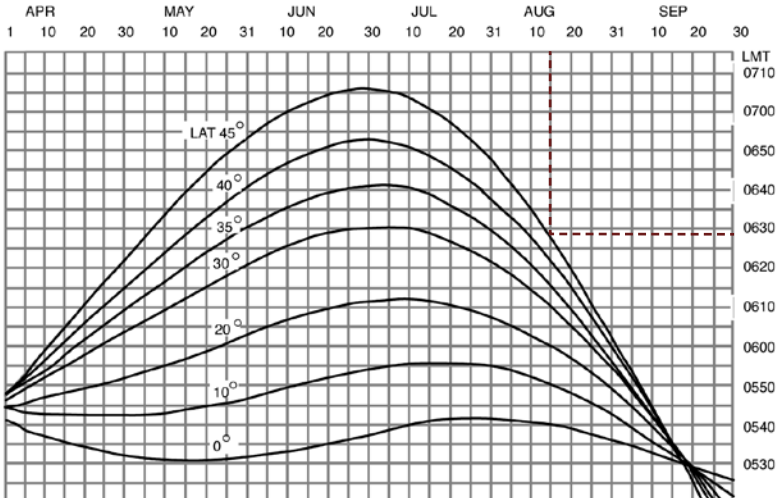
- EST is used in the States of New South Wales (except the Broken Hill Area), Queensland, Victoria, Tasmania and the Australian Capital Territory.
- CST is used in the State of South Australia, the Northern Territory and the Broken Hill area; and
- WST is used in the Sate of Western Australia.

However, certain States introduce local Summer Time each year between October of that year and March of the succeeding year, which adds an additional hour to the local time applicable in that State.

NOTAM or AIP Supplements will be issued detailing revised hours of operation for those aeronautical facilities affected by local time changes during periods of States Summer Time and which do not have such hours promulgated in AIP.

daylight and darkness

BEGINNING OF DAYLIGHT (AIP GEN 2.7)



	15	**06**	**29**
	-	**09**	**49**
=	**14**	**20**	**40**

Location: Launceston
Date: 15th August
Lat/Long: S41 32.7
E147 12.9

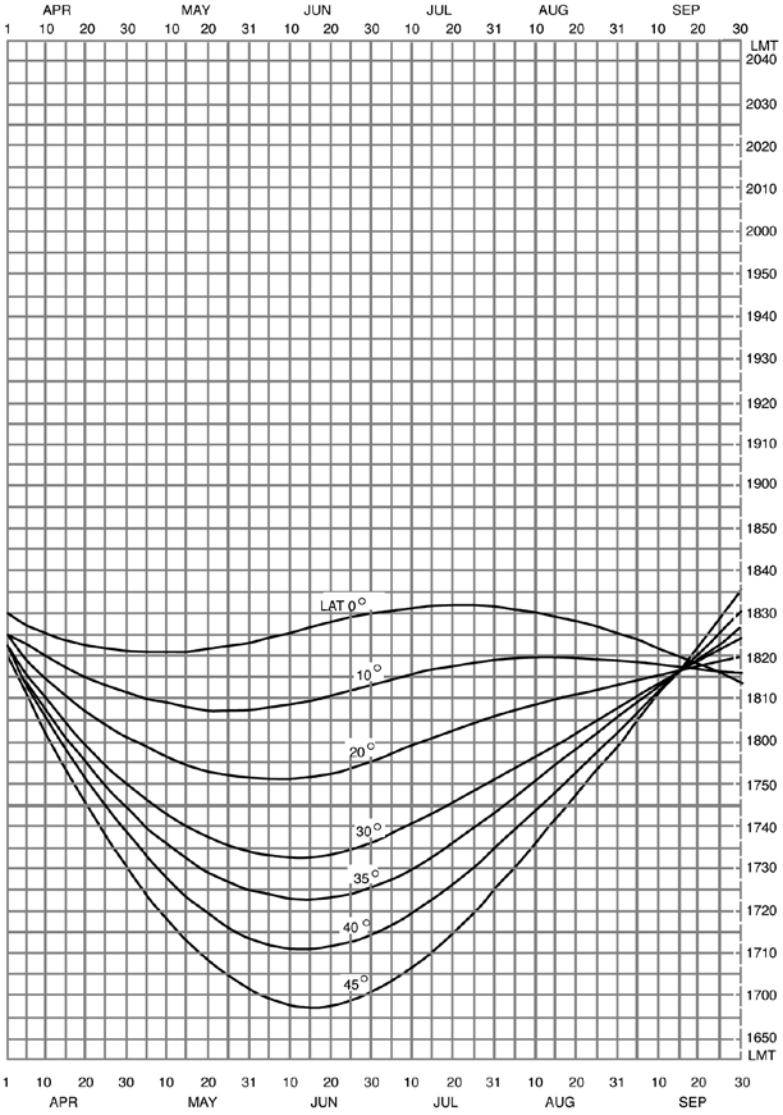
WORKED EXAMPLE - BEGINNING OF DAYLIGHT

Enter at 15 August and follow downward until reaching latitude 41 32.7. (41 will do) then straight across to read the Local Mean Time (LMT) = 06 29 Technically 15 06 29 (date added).

On the Arc to Time table find Longitude 147 = 9 hours 48 minutes.
Add the increment corresponding to 13′ (rounding up) = 0′ 52′ = 09 48 + 001 01 (rounding up) = 09 49.

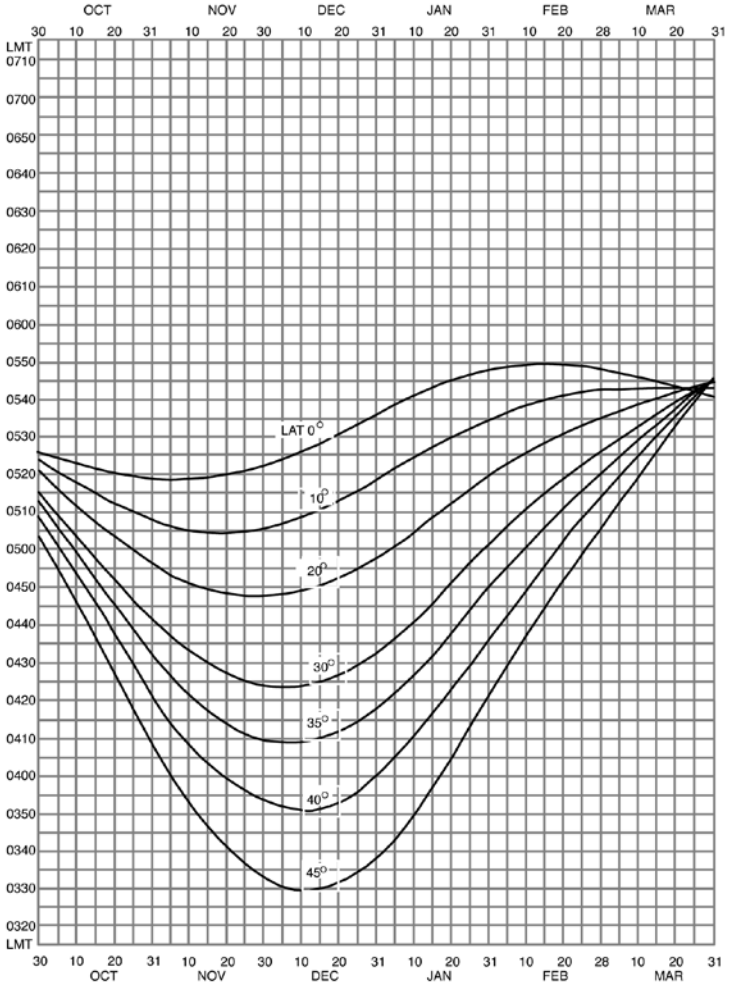
Subtract the Arc to Time from the LMT to give the Beginning of Daylight in UTC. = (15) 06 29 - 09 49 = (14) 20 40 on the 14th.

END OF DAYLIGHT (AIP GEN 2.7)

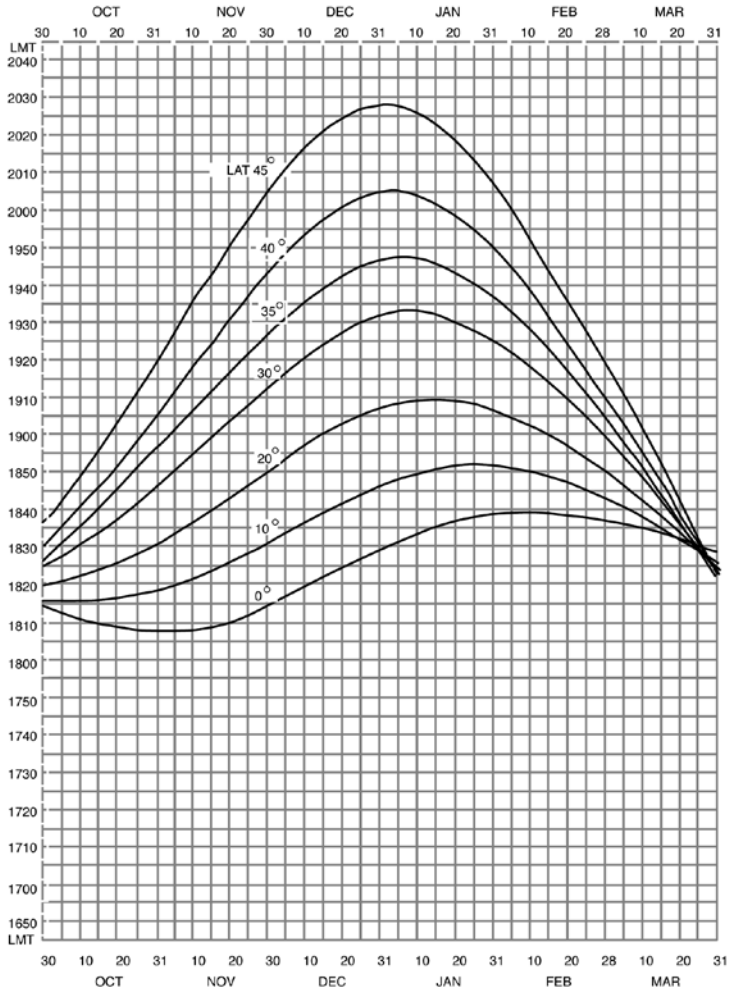


daylight and darkness

BEGINNING OF DAYLIGHT (AIP GEN 2.7)



END OF DAYLIGHT (AIP GEN 2.7)



daylight and darkness

ARC TO TIME CONVERSION (AIP GEN 2.7)

DEGREES						MINUTES					
	TIME			TIME			TIME			TIME	
LONG DEG	HOURS	MIN	LONG DEG	HOURS	MIN	LONG MIN	MIN	SEC	LONG MIN	MIN	SEC
110	7	20	140	9	20	0	0	00	30	2	00
111	7	24	141	9	24	1	0	04	31	2	04
112	7	28	142	9	28	2	0	08	32	2	08
113	7	32	143	9	32	3	0	12	33	2	12
114	7	36	144	9	36	4	0	16	34	2	16
115	7	40	145	9	40	5	0	20	35	2	20
116	7	44	146	9	44	6	0	24	36	2	24
117	7	48	147	9	48	7	0	28	37	2	28
118	7	52	148	9	52	8	0	32	38	2	32
119	7	56	149	9	56	9	0	36	39	2	36
120	8	00	150	10	00	10	0	40	40	2	40
121	8	04	151	10	04	11	0	44	41	2	44
122	8	08	152	10	08	12	0	48	42	2	48
123	8	12	153	10	12	13	0	52	43	2	52
124	8	16	154	10	16	14	0	56	44	2	56
125	8	20	155	10	20	15	1	00	45	3	00
126	8	24	156	10	24	16	1	04	46	3	04
127	8	28	157	10	28	17	1	08	47	3	08
128	8	32	158	10	32	18	1	12	48	3	12
129	8	36	159	10	36	19	1	16	49	3	16
130	8	40				20	1	20	50	3	20
131	8	44				21	1	24	51	3	24
132	8	48				22	1	28	52	3	28
133	8	52				23	1	32	53	3	32
134	8	56				24	1	36	54	3	36
135	9	00				25	1	40	55	3	40
136	9	04				26	1	44	56	3	44
137	9	08				27	1	48	57	3	48
138	9	12				28	1	52	58	3	52
139	9	16				29	1	56	59	3	56

charts

CHARTS AVAILABLE

The following aeronautical charts are produced:

VFR	• Planning Chart Australia (PCA) • World Aeronautical Chart (WAC) • Visual Terminal Chart (VTC) • Visual Navigational Chart (VNC) • En Route chart - Low (ERC-L)
IFR	• En Route chart - High (ERC-H) • Terminal Area Chart (TAC) • Aerodrome (AD) Chart

AIRSERVICES PUBLICATION UNIT

LOCKED BAG 8500
CANBERRA ACT 2601

T. 1300 306 630
F. 02 6268 5111

PLANNING CHART AUSTRALIA

PCA depicts the following information:

- ARFOR boundaries,
- WAC coverage and chart titles;
- location names and abbreviations;
- estimated FIS VHF coverage at 5,000FT and 10,000FT and
- HF network boundaries.

VISUAL CHARTS

WACs (scale 1:1,000,000) are designed for pre-flight planning and pilotage. They are constructed on Lambert's Conformal Conic Projection. Australian coverage is shown on the back of each chart.

VNCs (scale 1:500,000) are designed for operations under the VFR. They contain an aeronautical overlay of controlled airspace over a topographical base, and contain some radio communication and other navigational data appropriate for visual navigation. Map coverage is shown on the front of each map. VNC's are intended for use up to and including FL180.

VTCs (scale 1:250,000) are designed for visual operations near terminal areas. They contain some topographical detail and appropriate airspace, radio communication and navigation aid information. VTCs are intended for use up to and including FL180.

Note: When planning visual navigation outside the coverage of VTCs, pilots will need to refer to the appropriate VNC (if available) or IFR chart ERC-L for depiction of controlled airspace and Prohibited, Restricted and Danger areas. (AIP GEN 3.2)

EN-ROUTE CHARTS AND TERMINAL AREA CHARTS

ERCs-L, ERCs-H and TACs are presented at various scales and depict airspace, air routes and radio navigation facilities.

ERCs-L are intended for use primarily up to and including FL180.

ERCs-L show an outline of the areas covered by TACs and VTCs.

These areas impact on the ERC-L presentation as follows:

- Within the areas covered by TACs, full details of air routes may not be shown due to lack of space.
- Air route information within these areas will usually only include the route line and bearing. Where space permits, the route designator, distance and LSALT may also be shown.
- Within the areas covered by TACs and VTCs, full details of airspace may not be shown. Information may only indicate lateral boundaries. Restricted and Danger area numbers and sport aviation symbols may not be shown.

For complete details of aeronautical data in these areas refer to the appropriate TACs or VTCs.

ERCs-H are intended to be used for operations above FL180.

TACs show details applicable to both high and low level operations in terminal areas.

Aerodrome charts, Apron charts, Noise Abatement Procedures, SID charts, STAR charts, DME and GPS Arrival charts and IAL charts are IFR charts and are published in DAP East and DAP West. (AIP GEN 3.2)

RESTRICTED AND DANGER AREA

Restricted and Danger areas are depicted as follows:

- On all charts, Restricted areas are shown with a magenta verge.
- On the ERC's and TAC's, Danger areas are shown with a solid magenta line.

- On the VTC's, Danger areas are shown with a solid magenta line with a magenta dot verge along the inside of its boundary.
- On all charts where a Restricted and Danger area have a common lateral boundary, only the Restricted area verge is shown. The Danger area boundary is indicated by labels. (AIP GEN 3.2)

AIRSPACE BOUNDARY INFORMATION

Distances associated with airspace boundaries indicate the datum on which the airspace is based, and is shown as follows:

- "NM" indicates a distance from the aerodrome reference point.
- "DME" or "TAC" indicated a distance based on that navigation aid.
- Some control zones have boundaries based on a runway threshold; eg."7NM FM THR RWY 33" indicates a distance based on the threshold of Runway 33 at the associated aerodrome. (AIP GEN 3.2)

FREQUENCY INFORMATION

Flight Information Area (FIA) boundaries and frequencies are depicted in green. ATC frequencies and the associated boundaries, for use in Class E airspace, are depicted in brown.

The prefix to a frequency indicates the provider of the service.

Where a single area is divided vertically between different frequencies, the vertical limits applicable to each frequency will be indicated. (AIP GEN 3.2)

DEPICTION OF COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)

At non-controlled aerodromes where multicom (126.7MHZ) is not the CTAF, or non-controlled aerodromes that have an associated navaid, an entry "CTAF" followed by the designated frequency, is annotated in a box associated with the location. At non-controlled aerodromes where radio carriage and use is required, an entry "CTAF<frequency>(R)" is annotated in a box asociated with the location. ERSA should always be consulted as part of the pre-flight planning process prior to operating at non-controlled aerodromes.

In areas where numerous aerodromes and landing sites including uncharted aerodromes share the same frequency, a note on charts states "for operations

at aerodromes and landing sites in this area use CTAF<frequency>".

PROHIBITED, RESTRICTED AND DANGER AREAS (CAR 140)

You must not fly the aircraft over a prohibited area.

You must not fly the aircraft over a restricted area if the flight is not in accordance with conditions specified in the notice declaring the area to be a restricted area.

Note: See also (AIP ENR 1.4)

If you finds that the aircraft is over a prohibited area or a restricted area in contravention of the above, you shall:

- immediately have the aircraft flown to a position where it is not over the area;
- as soon as possible report the circumstances to the nearest Air Traffic Control unit; and
- land at such aerodrome as is designated by the Air Traffic Control unit and, for that purpose, obey any instructions given by the Air Traffic Control unit as to the movement of the aircraft.

services

WEATHER RADAR (AIP GEN 3.3)

Weather radar data derived from BoM radar sites is displayed at various ATS working positions by means of a PC-based system known within Airservices as METRAD and within the military as RAPIC.

METRAD/RAPIC images are not 'real time' but are the results of a ten minute update cycle. The most effective range of the radars is up to 75NM.

Weather radar sites, which may be utilised by ATS, are shown in ERSA MET. Weather radar information within 75NM of radar sites is available to pilots, subject to ATS workload, on request.

When providing METRAD/RAPIC information to pilots, ATS will use the prefix "MET RADAR DISPLAY INDICATES.."

METEOROLOGICAL BRIEFING (AIP GEN 3.5)

A limited elaborative briefing service is available from Regional Forecasting Centres (RFC's) and meteorological offices on the following telephone numbers:

Adelaide	08 8366 2617	Alice Springs	08 8952 1943
Cairns	07 4035 9777	Canberra	02 6247 0411
Brisbane	07 3229 1854	Launceston	03 6391 8377
Darwin	08 8982 2824	Port Headland	08 9140 1480
Hobart	03 6221 2000	Rockhampton	07 4922 3597
Melbourne	03 9669 4850	Townsville	07 4779 5999
Perth	08 9263 2255		
Sydney	02 9296 1527		

AVAILABILITY OF METEOROLOGICAL DOCUMENTATION (AIP GEN 3.5)

Available documents include the following:

- mean sea level analysis and prognosis charts
- upper level analysis and prognosis charts
- satellite imagery
- grid point winds and temperatures
- route sector winds and temperatures and
- significant weather charts
- Domestic TAF: Domestic Area Forecasts (ARFOR); AREA QNH
- International TAF Bulletins according to major route corridors
- Selected route forecast for high density route
- SIGMET, AIRMET and VOLCANIC ASH ADVISORIES

NOTIFICATION REQUIRED FROM OPERATORS FOR DOMESTIC OPERATIONS

All meteorological information issued on a routine basis and held by the briefing office concerned is available without prior notice. Eight (8) hours notice is required for nonroutine forecasts. (AIP GEN 3.5)

FORECAST FOR FLIGHTS - VALID AREA FORECASTS NOT AVAILABLE

Route forecasts required for flights for which valid Area Forecasts are not available will be supplied subject to the prior notification specified below. Notification should include part or all of the following information:

- departure aerodrome and ETD
- destination and ETA
- route
- ETAs and ETDs for intermediate stopping places
- alternate aerodrome and probable ETAs
- heights for upper winds and temperatures
- aerodrome(s) at which flight documentation is required
- time briefing required (AIP GEN 3.5)

FORECAST REQUIRED	AVAILABILITY	NOTICE REQUIRED
A. Pre-flight	1 hour before ETD	3 hours
B. Pre-flight for multi stage flights having a duration of more than 6 hours	1 hour before ETD	8 hours
C. En route	As arranged	3 hours

Requests for these should be made to the appropriate MET office.

Note: Every effort will be made to expedite MET documentation for Mercy and SAR flights. (AIP GEN 3.5)

SIGNIFICANT FORECAST ABBREVIATIONS (AIP GEN 3.5)

In reports, terminal forecasts and low level area forecasts, the amount of cloud will be indicated by the following abbreviations:

SKC or, if Sky Clear No cloud appropriate , CAVOK		
FEW	Few	1 to 2 OKTAS
SCT	Scattered	3 to 4 OKTAS
BKN	Broken	5 to 7 OKTAS
OVC	Overcast	8 OKTAS

The only cloud type that are included in aeronautical code format are towering cumulus (TCU) and cumulonimbus (CB). Forecasts in narrative form, such as ow level area forecasts, will continue to include cloud types other than CB and TCU when appropriate.

In the case of CB cloud, the amount will be indicated as follows:

ISOL	ISOLATED	for individual CBs
OCNL	OCCASIONAL	for well-separated CBs
FREQ	FREQUENT	for CBs with little or no separation

GOOD is used in the visibility section of low level area forecasts to indicate a visibility greater than 10KM over the entire area. When weather elements are forecast to reduce the visibility below 10KM, **GOOD** is replaced by those elements and their associated visibilities. Note that the visibility remains greater than 10KM in parts of the area unaffected by those elements.

WEATHER CODE AND TRANSLATION (AIP GEN 3.5)

CODE	TRANSLATION
	WEATHER DESCRIPTORS
BC	Patches (or Patches of)
BL	Blowing
DR	Drifting
FZ	Freezing
MI	Shallow
SH	Showers (or showers of)
TS	Thunderstorms (or Thunderstorms with)
PR	Aerodrome partially covered by Fog
	PHENOMENA
BR	Mist
DU	Dust
DS	Dust storm
DZ	Drizzle
FC	Funnel Clouds
FG	Fog
FU	Smoke
GR	Hail
GS	Small hail pellets
HZ	Haze
IC	Ice Crystals (very small ice crystals in suspension, also known as diamond dust)
PL	Ice Pellets
PO	Dust Devils
RA	Rain
SA	Sand
SG	Snow Grains
SN	Snow
SQ	Squalls
SS	Sand Storm
UP	Unknown Precipitation
VA	Volcanic Ash

Note 1: There is an option for intensity to be described when used with theabbreviations DZ, RA, SN, SH or TS. In these cases, the weather group is prefixed by (-) for light, or (+) for heavy. Moderate intensity has no prefix.

Note 2: METAR/SPECI may provide an indication of weather in the vicinity. If this is included, one or more of the weather groups above may be used, preceded by the abbreviation "VC"

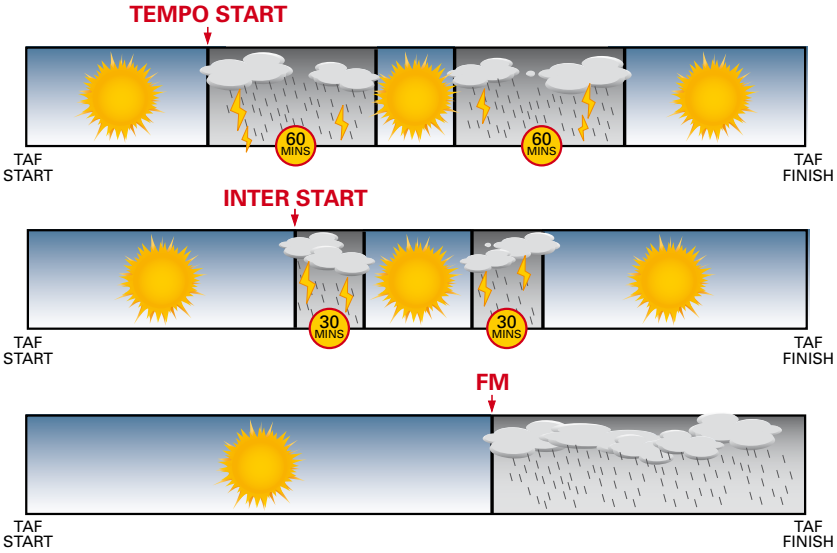
TEMPO AND INTER (AIP GEN 3.5)

TEMPO and **INTER** are used to indicate significant variations of a temporary or intermittent nature in aerodrome and landing forecasts.

TEMPO is used to indicate changes to conditions which are expected to last for less than 60 minutes but more than 30 minutes in each instance and where the aggregate of the changes is expected to be less than half the total period indicated.

INTER is used to indicate changes expected to occur frequently and more or less continuously throughout for periods of less than 30 minutes in each instance and where the aggregate of the changes is expected to be less than half the total period indicated.

FM is used in forecasts to indicate changes which are significantly different to preceding information in one or more of the elements, wind direction and/or speed, visibility, weather or cloud. The changes relate to improvements as well as deteriorations. The forecast conditions commencing with the code "FM" will continue until the end of the TAF validity period, or until replaced by another significant change.



CLOUD HEIGHT DATUM

In aerodrome and trend forecasts, cloud heights are given above aerodrome elevations. In other forecasts, heights are expressed:

- as a flight level; or
- with reference to mean sea level

FORECAST AMENDMENTS

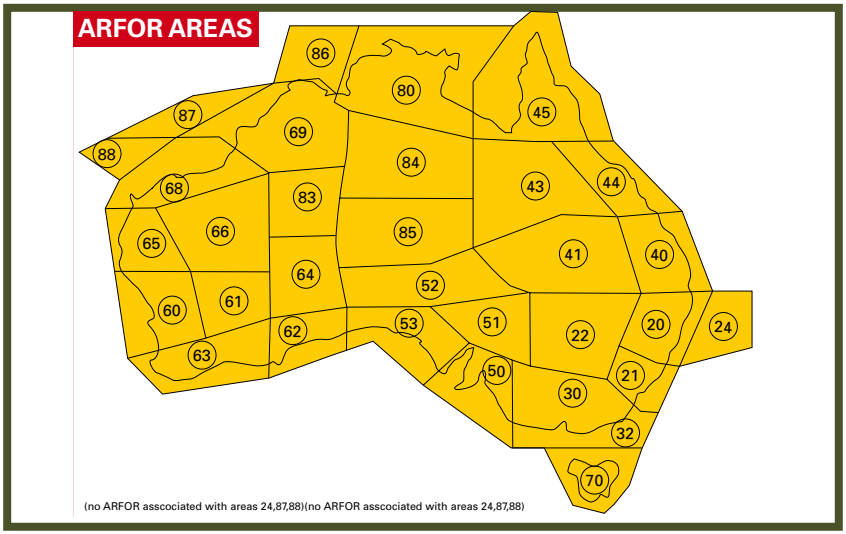
Amendments to forecasts are issued as necessary when changes are expected during the period of validity of a given forecast.

area forecasts

AREA FORECASTS (ARFOR) (AIP GEN 3.5)

These forecasts are issued in narrative form for aircraft operations at or below FL200. They comprise a statement of the general synoptic situation and the meteorological conditions expected to prevail in the designated area. A route forecast is issued for any part of a planned flight for which a routine area forecast is not prepared.

These forecasts are available from the ATS automated briefing systems the bureau of meteorology web site at www.bom.gov.au and briefing offices listed in ERSA GEN.



pre-flight planning

FORMAT OF AN ARFOR

The following is the format used in an area forecast:

TIME OF FORECAST (in UTC HH:MM)

VALIDITY PERIOD (in UTC DDHHMM)

APPLICABLE AREA NUMBER (can be more than one area at times)

OVERVIEW

SUBDIVISIONS (if any)

WIND

CLOUD

WEATHER

VISIBILITY

FREEZING LEVEL

ICING

TURBULENCE

CRITICAL LOCATIONS (if any)

aerodrome forecasts

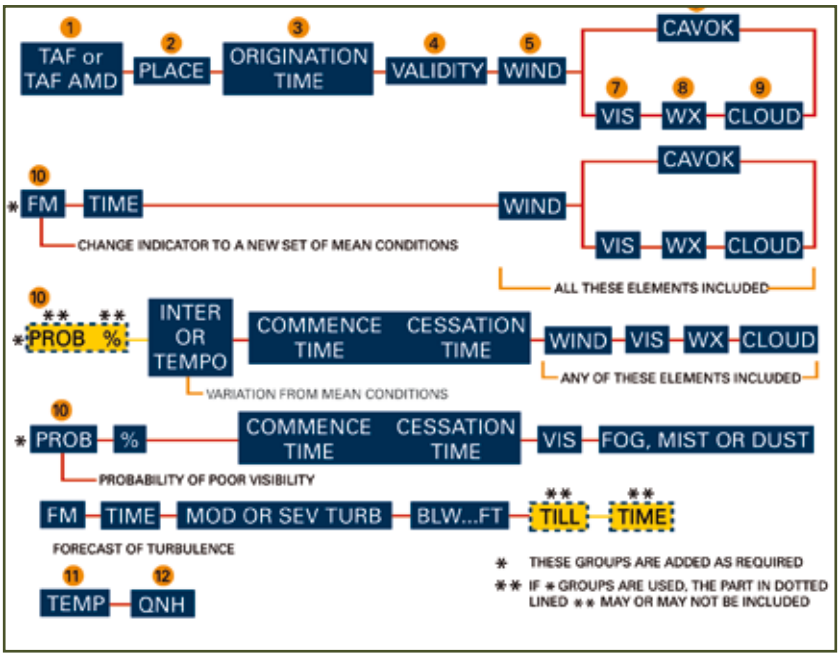
AERODROME FORECASTS (TAF)

An aerodrome forecast (TAF) is a statement of meteorological conditions expected for a specified period in the airspace within a radius of five nautical miles of the centre of the aerodrome or runway complex.

The TAF service provided is in accordance with the airfield category, the category of airfield being determined by the type and the amount of traffic. (AIP GEN 3.5)

CATEGORY DESCRIPTION AND SERVICE (AIP GEN 3.5)		
CATEGORY	AERODROME TYPE	ROUTINE TAF SERVICE
A	**International**: Major International Restricted Use International International Alternates International Non-Scheduled External Territory International Airport	Issued 6 hourly, valid for 18 or 24 hours Commencement times 00, 06, 12, 18 Z Continuous meteorological watch and amendment service
B	**Major Domestic**: Passengers above 30,000 p.a. Control Tower	Issued 6 hourly, valid 12, 18 or 24 hours Commencement times 00, 06, 12, 18 Z Continuous meteorological watch and amendment service
C	**Minor Domestic**: Passengers below 30,000 p.a.	As determined by consultation with clients Meteorological watch and amendment service during validity
D	**Strategic Domestic**: Alternate for RPT Other Aerodromes	As determined by consultation with clients Meteorological watch and amendment service during validity
E	**Observations only**: Critical Locations Aerodromes with AWS	No TAF Service except for SAR, Mercy Flights, etc

TAF - AERODROME FORECAST FORMAT (AIP GEN 3.5)



AERODROME WEATHER AND FORECAST DECODE COMPOSITION

❶ IDENTIFIER

The identifier METAR is used to identify all aerodrome weather reports maderoutinely either on the hour or half hour UTC which do not meet SPECI criteria. SPECI is used to identify all other observations and is also used to identify observations recorded 10 minutes following an improvement above SPECI conditions.

The identifier TTF METAR or TTF SPECI is used to identify METAR and SPECI to which a three hour trend is appended. The use of this identifier is restricted to those locations for which Trend-Type Forecasts are issued.

The identifier TAF or TAF AMD is used to identify an aerodrome forecast or an amended aerodrome forecast. If the forecast is provisional, the abbreviation PROV becomes the first element of the identifier.

❷ LOCATION

The location is indicated by either the ICAO location indicator, the place name, or the approved abbreviation.

❸ ORIGINATION TIME

The origination time of a TAF is expressed in a six figure group, followed by the abbreviation "Z"

❹ VALIDITY PERIOD

The time of an aerodrome weather report is expressed in a four figure group followed by the abbreviation "Z". The period of validity of an aerodrome forecast is expressed as a four figure hour group. UTC to hour UTC.

❺ WIND INFORMATION

Wind direction is given in three figures relating to True North.

When the wind is calm, it is encoded as "00000KT".

Wind speeds from 1 to 9KT, inclusive, are given in two figures; eg. 5KT is given as 05KT.

Variable wind direction is given as "VRB" and is used when the reporting of a mean wind direction is not possible, such as:

- In light windy conditions (3KT or less), or
- The wind is veering or backing by 180o or more (eg, passage of a thunderstorm, or localised wind effect)

Maximum wind speed is given only when it is 10KT or more greater than the mean wind speed and the mean wind speed is greater than or equal to 15KT. The term "MAX" is not included, the letter "G" followed by the maximum wind speed is used; eg 280° mean speed 20KT, maximum speed 35KT, is given as 28020G35KT.

❻ USE OF THE TERM "CAVOK"

"CAVOK" is included in the report or forecast when the following conditions are observed, or forecast to occur simultaneously:

- visibility 10KM or more
- no cloud below 5,000FT or below the highest minimum sector altitude, whichever is the greater, and no cumulonimbus; and
- no precipitation, thunderstorm, shallow fog, low drifting snow or dust devils.

Whenever a total of BKN (ie more than 4/8) low or middle cloud cover is present at or above 5000FT, and CAVOK has been used, cloud amount and

base are given.

❼ VISIBILITY

In METAR/SPECI or TAF, the minimum visibility observed OR forecast is always given.

In METAR/SPECI, if the minimum visibility covers more than half the aerodrome, or when visibility is fluctuating rapidly and significant directional variations cannot be given, the minimum visibility is the only visibility information reported.

METAR/SPECI visibility will have a directional variation indicated when the minimum visibility is less than 5,000M and the visibility in another direction, covering more than half the aerodrome, is at least 50% greater. Under these conditions, the minimum visibility will be given first, with the direction indicated by one of the eight points of the compass, followed by the higher visibility, without a compass point. 1000N 9999

❽ WEATHER

Weather is given using the codes listed on page 125. One or more of the codes may be grouped eg TS or TSGR, SH or SHRA.

There is an option to describe the intensity of the weather which is only used with the precipitation codes DZ, RA, SN, SH , or TS. In these cases, the weather group is prefixed by (-) for light, and (+) for heavy. Moderate intensity has no prefix.

METAR/SPECI may provide an indication of weather in the vicinity. If this is included, one or more of the weather groups on page 139 may be used, preceded by the abbreviation "VC".

❾ CLOUD

Cloud height is always given as a three figure group in hundreds of feet, with the last two digits omitted; eg: cloud at 700 feet is shown as 007.

Cloud information is reported from the lowest to the highest layer or mass in accordance with the following:

- the lowest layer or mass, regardless of amount, as FEW, SCT, BKN or OVC as appropriate
- the next layer or mass, covering more than 2/8, as SCT, BKN or OVC as appropriate

- the next higher layer or mass, covering more than 4/8, as BKN or OVC as appropriate; and
- cumulonimbus and/or towering cumulus clouds, whenever observed, and not reported in the above.

The cloud type will be identified only for cumulonimbus and towering cumulus when observed at or near the aerodrome. These will be given as "CB" and "TCU" respectively. When an individual layer (mass) or cloud is composed of cumulonimbus and towering cumulus with a common cloud base, the type of cloud is reported as cumulonimbus only.

Cloud details will be written as one word for each layer being reported; eg 8/8ths of stratus at 500FT will be given as "OVC005" and not "OVC 005"

Whenever cumulonimbus cloud is forecast, the degree of associated thunderstorm activity or probability of occurrence is included.

Cloud information is not included if there is no cloud. When the sky is obscured, the group is omitted in a report and included in a forecast only if cloud is forecast.

Vertical visibility is never included.

⑩ SIGNIFICANT VARIATIONS

Aerodrome forecasts may include an indicator of significant variation if changes in one, or more of the elements of wind, visibility, weather or cloud, which would satisfy the amendments criteria, are expected. These relate to improvements as well as deteriorations.

The terms TEMPO and INTER are used to indicate significant variations of a temporary or intermittent nature. The term FM Is used to indicate changes which are more lasting in nature. The indicator is the beginning of a self-contained forecast or trend.

When reduced visibility due to fog, mist or dust is forecast, but the probability is assessed at between 30% and 40%, the term PROB (percent) is used. The term may also be attached to TEMPO and INTER conditions.

The terms WX NIL,NO SIG WX and SKC may be included following a significant variation indicator, to indicate significant improvements expected.

If a TAF or TTF includes a forecast or turbulence, its commencement will be indicated by the word "FM", and its cessation within the forecast coverage will be indicated by the word "TILL"

aerodrome forecasts

TEMPERATURE

Aerodrome weather reports contain both temperature and dewpoint.

Forecasts of air temperature are given at three-hourly intervals for a maximum of nine hours, from the time of commencement of validity of the forecast. The temperature groups are prefixed by the letter "T". Negative values are indicated by the letter M before the numeral.

QNH

QNH is given as a whole number of hectopascals, with observed intermediate values being rounded-off downward. QNH is always given using four figures, prefixed by the letter "Q", eg: Q0997

SUPPLEMENTARY INFORMATION (AIP GEN 3.5)

In METAR/SPECI, supplementary information is used to report the following:

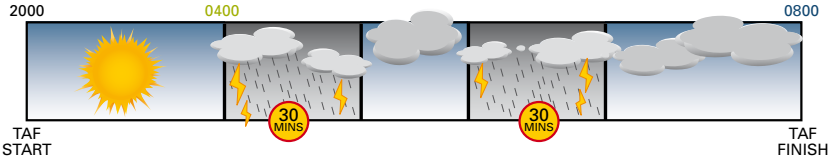
- recent weather of operational significane, and
- wind shear information on a take-off or landing runway.

TERMINAL AERODROME FORECASTS (TAF) EXAMPLES (AIP GEN 3.5)

- TAF YCOM 070635Z 0820 18015KT 9999 FEW005 BKN020 TEMPO 1014 2000 -SHSN BKN005 SCT020 T 03 00 M02 M04 Q1008 1007 1006 1006
- TAF YSSY 010435Z 0606 31005KT CAVOK FM14 16015KT 8000 SHRA BKN008 SCT030 FM23 23010KT 9999 NO SIG WX SCT030 T 25 21 18 15 Q 1012 1013 1014 1014
- TAF YSCB 270648Z 0820 33015G28KT 3000 +RA BKN010 OVC100 FM14 16015KT 8000 SHRA FEW010 SCT040 SCT100 INTER 1015 1000 +TSRA BKN005 SCT040CB FM08 MOD TURB BLW 5000FT TIL 15 T 14 13 13 11 Q 1016 1015 1013 1016
- TAF YMHB 100645Z 0820 14001KT 3500 DZ OVC005 FM12 14001KT 0300 FG T 12 11 10 10 Q 1018 1019 1020 1019

aerodrome forecasts

TAF YMAY 021830Z 2008 35010KT CAVOK
FM 04 30015KT OVC100
INTER 0408 30020G40KT 3000 +TSRA BKN010 SCT040CB
T 23 24 28 33 Q 1012 1013 1014 1009



PROVISIONAL FORECASTS (AIP GEN 3.5)

Forecasts may be prefixed PROV (to denote provisional) when considered likely to be deficient in accuracy because origination was by a forecasting office issuing information for a location or area not under its authority.

Note: The Director of Meteorology may, however, authorise the issue of provisional TAF in additional circumstances Provisional aerodrome forecasts will be confirmed or amended as soon as possible.

trend type forecast

TREND TYPE FORECAST (TTF) (AIP GEN 3.5)

TTFs are prepared for the following locations: Adelaide, Amberley, Brisbane, Darwin, Cairns, Canberra, East Sale, Melbourne, Nowra, Oakey, Pearce, Perth, Rockhampton, Sydney, Townsville and Williamtown.

Note: The provision of TTF at some aerodromes is limited to routine flights only. METAR/SPECI is normally available outside these hours.

TTF is defined as an aerodrome weather report (METAR/SPECI) to which a statement of trend is appended. The TTF relates to weather conditions expected to affect the aerodrome of origin for three hours following the time of the report.

The TTF supersedes the TAF for its validity period of three hours commencing at the time of the observation and is the current forecast for pilots of aircraft whose arrival time falls within the three-hour period. For aerodromes where the TTF service is not 24 hour service, or the meteorological watch ceases,

trend type forecast

the TAF will supersede the remaining portion of the TTF validity for which a meteorological watch is not available.

The time at which the TAF supersedes the TTF will be included in the remarks section of the TTF.

Note: For pilots whose arrival time falls outside the three-hour period, the TAF is the current forecast. Where applicable, TTF replaces TAF and present weather in VOLMET broadcasts.

TREND-TYPE FORECASTS - EXAMPLES (AIP GEN 3.5)

- TTF SPECI YPAD 2200Z 00000KT 9999 DZ OVC005 14/04 Q 1025
  FM2200 00000KT 9999 NO SIG WX BKN008
  FM2300 03005KT 9999 NO SIG WX SCT020
- TTF SPECI YMML 0200Z 05008KT 4000 DZ BKN005 OVC100 16/15 Q1017
  NOSIG
- TTF METAR YPPH 0500Z 36015KT CAVOK 32/08 Q1014
  FM0630 20825KT 9999 NO SIG WX BKN030
  INTER 0530/0730 5000 SHRA BKN008
- TTF METAR YBTL 0730Z 35006KT 9999 FEW050TCU 31/21 Q1005
  REMARKS DISTANT THUNDER NOSIG
- TTF SPECI YBTL 0800Z 03010KT 4000 TSRA BKN030CB SCT120 27/24
  Q1008
  FM0830 03005KT 9999 SHRA BKN035
  INTER 0830/1100 4000 TSRA SCT010 SCT030CB
- TTF METAR YBAS 1400Z 02015KT 9999 SCT040 BKN120 22/08 Q1000
  RMK
  DISTANT LIGHTING TO NW
  FM1630 34018G35KT 6000 SHRA BKN030 BKN120 INTER 1630/1700
  3000 TSRA SCT010 BKN030CB RMK USE TAF FOR ARRIVALS AFTER
  1500Z

TTF - TREND-TYPE FORECASTS (AIP GEN 3.5)

		(1)	(2)	(3)	(4)	(5)
TTF METAR OR TTF SPECI	Aero-drome Ident	Time of Report	Surface wind direction and speed/ max. wind	Visibility	Present Weather	Cloud
				OR CAVOK		

(6)	(7)	(8)	(9)	(10) - (11)	
Temp-erature and Dew Point	QNH	Supplementary Information which is windshear data and recent weather (prefixed 'RE') and Remarks which is any other significant comment not covered in the formal parts. Data from visionmeters and ceilometers when available are included here.	Trend NOSIG [refer note (9)]	or	FM (time 1) [refer note (10)] INTER/TEMPO (time 2) (time 3) [refer note (11)]

trend type forecast

TREND TYPE FORECAST (TTF) (CONTINUED)

TTF - NOTES

1.	Time of observation in hours and minutes UTC	Aerodrome Weather Report
2.	Direction in three figures rounded off to the nearest 10° (true); speed (KT) in two figures averaged over 10 minutes followed by maximum gusts (KT) in two figures when given. VRB - wind direction 00000KT - calm METAR or SPECI	
3.	Visibility in metres. 9999 indicates a visibility of 10KM and above.	
4.	Present weather reported in terms listed at page 134	
5.	Amount of cloud indicated by the following abbreviations: • SKC or, if appropriate, CAVOK — no cloud • FEW — 1 to 2 OKTAS • SCT — 3 to 4 OKTAS • BKN — 5 to 7 OKTAS • OVC — 8 OKTAS • CB — Cumulonimbus • TCU — Towering Cumulus next 3 figures -height of the cloud-base above level of aerodrome reference point given in hundreds of feet (eg 200Ft - 002; 2,000FT - 020; 20,000FT - 200)	
6.	Dry Bulb and dew point temperature in whole degrees Celsius. Negative values indicated by M before numeral. Values between -9°C and + 9°C are given as M09 to 00 to 09	
7.	QNH reported in whole hectopascals	
8.	Plain language remarks may be added to describe significant conditions in the vicinity of the aerodrome	
9.	NOSIG is used to indicate that no significant changes to METAR or SPECI conditions are expected to occur during the three-hour validity period of the TTF	The trend
10.	FM (time 1) indicates that significant mean conditions are expected to commence at the time (time 1) and to persist until the end of the three (3) hour validity of the TTF or until new mean conditions are specified. METAR or	Aerodrome Weather Report
11.	INTER (periods less than 30 minutes) and TEMPO (periods less than 60 minutes) are given either as INTER/TEMPO (time 2/time3) - in this case, intermittent or temporary variations are expected to commence at (time 2) and to end at (time 3)	SPECI

WIND SHEAR WARNINGS

Wind Shear Warnings provide information on observed, reported or assessed risk of wind shear which could adversely affect aircraft on the approach or take-off paths, during circling approach between runway level and 2,000FT above that level and aircraft on the runway during the landing roll or take-off run.

This service is provided for Adelaide, Brisbane, Cairns, Darwin, Melbourne, Perth, Rockhampton, Sydney and Townsville during duty hours of the MET office.

METEOROLOGICAL REPORTS

AERODROME WEATHER REPORTS are observations of meteorological conditions at aerodromes. The reports are made by approved observers, and/or electronic recording devices called Automatic Weather Stations (AWS). The different types of reports are detailed below.

ROUTINE REPORTS (METAR) are issued at fixed times, hourly or half hourly, and are made available at pre-flight briefing or on request to aircraft (an example of METAR composition is detailed on page 141 and in (AIP GEN 3.5)

SPECIAL REPORTS (SPECI)

Aerodrome weather reports issued whenever weather conditions meet or are below specified criteria.

SPECI reports are issued whenever there is more than 4/8ths cloud (ie BKN or OVC) at or below the alternate minimum cloud base, or whenever the horizontal visibility is at or below the alternate minimum visibility*. Additional SPECI may be issued when weather conditions deteriorate further.

*Note: Where no descent procedure is established, the alternate ceiling and visibility minima are 1,500FT and 8KM respectively

SPECI will also be issued under the following conditions:

- Wind:
  - when mean direction changes by 30° or more, the mean speed before or after the change being 20KT or more; or
  - when the mean speed changes by 10KT or more, the mean speed before or after the change being 30KT or more; or

  - when the variation from the mean speed gusts has increased by 10KT or more, the mean speed before or after the change being 15KT or more.
- Other conditions
  - when any of the following begins, ends or changes in intensity - thunderstorm, hailstorm, mixed snow and rain, freezing precipitation, drifting snow, dust storm, sandstorm, squall, fog;
  - when severe turbulence, severe icing, or wind shear is reported by a pilot to have begun or ended;
  - at the passage of a front;
  - at the incidence of any other phenomena likely to be significant to the operation of an aircraft;
  - when the QNH altimeter setting changes by 2HPA or more;
  - when the temperature changes by 5° or more.

RAAF Special Reports (RAAF SPECI) At joint user aerodromes, Canberra, Darwin, Newcastle/Williamtown and Townsville, aerodrome weather reports based on a circling ceiling and visibility minima higher than those specified for civil operations are issued for use by military pilots.

AERODROME WEATHER REPORTS - EXAMPLES

- SPECI YMML 2000Z 22012KT 6000 DZ FEW002 SCT006 15/12 Q1020
- METAR YBRK 0100Z 03012KT 9999 FEW025 SCT035TCU 26/20 Q1003
- METAR YPPH 1130Z 28012KT 9999 FEW005 SCT035TCU 26/17 Q1007 RETS
- SPECI YBCS 1745Z 23014G29KT 1200NE 6000 TSRA FEW030CB BKN100 26/22 Q1003
- SPECI YSSY 1900Z 26001KT 3000 HZ VCFG FEW030 18/17 Q1018

AUTOMATIC WEATHER STATIONS WITH CEILING AND VISIBILITY INFORMATION

Automated cloud and visibility elements of an AWS will be included in the body of METAR/SPECI when there is no human input to the message. These fully automated messages will be indicated by inclusion of the abbreviation AUTO in the message.

For example:

METAR YSBK 071800Z AUTO 10015KT 9999NDV // SCT042 BKN110 14/06 Q1020 RMK RF00.0/000.8

In this example, NDV (No Directional Variation) is appended to the visibility element to indicate that the single visibility sensor at this site does not have the capability of detecting any spatial variation in visibility that may exist; and // is inserted in lieu of weather to indicate that this site does not have a weather sensor.

Ceilometers (cloud sensors) will only detect cloud to 12,500FT. If there is no cloud detected below this level, and the detected visibility is greater than 1,000M, the cloud report will be CLD: CLR BLW 125 (in the remarks [RMK] section). If no cloud is detected and the detected visibility is less than or equal to 1,000M the cloud report will be CLD: SKY MAY BE OBSC (in the remarks [RMK] section).

AUTOMATED WEATHER STATIONS REPORTING OF RAINFALL

Automated cloud and visibility elements of an AWS will be included in the body of METAR/SPECI when there is no human input to the message. These fully automated messages will be indicated by inclusion of the abbreviation AUTO in the message.

For example:

METAR YSBK 071800Z AUTO 10015KT 9999NDV // SCT042 BKN110 14/06 Q1020 RMK RF00.00/000.8

In this example, NDV (No Direct Variation) is appended to the visibility element to indicate that the single visibility sensor at this site does not have the capability of detecting any special variation in visibility that may exist; and // is inserted in lieu of weather to indicate that this site does not have a weather sensor.

Ceilometers (cloud sensors) will only detect cloud to 12, 500 FT. If there is no cloud detected below this level, and the detected visibility is greater than 1,000M, the cloud report will be CLD: CLR BLW 125 (in the remarks [RMK] section). If no cloud is detected and the detected visibility is less than or equal to 1,000M the cloud report will be CLD: SKY MAY BE OBSC (in the remarks [RMK] section).

The remarks section of the report may include figures to indicate rainfall recorded by an automatic rain gauge.

The information is in the form RF00.0/000.0 where the first three digits after the letters RF will indicate the rainfall recorded in the ten minutes prior to the observation time, and the next four digits indicate the total rainfall recorded

since 0900 local mean time of the observation time. Both amounts are expressed in millimetres to the nearest 0.2mm.

Note: In situations of fine droplet precipitation, such as very light drizzle or fine mist situations, there may not be sufficient precipitation recorded to indicate any rainfall in the last ten minutes. Pilots should, therefore, regard automated reports of rainfall as guidance material only.

ELEMENTS OF REPORT NOT AVAILABLE

In cases where some elements of a report are not available; eg, visibility or cloud in an automatic weather station report, the indicator "II" will be used.

TAKE-OFF AND LANDING REPORTS

Are provided at aerodromes where a control tower is established. This service may also be provided by UNICOM, details of which can be obtained in ERSA.

Take-off and landing reports are included on ATIS, where available, or passed to aircraft reporting taxiing or inbound. Take-off and landing reports contain, as available, the following:

- wind velocity, with direction in degrees magnetic
- altimeter setting
- air temperature (if appropriate to the type of aircraft)
- low cloud, if significant
- visibility, if significant - in metres up to and including 5,000M, above this value in KM. A visibility greater than 10KM is given as "VISIBILITY GREATER THAN 10KM"
- additional items, ie extent of cloud below the main ceiling, disposition and intensity of rain, reported turbulence area, etc;
- CAVOK- when the following conditions are observed to occur simultaneously:

  visibility of 10KM or more;

  no cloud below 5,000FT or below the highest minimum sector altitude, whichever is the greater, and no cumulonimbus;

no precipitation, thunderstorm, shallow fog, low drifting snow or dust devils. When the term, CAVOK is used, the elements low cloud, visibility and additional items will not be advised.

The meteorological information provided by AIR Traffic Controllers may be obtained by observation of the whole horizon or only the area that will contain the probable flight path of an aircraft. Reports based on AWS data will be limited to wind direction and velocity, QNH and temperature, except when a qualified observer at the aerodrome provides visually observed information.

APPROVED OBSERVERS

"Approved Observers" are officers of the BoM, Air Traffic Controllers, and other persons on the ground approved for the purpose by the BoM and/or CASA.

For the purpose of observing visibility for take-off and landing at an aerodrome, the pilot in command shall be deemed an approved observer for that flight.

OBSERVING POINT

The location of the observing point for the aerodrome weather reports is such that the meteorological conditions observed within visual range, or interpreted from instruments at that point, are representative of conditions at the aerodrome.

AIRCRAFT WEATHER REPORTS

The pilot in command of an aircraft is required to observe and report en route meteorological conditions as prescribed in AIP GEN 3.5-15 and 3.5-21. For this purpose, he/she is deemed an approved observer.

In addition to requirements for special AIREP reports concerning MET conditions likely to affect the safety of other aircraft, pilots in command of flights, in areas where ground meteorological reports are scanty, are encouraged to report observations of MET conditions which they consider will assist in the provision of meteorological services.

meteorological advices

SIGMET

SIGMET information concerns the occurrence or expected occurrence, in an area over which meteorological watch is being maintained, of one or more of the following:

- below FL450
  - active thunderstorm area
  - tropical revolving storm
  - severe line squall
  - heavy hail
  - severe turbulence
  - severe icing
  - marked mountain waves
  - widespread sandstorms or duststorms
  - volcanic ash cloud
- above FL450
  - moderate or severe turbulence
  - cumulonimbus clouds
  - hail

Note: Messages containing SIGMET information for aircraft in transonic and supersonic flight are identified as SIGMET SST

Pilots in command of aircraft encountering any of the above phenomena, not notified by SIGMET advices, must report details of the phenomena in an AIREP SPECIAL.

SIGMET information is issued by MET forecasters and addressed by ATS as a Hazard Alert to aircraft operating on routes or in areas likely to be affected. This information will normally relate the phenomena reported to designated reporting points, and where possible, will indicate the area in which the phenomena exist.

AIRMET

AIRMET information concerns the occurrence or expected occurrence affecting the levels below FL120 in an area over which meteorological watch is being maintained, of one or more of the following phenomena:

- hail
- moderate icing
- moderate turbulence, when this is expected to occur in an area, or at a time, where or when it is not a normal seasonal feature
- the initial onset of phenomena producing extensive areas of visibility of less than 8KM, or of cloud coverage of more than 4/8ths below 1,500FT above ground level
- winds of 40Kt or more within 2,000FT above ground level

and also includes phenomena covered by SIGMET advices.

Note: When SIGMET phenomena only are concerned, a separate AIRMET advice is not issued.

AIRMET information, which concerns phenomena of a lesser degree of severity than SIGMET information, is given to aircraft operating at or below 10,000FT.

AIRMET Information is issued by MET forecasters and addressed by ATS as a Hazard Alert to aircraft operating on routes or in areas likely to be affected. It will indicate the locality or area in which the phenomena exist or are expected to exist.

AIRMET information will not be issued on phenomena which are included in a current area forecast. Pilots in command who encounter any of the above phenomena, which have not been notified by a forecast or an AIRMET advice, should report the details by SHORT AIREP.

Note: AIRMET information is additional to SIGMET information which is issued to all aircraft types.

meteorological advices

HAZARDOUS WEATHER

RESPONSIBILITY

Cooperative and concerted action is required by pilots, meteorologists and ATS to ensure the most accurate information is promulgated to assist pilots in the avoidance of hazardous weather, particularly those phenomena associated with thunderstorms - icing, hail and turbulence.

Meteorologists are responsible for the observation of weather phenomena and forecasting their occurrence, development and movement, in terms applicable to aircraft operations. These forecasts need to be produced in sufficient time for avoiding action to be taken.

ATS is responsible for distributing reports of hazardous meteorological conditions to pilots as a part of the Hazard Alert service. ATS also makes visual and limited radar weather observations for the information of meteorologists and pilots and is responsible for relaying pilot weather reports to the BoM. At some locations, ATS is provided with METRAD or RAPIC which may supplement weather advice by the ATS. Details are given in AIP GEN 3.3.

Whilst manoeuvring in hazardous weather situations, pilots are responsible for the safety of their own aircraft using advices and clearances passed by ATS and information obtained from their own visual or airborne radar observations.

They are also responsible for passing visual and airborne radar observations of hazardous weather to ATS.

PILOT ACTION

Outside controlled airspace all hazardous weather avoidance action is the sole responsibility of the pilot in command. However, in order to preserve the safety of the aircraft and other air traffic, the pilot in command is requested to advise ATS of intended actions.

The pilot in command, both inside and outside controlled airspace, must advise ATS promptly of any hazardous weather encountered, or observed either visually or by radar. Whenever practicable, those observations should include as much detail as possible, including location and severity. Hazardous weather includes, in particular, thunderstorms, severe turbulence, hail, icing and line squalls.

WIND SHEAR - PILOT REPORTING

Wind shear encountered by aircraft must be reported by pilots as follows:

- light - shear causing minor excursions from flight path and/or airspeed
- moderate - shear causing significant effect on control of the aircraft
- strong - shear causing difficulty in keeping the aircraft to desired flight path and/or airspeed
- severe - shear causing hazardous effects to aircraft controllability

Pilots encountering wind shear of intensity "moderate", "strong" or "severe" should immediately report the degree, type of shear and the altitude at which the greatest adverse effect was experienced. At non-controlled aerodromes, the report should also be broadcast to all aircraft on the CTAF and should include the name of the aerodrome (AIP GEN 3.5).

The responsibility to continue an approach to land, or to take off following notification of low level wind shear rests with the pilot in command.

AUTOMATIC METEOROLOGICAL BROADCASTS

Routine broadcasts of selected operational meteorological information for use by aircraft in flight are made from suitable locations using discrete ground-to-air frequencies.

AUTOMATIC EN ROUTE INFORMATION SERVICES (AERIS)

The AERIS continuously broadcasts METAR from a network of VHF transmitters installed around Australia. Details of transmitter sites, frequencies and locations for which METAR are provided are at ERSA GEN.

meteorological advices

VHF AUTOMATIC EN ROUTE INFORMATION SERVICE (AERIS) NETWORK
(COVERAGE AT 20,000 FT)

VHF AUTOMATIC EN ROUTE INFORMATION SERVICE (AERIS) NETWORK (COVERAGE AT 20,000 FT)		
OUTLET	VHF	METAR MENU
Mt. WILLIAM	119.75	Adelaide, Hobart, Launceston, Melbourne, Perth, Mildura
Mt. GININI	119.95	Adelaide, Canberra, Hobart, Melbourne, Wagga Wagga
Mt. CANOBOLAS	119.85	Adelaide, Alice Springs, Brisbane, Melbourne, Perth, Sydney
POINT LOOKOUT	119.75	Brisbane, Canberra, Coolangatta, Melbourne, Rockhampton, Sydney
Mt. MOWBULLAN	119.95	Brisbane, Coolangatta, Mackay, Maroochydore, Rockhampton, Sydney
Mt. BLACKWOOD	119.85	Brisbane, Cairns, Hamilton Island, Mackay, Kalgoorlie, Townsville
BELLENDEN KERR	119.75	Brisbane, Cairns, Hamilton Island, Mackay, Rockhampton, Townsville
Mt. ISA	128.45	Alice Springs, Brisbane, Cairns, Mt. Isa, Tindal, Townsville
GOOCHEGOOCHERA	128.45	Alice Springs, Cairns, Darwin, Tennant Creek, Tindal, Townsville
DERBY	128.45	Broome, Darwin, Kununurra, Meekatharra, Perth, Port Hedland
MEEKATHARRA	128.45	Broome, Kalgoorlie, Karratha, Meekatharra, Perth, Port Hedland
CEDUNA	128.45	Adelaide, Alice Springs, Kalgoorlie, Melbourne, Perth, Sydney
KALGOORLIE	128.25	Adelaide, Alice Springs, Ceduna, Kalgoorlie, Laverton, Perth
BROKEN HILL	128.25	Adelaide, Alice Springs, Brisbane, Darwin, Melbourne, Sydney

AIREP

AIREP SPECIAL

A pilot in command should make a special report (see ERSA Flight Planning) when requested, or as soon as practicable after encountering any SIGMET condition which has not been notified, or any other MET condition which is likely to affect the safety or markedly effect the efficiency of other aircraft.

The estimate of next position may be omitted from an AIREP SPECIAL report except where the report is made at a planned position reporting point.

In the climb-out and approach phases, a pilot in command must report meteorological conditions, not previously advised, which are likely to affect the safety of aircraft operations. The preferred format of the report is detailed in ERSA Flight Planning.

SHORT AIREP

Short AIREP should be provided by pilots when requested.

ATS should be advised when a pilot encounters:

- Cloud-unexpected significant variations to amount, base or tops (by reference to QNH);
- Visibility- reduced due to fog, mist, hail, rain, snow or dust, or improvement observed;
- Wind- significant variation to forecast;
- Other phenomena - incidence of severe or moderate turbulence, thunderstorms, moderate or severe icing, hail, line squalls, standing waves or winds of 40KT or more within 2,000FT of ground level.

The report comprises:

- callsign of the ground station;
- callsign of the aircraft;
- short AIREP;
- position and time;
- EN ROUTE (departure point) TO (destination);
- weather report.

FLIGHTS OVER WATER (CAR 258)

An aircraft shall not fly over water at a distance from land greater than the distance from which the aircraft could reach land if the engine, or, in the case of a multi-engined aircraft, the critical engine (being the engine the non-operation of which when the other engines are in operation gives the highest minimum speed at which the aircraft can be controlled) were inoperative, except:

- in accordance with directions issued by CASA; or
- in the course of departing from or landing at an aerodrome in accordance with a normal navigational procedure for departing from or landing at that aerodrome.

Aircraft engaged in PVT, AWK or CHTR operations, and which are normally prohibited by CAR 258 from over-water flights because of their inability to reach land in the event of engine failure, may fly over water subject to compliance with the following conditions. These conditions are additional to the requirements for flight over land (AIP ENR 1.1).

There is no limitation for PVT, AWK or freight-only CHTR operations.

Each occupant of the aircraft must wear a life jacket during the flight over water unless exempted from doing so under the terms of CAO 20.11.

A meteorological forecast must be obtained.

VFR flights are required to submit a SARTIME flight notification to ATS or leave a Flight Note with a responsible person.

SAR Alerting

- VFR flights may choose to operate on reporting schedules for the over-water stages of a flight. Schedules may be arranged before commencing the overwater stage and terminate on completion of the crossing.
- VFR aircraft not equipped with radio which will enable continuous communication, or not radio equipped, must carry a survival beacon as prescribed in CAO 20.11, for the over-water stages of the flight.

LIFE JACKETS

Aircraft shall be equipped with one life jacket that complies with the standards specified in CAO 103.13 for each occupant when the aircraft is over water and at a distance from land:

- in the case of a single engine aircraft – greater than that which would allow the aircraft to reach land with the engine inoperative; and
- in the case of multi-engine aircraft – greater than 50 miles.

Note 1: For the purposes of this paragraph 'land' shall mean land suitable for an emergency landing.

Note 2: Except as specified in 5.1.2 below, the provisions of this paragraph need not apply to land aircraft departing from or landing at an aerodrome in accordance with a normal navigational procedure for departing from or landing at that aerodrome.

Where required by 5.1.1 or 5.1.2, a life jacket or individual flotation device shall be stowed at or immediately adjacent to each seat. In addition, sufficient additional life jackets or individual flotation devices shall be carried in easily accessible positions for use by infants or children for whom a life jacket or individual flotation device is not available at or adjacent to their seated position.

Life jackets shall be so stowed in the aircraft that one life jacket is readily accessible to each occupant and, in the case of passengers, within easy reach of their seats.

Where life jackets are required to be carried in accordance with sub-paragraph 5.1.1(a) each occupant shall wear a life jacket during flight over water. However, occupants of aeroplanes need not wear life jackets during flight above 2000 feet above the water.

Where life jackets are required to be carried in accordance with paragraph 5.1.4 each occupant of a single engine aircraft shall wear a life jacket during flight over water when the aircraft is operated beyond gliding distance from land or water, as appropriate, suitable for an emergency landing. However, occupants need not wear life jackets when the aircraft is taking-off or landing at an aerodrome in accordance with a normal navigational procedure for departing from or arriving at that aerodrome, and occupants of aeroplanes need not wear life jackets during flight above 2000 feet above the water.

LIFE RAFTS (CAO 20.11)

An aircraft that is flown over water at a distance from land greater than the permitted distance, (a distance equal to 30 minutes at normal cruising speed, or 100 miles, whichever is the less) must carry, as part of its emergency and lifesaving equipment, sufficient life rafts to provide a place in a life raft for each person on board the aircraft.

Life rafts shall be in addition to the life jackets that are required for the flight. Life rafts carried in accordance with this section shall be stowed so as to be readily accessible in the event of a ditching without appreciable time for preparatory procedures. When life rafts are stowed in compartments or containers, such compartments or containers shall be appropriately and conspicuously marked. Life rafts shall comply with the standards specified in CAO 103.15.

SIGNALLING EQUIPMENT (CAO 20.11)

Aircraft or flights where the carriage of life rafts is required by CAO 20.11, or on such other overwater flights as the Authority specifies, shall carry approved types of the following signalling equipment:

- one survival radio beacon when one life raft is carried and at least two beacons when more than one raft is carried. The beacons shall operate on frequencies of 121.5 MHz and 243 MHz, shall meet the standards specified in CAO 103.40 and shall be stowed so as to facilitate their ready use in an emergency; and
- a supply of pyrotechnic distress signals.

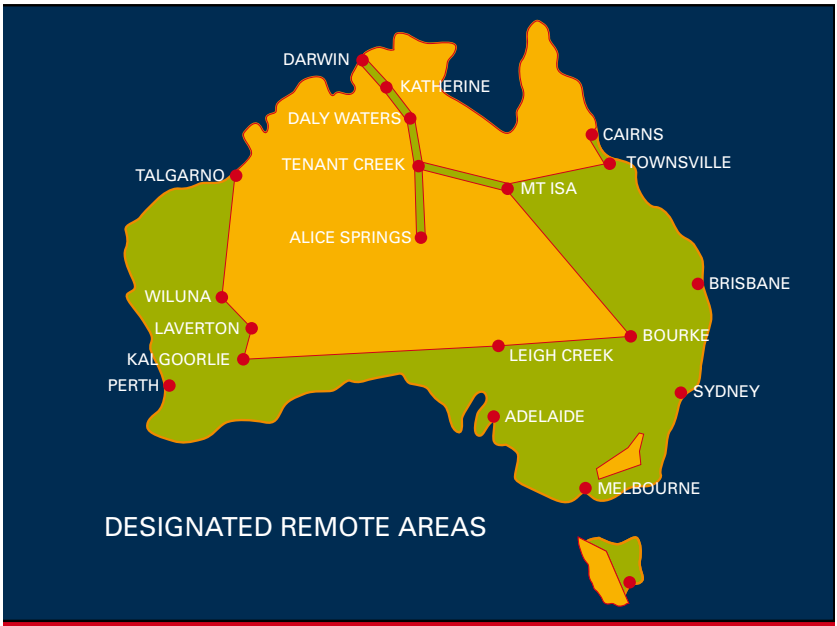
Single engine aircraft on flights over water, which are not equipped with radio communication equipment or are not capable of continuous air – ground communication and which are not required to carry a life raft, shall be required to carry a survival radio beacon. The beacon shall operate on frequencies of 121.5 MHz and 243 MHz, shall meet the standards specified in CAO 103.40 and shall be stowed so as to facilitate its ready use in an emergency.

SURVIVAL EQUIPMENT(CAO 20.11)

An aircraft shall carry survival equipment for sustaining life appropriate to the area being overflown on the following flights:

- where the carriage of life rafts are required; and
- during operations within or through the remote areas specified by the remote area maps; and
- on such other flights as may be directed by the Authority.

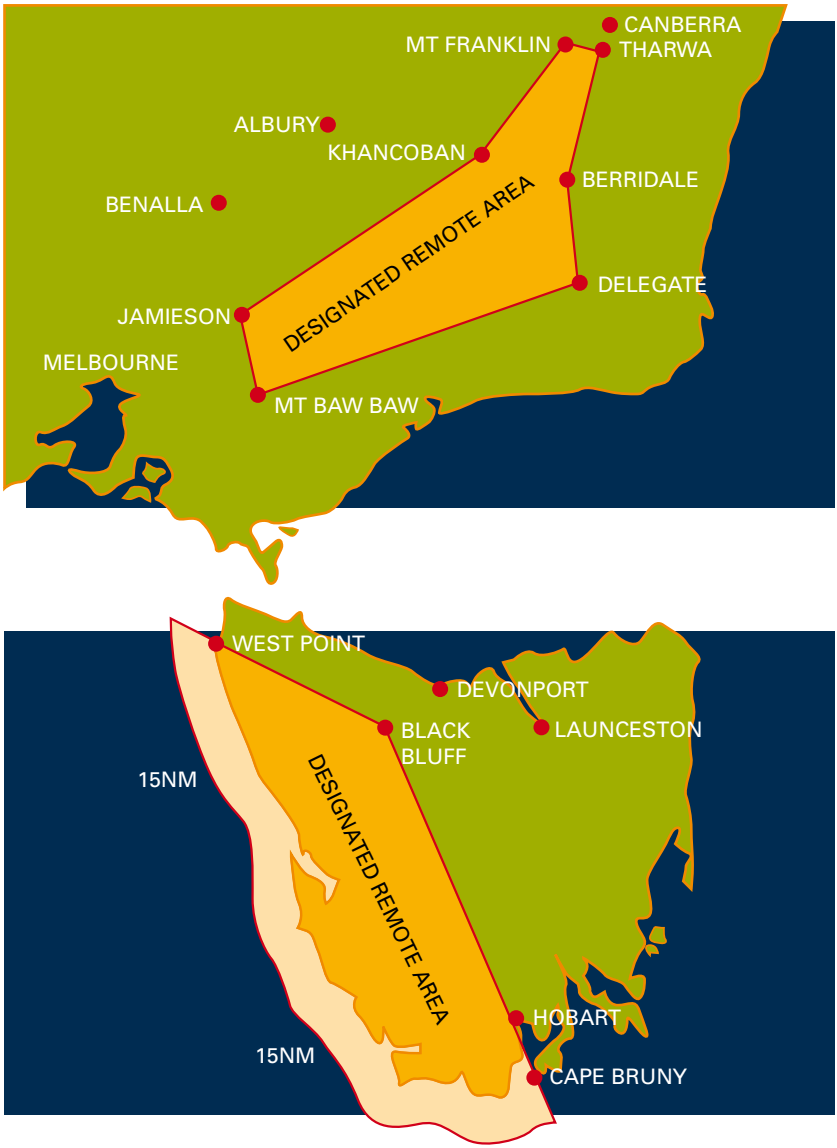
maps



NOTE 1 - Flight through corridors shall be made within sight of the highway concerned but in no case more than five miles therefrom.

NOTE 2 - Australian administered islands adjacent to the remote Area between Talgarno and Cairns are part of the Designated Remote Area.

NOTE 3 - Mainland within 50NM of Darwin excluded from Designated Remote Area.


CANBERRA
THARWA
MT FRANKLIN
ALBURY
KHANCOBAN
BERRIDALE
BENALLA
DESIGNATED REMOTE AREA
DELEGATE
JAMIESON
MELBOURNE
MT BAW BAW
WEST POINT
DEVONPORT
BLACK BLUFF
LAUNCESTON
15NM
DESIGNATED REMOTE AREA
HOBART
15NM
CAPE BRUNY

REMOTE AREAS (CAO 20.11)

Aircraft operating within or through the remote areas designated in the above maps shall carry an approved type of one of the following signalling equipment:

- HF radio communication such that continuous communication can be maintained throughout all phases of flight;
- a survival radio beacon stowed so as to facilitate its ready use in an emergency and having its stowage position appropriately placarded. The beacon shall operate on a frequency of 121.5 MHz and meet the standards in CAO part 103 section 103.40 or section 103.41;
- a crash locator beacon which meets the standards set out in CAO 103.42;
- an emergency locator transmitter identified as complying with the requirements of FAA TSO-C91 for Automatic Fixed (ELT(AF)) or Automatic Deployable (ELT(AD)) type equipment and meeting additional requirements specified in CAO section 103.43.

BRIEFING OF PASSENGERS (CAO 20.11)

The operator of an aircraft shall ensure that all passengers are orally briefed before each take-off on:

- smoking, including the prohibition of smoking in toilets;
- the use and adjustment of seat belts;
- the location of emergency exits;
- the use of oxygen where applicable;
- stowage of hand luggage; and
- the presence on board of special survival equipment where applicable.

A typical passenger briefing on a private flight could go something like this:

> **"The law requires that you refrain from smoking on the tarmac and in the terminal as well as during take-off, landing, and refuelling.**
>
> **Your seatbelts are similar to your car's and I would ask you to keep them fastened comfortably during take-off, landing and any other time I feel it is necessary for your safety.**
>
> **The exits operate like this… and will only be opened on the ground. Please stow your hand luggage under the seat or I can secure it in the baggage compartment.**
>
> **If you feel uncomfortable in any way, please let me know and I'll do everything I can to improve the situation."**

Passenger briefings such as this can instill confidence in your passengers and start the flight off well.

The operator of an aircraft shall ensure that a handicapped person, and the person assisting the handicapped person, if any, is given individual briefing appropriate to the needs of that person in the procedures to be followed in the event of emergency evacuation of the aircraft. The briefing should include which emergency exit to use and when to move to the exit. The person giving the briefing should also enquire as to the most appropriate manner of assisting the handicapped person so as to prevent pain or injury to that person.

REMOVAL OF LOCKING AND SAFETY DEVICES (CAO 20.2)

Prior to take-off, the pilot in command of an aircraft shall ensure that all control surface locks, undercarriage pins and locks, and any other devices used for restricting movement or preventing operation of any part of an aircraft or its equipment when not in flight or taxi-ing are removed.

Where external control surface locks, undercarriage pins and locks, or other external locking or restricting devices have been fitted, they shall, except where otherwise approved by CASA, be removed prior to commencement of taxi-ing for the purpose of taking off. They shall be removed only by the pilot in command or the co-pilot, or by a person instructed in this function and authorised to perform it by the owner, hirer, operator or pilot in command.

Where external control surface locks, undercarriage pins and locks, or other external locking or restricting devices are removed by a person other than the pilot in command or co-pilot:

- removal shall only be effected as directed by the pilot in command.
- the locks, pins and other external devices shall be exhibited to the pilot in command from a position which will enable him to readily determine that all pins, locks and devices are being displayed.
- during the hours of darkness the owner, hirer, operator or pilot in command shall ensure that adequate lighting is provided to enable the pilot in command to see the articles displayed.
- when the pilot in command is satisfied that all locking devices have been removed and displayed he or she shall give an agreed form of acknowledgement to the person effecting removal.

When an aircraft has been parked, taxied or towed in winds exceeding 35 knots and the control systems and surfaces have not been effectively restrained either by a person in the cockpit or by approved control surface gust locks, the pilot in command or an appropriately licensed maintenance engineer shall, before flight, inspect the control systems and control surface attachments for damage.

Where external control surface locks or restricting devices have been removed or where an aircraft is to be flown for the first time following maintenance work involving the aircraft's control surfaces or control surface systems, the pilot in command shall, immediately before taxi-ing for the purpose of taking off, test the flight controls to the full limit of their travel

and make such other tests as are necessary to ensure that those controls are functioning correctly.

Note: Civil Aviation Regulation 244 (1)(a) requires that immediately before taking-off on any flight, the pilot in command of an aircraft shall test the flight controls on the ground to the full limit of their travel and make such other tests as are necessary to ensure that those controls are functioning correctly.

SECURITY OF DOORS AND HATCHES (CAO 20.2)

Immediately before taxi-ing for the purpose of taking off on any flight, the pilot in command shall ensure that all doors, escape hatches and loading hatches are properly secured.

PRECAUTIONS BEFORE SOLO FLIGHT IN AIRCRAFT FITTED WITH DUAL CONTROLS (CAO 20.2)

The pilot in command of an aircraft fitted with dual controls, which is to be flown solo, shall ensure that safety harness and any other articles or equipment which may foul the controls are safely secured; if the second control column is readily detachable, it shall be removed.

FUEL SYSTEM INSPECTION (CAO 20.2)

The operator and pilot in command shall ensure that the following inspections and tests for the presence of water in the fuel system of the aircraft are made:

- either:
  - if the aircraft manufacturer's data specifies the manner in which inspections and tests for the presence of water in the aircraft's fuel system are to be made and the data has been approved under regulation 42M as part of the aircraft's system of maintenance an inspection and test in accordance with the approved data; or
  - in any other case, before the start of each day's flying, and after each refuelling, with the aircraft standing on a reasonably level surface, drain a small quantity of fuel from each fuel tank into a clear transparent container and check by an approved method for the presence of water.

- on such aircraft types which may be specified by CASA, extend the foregoing inspection to fuel system filters and collector boxes. It is recommended that all aircraft fuel system filters and collector boxes be checked for water contamination at frequent intervals.

Note: It is important that checks for water contamination of fuel drainage samples be positive in nature and do not rely solely on sensory perceptions of colour and smell, both of which can be highly deceptive.

The following methods are acceptable:

- place a small quantity of fuel into the container before taking samples from tank or filter drain points. The presence of water will then be revealed by a visible surface of demarcation between the two fluids in the container.
- check the drainage samples by chemical means such as water detecting paper or paste, where a change in colour of the detecting medium will give clear indication of the presence of water.
- in the case of turbine fuel samples, tests should also include inspection for persistent cloudiness or other evidence of the presence of suspended water droplets, which will not necessarily be detected by methods mentioned in notes 1 and 2. Should any doubt exist of the suitability of the fuel, the checks specified in the aircraft Operators Maintenance Manual should be followed. It is advisable to allow turbine fuel a reasonable period of stagnation before drawing test samples from fuel drain points; this allows settling of suspended water which is a slower process in turbine fuel than in aviation gasoline.

The paragraph above does not apply to helicopters that are being hot refuelled in accordance with section 20.10.

If, at any time, a significant quantity of water is found to be present in an aircraft fuel system, the operator and pilot in command shall ensure that all traces of it are removed from the fuel system, including the fuel filters, before further flight.

Note: In eliminating water from an aircraft fuel system, it is important that consideration be given to the possibility of water lying in portions of the tanks or fuel lines where, because of the design of the system or the existing attitude of the aircraft, it is not immediately accessible to a drain point.

The operator and pilot in command shall ensure that, before the commencement of each day's flying, all external fuel tank vents are inspected for freedom from obstruction.

daily inspection

An inspection (called a daily inspection) must be carried out on the aircraft before the aircraft's first flight on each day on which the aircraft is flown.

A daily inspection must consist of the making of such of the checks set out in the aircraft flight manual (AFM) or the following table as applicable to the aircraft.

TABLE OF CHECKS INCLUDED IN A DAILY INSPECTION

- check that the ignition switches are off, the mixture control is lean or cut off, the throttle is closed and the fuel selector is on.
- check that the propeller blades are free from cracks, bends and detrimental nicks, that the propeller spinner is secure and free from cracks, that there is no evidence of oil or grease leakage from the propeller hub or actuating cylinder and that the propeller hub, where visible, has no evidence of any defect which would prevent safe operation.
- check that the induction system and all cooling air inlets are free from obstruction.
- check that the engine, where visible, has no fuel or oil leaks and that the exhaust system is secure and free from cracks.
- check that the oil quantity is within the limits specified by the manufacturer for safe operation and that the oil filler cap, dipstick and inspection panels are secure.

daily inspection

- check that the engine cowlings and cowl flaps are secure.
- check that the landing gear tyres are free from cuts or other damage, have no plies exposed and, by visual inspection, are adequately inflated.
- check that the landing gear oleo extensions are within normal static limits and that the landing gear doors are secure.
- check that the wing and fuselage surfaces are free from damage and that the inspection panels, flight control surfaces and flight control devices are secure.
- check that the interplane and centre section struts are free from damage and that the bracing wires are of the correct tension.
- check that the pitot heads and static ports are free from obstruction and that the pitot cover is removed or is free to operate.
- check that the fuel tank filler caps, chains, vents and associated access panels are secure and free from damage.
- check that the empennage surfaces are free from damage and that the control surfaces control cables and control rods, where visible, are secure.
- check that the canard surfaces are free from damage and that the control surfaces, control cables and control rods, where visible, are secure.
- check that the flight controls, the trim systems and the high lift devices operable from the ground has full and free movement in the correct sense.
- check that the radios and antennae are secure and that where visible, radio units and interwiring are secure.
- check that the drain holes are free from obstruction.
- check that there is no snow, frost or ice on the wings, tail surfaces, canards, propeller or windscreen.
- check that each tank sump and fuel filter is free from water and foreign matter by draining a suitable quantity of fuel into a clean transparent container.
- check that the windscreen is clean and free from damage.
- check that the instruments are free from damage, legible and secure.
- check that the seat belts, buckles and inertia reels are free from damage, secure and functioning correctly.

ADDITIONAL ITEMS FOR AGRICULTURAL AEROPLANES

- check that the agricultural equipment is secure.
- check that the dump and fan brake mechanisms are free from obstructions and operate correctly.

ADDITIONAL ITEMS FOR SEAPLANES

- check that the hull and floats are free from damage, corrosion and water accumulation.
- check that the float attachment struts, bracing wires and attachment fittings are secure and free from damage and corrosion.
- check that the water rudder and its attachments are secure and free from damage and corrosion and that the water rudder has full, free and correct travel.

ELT

ELT REQUIREMENTS (CAR 252A)

Before undertaking a flight at a greater distance than 50NM radius from the aerodrome of departure, you must carry a serviceable ELT. If the ELT is installed on the aircraft It must be armed before flight. If it is a portable ELT it must be carried in a readily accessible place.

Exceptions to this requirement are:

- flights wholly within 50NM of the aerodrome of departure.
- an aerial agriculture flight
- where CASA have issued an approval (CAR 134 (1))
- the flight is for the purpose of moving the aircraft to a place where an ELT is to be installed, repaired or overhauled.
- the ELT fitted to the aircraft has been removed for inspection, repair, modification or replacement provided that
  - an entry has been made in the aircraft's log book stating the ELT make, model and serial number together with the date it was removed and the reason for doing so and

- a placard stating "ELT not installed or carried" has been placed in a position visible to the pilot and
- not more that 90 days have passed since the ELT was removed.

MONITORING OF 121.5MHZ

Pilots should monitor 121.5MHZ before engine start and after shut down (AIP GEN 1.5 para. 3). Reception of an ELT transmission must be reported to ATS immediately.

Transmissions from early style superseded marine style ELTs may be identified by breaks on the modulating tone.

CHECKING ELTS

Test transmissions from ELTs should be limited to 5 seconds and it is preferred that such tests be conducted within the first five minutes of the hour. Before conducting operational tests operators must notify AusSAR.

If your ELT has been inadvertently activated for more than 10 seconds you should contact AusSAR at 1800 815 257.

Activation of the test switch results in a transmission which is detected by COSPASSARSAT satellites and by other aircraft.

ELT FREQUENCIES

In addition to 121.5MHZ, current ELTs may also radiate on frequencies of 243MHZ and 406MHZ. (Prospective purchasers of ELTs should note that from January 2009 the satellites will not detect 121.5 MHZ and new requirements will apply).

EMERGENCY USE OF ELTS

Information on the emergency use of ELTs is contained in section 4 of this guide and in ERSA at EMERG-6

NOTIFICATION - GENERAL (AIP ENR 1.10)

Pilots of VFR flights nominating a SARTIME to ATS, and those intending to operate in controlled airspace (except for VFR flights in Class E airspace and in GAAP CTRs) must submit flight details to ATS.

The preferred methods for pilots to submit comprehensive flight notification are:

- via pilot access to NAIPS
- in writing via AVFAX
- by telephone
- by radio to Flight Watch..

Pilots submitting SARTIME flight notifications by facsimile must confirm receipt of the notification with the briefing office. Further, Airservices strongly recommends that when any flight notification is submitted by facsimile, the pilot or operator telephones the briefing office before departure to confirm that the facsimile has been received.

Abbreviated details for operations in controlled airspace may be advised by radio if the flight is to operate locally, or operations will be for a brief duration. However, prior contact with ATC may avoid delays. Pilots may submit details by radio to ATS when associated with a clearance request, or to nominate a SARTIME.

When submitting flight notification by radio, pilots should be mindful of the need to minimise frequency congestion and transmit only that information required by the ATS for the current flight stage. Acceptance is subject to ATS workload and may be delayed.

Submission of comprehensive travel flight notification by radio is not a preferred method of notification and should not be used when submission by some other means is available. Flight notification by radio for travel flights requiring the submission of comprehensive details will not be accepted at controlled aerodromes.

Pilots of VFR flights wishing to operate in other than classes C or D airspace and who wish to nominate a SARTIME, must submit details in the NAIPS domestic flight notification (pilot access) format. If submitting the flight notification by facsimile or via telephone, the only form available is the Australian Domestic Flight Notification form.

VFR flights in the following categories are required to submit a SARTIME flight notification to ATS, or, as an alternative, to leave a Flight Note with a responsible person;

- RPT and CHTR flights;
- over-water flights;
- flights in Designated Remote Areas;
- flights at night proceeding beyond 120NM from the aerodrome of departure.

VFR flights which are required to or wish to use a SARTIME may do so by providing ATS with the following details:

- callsign
- aircraft type
- departure point
- route to be flown
- destination
- POB and
- SARTIME

Note: only one SARTIME may be current at any time. To prevent the existence of multiple SARTIMEs for aircraft used by more than one pilot, SARTIMES should be nominated immediately before the start of each flight.

VFR flights may operate on reporting schedules in the following circumstances:

- mercy flights
- flood, fire or famine relief flights
- search and rescue flights, and
- military flights.

When the pilot of a flight wishes to indicate a variation of SAR requirements, this must be indicated in Item 8 - Flight Rules, amplified in Item 15 (Route) by the position at which the change will occur, followed by the new Flight Rules.

Submission of flight details at least 30 minutes before ETD is recommended.

Where notification of flight details, or changes to details, are submitted less than 30 minutes before ETD, delays will be encountered when an ATC radar unit requires that the data be programmed into the computerised SSR Code/ Callsign Management System.

Pilots may cancel a SARTIME via:

- Flightwatch on a FIS VHF outlet as shown in ERSA, or on HF, or
- relay through another pilot, or
- telephone to CENSAR on 1800 814 931, or
- Flight Service or ATC when telephone facilities are not available.

SARTIMEs are managed on a national basis by the central SARTIME management database, CENSAR.

The following table identifies flight notification options for the various classes and types of operations when flying IFR or VFR:

Flight Category	Class Of Operation	Type of Operation	Summary of Flight Notification Options
IFR	All classes	All Operations	FULL FLIGHT DETAILS
VFR	RPT and CHTR	All Operations	SARTIME or FLIGHT NOTE
VFR	AWK and PVT	Over-water flights	SARTIME or FLIGHT NOTE
		In designated Remote Areas	SARTIME or FLIGHT NOTE
		At night proceeding beyond 120NM from the aerodrome of departure	SARTIME or FLIGHT NOTE
VFR	AWK and PVT	All other Operations	SARTIME FLIGHT NOTE or; NO NOTIFICATION

If advising ATS of a change of aircraft ident and/or registration, pilot of SARTIME flights must also advise, prior to take-off, that the flight is subject to a SARTIME.

To assist in managing the airways system, pilots should always warn ATS of any flight notification amendments by utilising appropriate alerting phraseologies: eg

"MELBOURNE CENTRE, DELTA MIKE GOLF, IFR FLIGHT PLAN AMENDMENT"

or

"FLIGHTWATCH, DELTA MIKE GOLF, SARTIME FLIGHT PLAN AMENDMENT"

briefing services

The briefing & notification options, in order of preference are:

NAIPS direct dial pilot access
phone 019 8304 767; user software is required; software available from Airservices web site or by purchasing a CD-ROM from Airservices Publications Centre; NAIPS also has flight notification facilities in either the Domestic Flight Notification Form (for controlled airspace) or the simpler SARTIME notification.

NAIPS from Airservices' web site
www.airservicesaustralia.com; click on "Pilot Centre" then "Pilot Briefing". The user interface is different to the direct-dial NAIPS. NAIPS from the web site also has the flight notification facilities.

AVFAX
fax 1800 805 150; A self-help system delivering MET and NOTAM information, including charts to a nominated fax number in response to a tone generated telephone request. Charges apply via Phone Away card; registration is via the help desk AVFAX also accepts hard copy Flight Notification.

DECTALK
Phone 1800 805 150; it is a self-help system that delivers MET information on the telephone using a computer generated voice, in response to a tonegenerated telephone request. Charges apply via your Phone Away card; No registration is required. No flight notification facility is available.

BRIEFING OFFICER
Phone 1800 805 150 and wait for operator. This is a verbal briefing but longdistance call charges apply.

FLIGHTWATCH
Available from Area FLIGHTWATCH FREQ.; primarily intended for in-flight updates. A 24 hour national help desk is available on 1800 801 960. A Phone Away card is purchased from Airservices Publications centre or from pilot shops.

WEATHER BRIEFINGS
forecasts, weather radar images, synoptic charts and other useful information is available direct from the BoM web site at www.bom.gov.au; For aviation a user ID of : bomw0007 and a password: "aviation" have been provided.

The National Aeronautical Information Processing System (NAIPS) is a multifunction, computerised, internet-based aeronautical information system. It provides pre-flight briefing information and a means of lodging flight notification.

NAIPS is accessed by

- direct dialling from a PC
- accessing via the internet

In both cases a username and password are required as described below. Both forms of access provide the same features and format.

PRE-FLIGHT BRIEFING REQUIREMENTS

Remember that forecast and NOTAMS are mandatory for flights away from the vicinity of an aerodrome (CAR 239) and, for VFR, an alternate must be provided for flights more than 50 NM from point of departure when forecast is below alternate minimum of 1500 FT ceiling and 8KM (AIP ENR 1.1 para. 73.2.13).

NAIPS ACCESS

ACCESS BY DIRECT DIALLING FROM A PC

This requires the NAIPS for Windows software to be installed on your computer. It can be downloaded from www.airservicesaustralia.com (and click on pilot briefing) or it is available from Airservices on CD (call 1300 306 630). When the NAIPS for Windows software is installed on your PC it is accessed by direct dial to 0198 304 767 or via the internet.

You need a user name and password; this will be issued immediately at the prompt.

YOUR USER NAME	
YOUR PASSWORD	

The help desk number 1800 801 960

NAIPS

ACCESS VIA THE INTERNET

Internet access to NAIPS does not require the NAIPS software to be installed on your PC so it can be accessed from internet cafes etc.

The address is www.airservicesaustralia.com [/brief/index.htm] (note: this supersedes their previous address www.airservices.gov.au). You still require the username and password as described above.

The NAIPS for Windows software also allows for internet access.

The internet version allows you to copy and paste sections of the briefing into a compact document for in-flight use.

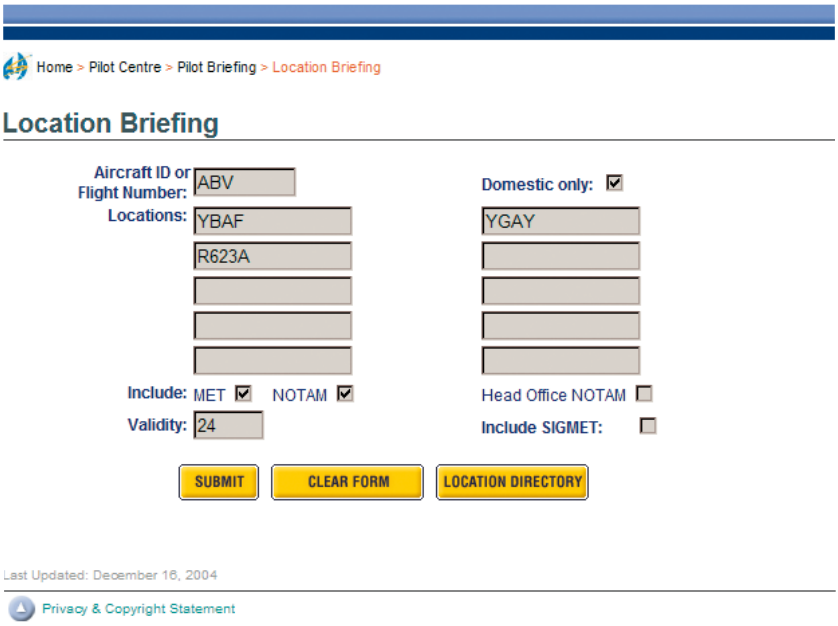
NAIPS PRE-FLIGHT INFORMATION

Pre-flight briefing and briefing update included by:

- use of stored personal flight files, Airservices' stored routes for tailored standard briefings;
- briefing by location: weather and NOTAM based on locations nominated by the pilot
- briefing by area: based on the forecast areas;
- briefing by route (SPFIB): weather and NOTAM based on departure, destination and en-route locations. Briefing material is filtered by:
  - time (based on ETD and time period)
  - height ("low" is below 10,000 FT) and
  - wake turbulence category ("low" applies to aircraft of 7,000 KG MTOW or less).
- updates of pre-flight briefings (AVFAX and SPFIB briefings only);
- display of original briefings;
- area forecasts, Area QNH, METAR/SPECI, TAF, SIGMET, AIRMET, CHARTS and ATIS;
- first and last light calculations;
- GPS RAIM predictions;
- location-specific NOTAMS;
- FIR and sub-FIR NOTAMS;
- head Office NOTAMS;
- UTC time check;

Note that SPFIB = Specific Pre-Flight Information Bulletin.

BRIEFING ON INDIVIDUAL LOCATIONS



This enables the user to obtain Met and Notam information for single nominated locations.

1. Enter the aircraft ID or flight number
2. Tick either MET or NOTAM depending on what products are required
3. Tick Head office NOTAM or SIGMET if they are required
4. Enter validity time of briefing from 0 to 240 hours (default is 24 hours) only data current within this time will be presented.
5. Enter up to 10 locations in the spaces provided
6. To get an area forecast enter the number of the forecast only
7. To get FIR NOTAM, enter the area forecast area with the prefix 7 and ending in a zero
8. To get Restricted area Notams enter the restricted area number in full, if it is part of an airspace group enter the group designator (R623A or AMX)

9. Individual locations can be entered in the following formats:

   Full name (**BRISBANE**),

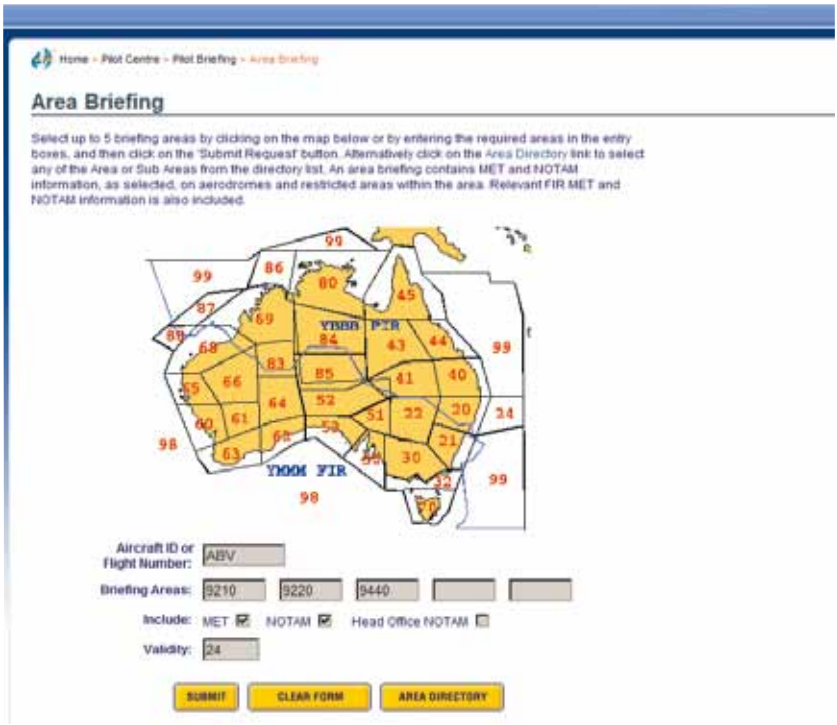
   ICAO four letter designator (**YBBN**),

   Navaid identifier (**BN**)

10. The briefing request can be saved by clicking on the "SAVE" icon

11. Use location search to find location codes if not known

BRIEFING BY AREA'S



This enables the user to obtain Met and Notam briefings for nominated briefing areas based on the area forecast areas.

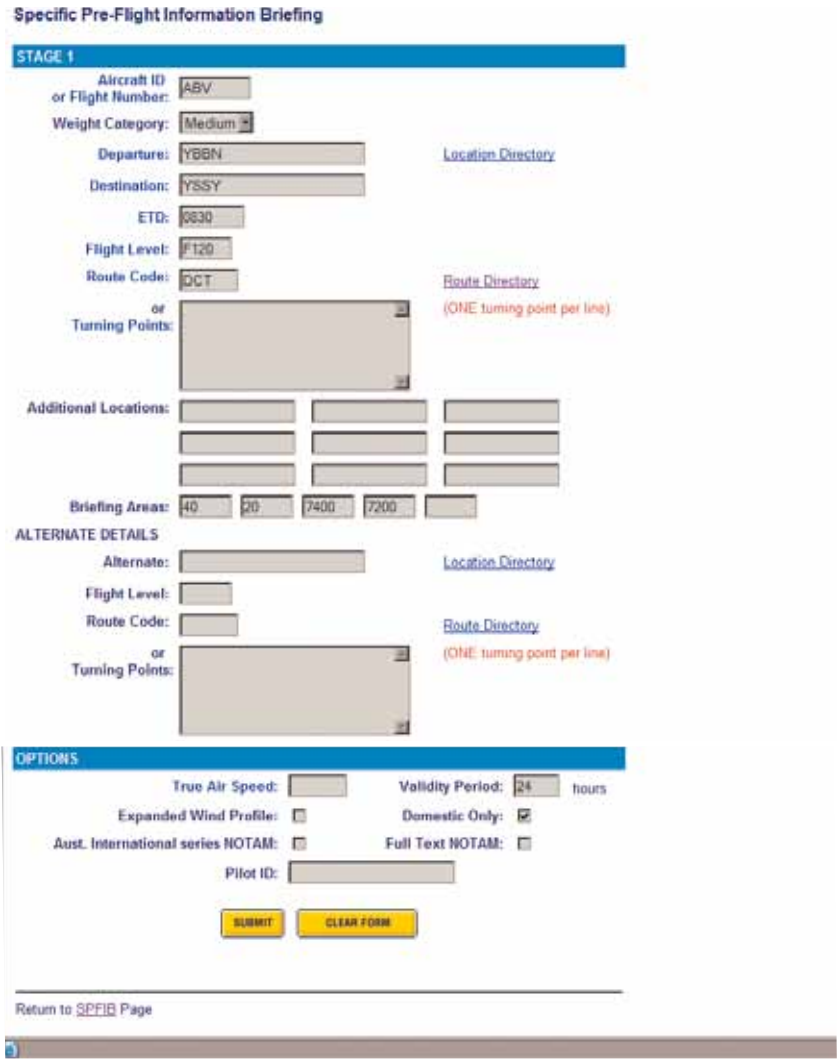
A 9 series, four digit number must be entered, this number consists of

- the number 9

- the area forecast area for which the briefing is required
- the number 0

1. Enter the aircraft ID or flight number
2. Met and Notams can be selected depending on what products are required for up to 5 areas
3. Tick head office NOTAM if required
4. Enter validity time of briefing from 1 to 240 hours (default is 24 hours) only data current within this time will be presented.
5. An Area directory and map is available to help with selection of the area and code

BRIEFING BY ROUTE



The SPFIB enables Met and Notam information relevant to the departure, destination and enroute locations to be retrieved. Wind and temperature information relevant to the route will also be available if flying above F110.

- a maximum of 10 stages can be created

- the SPFIB form can be saved onto your computer
- a SPFIB saved in NAIPS as a flight file can be activated via the icon
- access to the routes stored in NAIPS is available via the Route Directory, use of the stored routes guarantees a complete briefing will be provided
- the SPFIB will be valid for a nominated time (1 to 240 hours) and a briefing reference number will be allocated to each briefing to enable updates to be obtained at a later time.
- Notams are presented as a 1 line summary if more than 7 days old, full text can be obtained if required
- filters are applied to SPFIB Time, height, wake turbulence, these can affect the amount of data that is received

NAIPS FLIGHT NOTIFICATION

You can lodge the full Domestic ICAO Flight Notification or the much simpler SARTIME notification.

- the DOMESTIC/ICAO notification is required for flights into controlled airspace except GAAP.
- the SARTIME notification may be used for OCTA flights.

The NAIPS printed flight notification format is not suitable for use in flight so a separate flight plan and flight log is required for this purpose.

You can use

- data generated from the pre-flight briefing (SPFIB) via the website only;
- stored flight files or Airservices' stored routes or you can store your own;

It is necessary to follow the required format otherwise the plan will be rejected by the system;

All light blue fields are mandatory;

For training purposes you can lodge practice notifications under IDENT NOSEND; Some notable requirements are:

- speed in knots is entered Nxxxx i.e. 105 knots is N0105;
- endurance and estimated elapsed time (EET) are in hours and minutes (hhmm) so 300 minutes is 0500 (note: unfortunately this is contrary to the common practice on flight plans and flight logs used in navigation where times are kept in minutes).

- aircraft types are international designations i.e. a Warrior is a P28A (listed on Airservices website and in NAIPS).
- route: use DCT for "direct" (this limits information to departure and destination aerodromes) or list significant points along route.
- performance category is based on an aircraft's speed at threshold (VAT); Category A is up to 90 KIAS and categ ory B 120 KIAS; (AIP ENR1.5.1.2.1)
- NAIPS will not let you nominate multiple SARTIMEs for multistage flights so either use "TBA" for the later stages and activate them via FLIGHTWATCH or nominate a SARTIME only for the final stage.

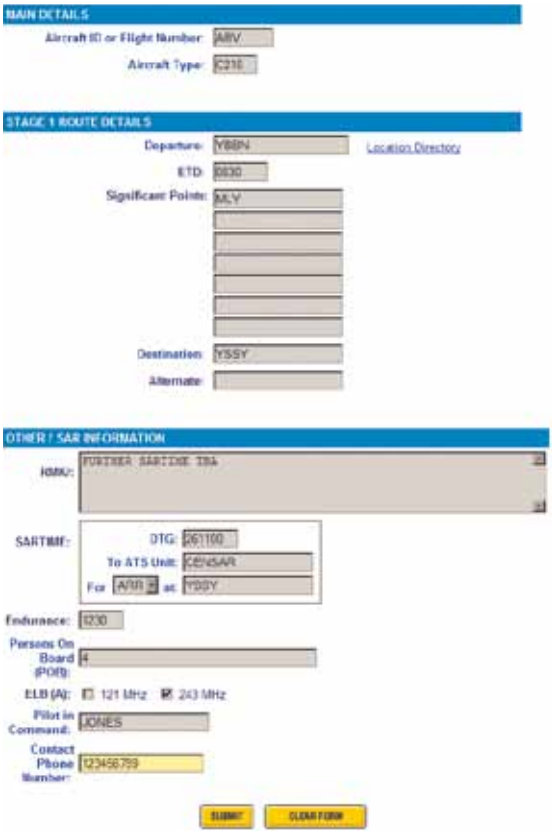
A flight notification form is accessed via the NAIPS briefing menu.

Neither of the NAIPS formats are intended for use in flight. A flight plan form is required for this purpose Since the SARTIME format may not contain sufficient detail for search and rescue purposes, a flight note with a responsible person plus a SARTIME notification provides the maximum protection possible provided that the flight note details are available to AusSar. One way to ensure this is to add these details to the RMK/: section such as : "Flight note with Bunyip Aero Club (03) 9739 1406".

AusSAR contact details are: tel 1-800-815 257
fax 1-800-622 153

The following details are applicable to typical light GA aircraft under VFR. More extensive details can be found at www.airservices.com/brief/naipsdoc.htm.

NAIPS SARTIME FLIGHT NOTIFICATION



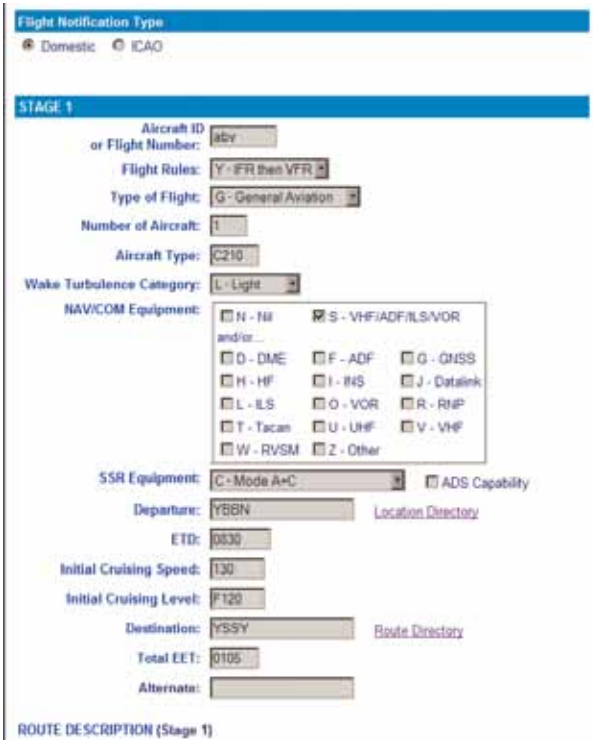
The SARTIME form of flight notification is the simpler alternative and only requires basic information but it can only be used for operations wholly outside controlled airspace (OCTA) or for GAAP.

SARTIME FLIGHT NOTIFICATION

- **A** 2 legs with a Sartime for each leg
- **B** Route details (not mandatory)
- **C** Sartime for arrival YMCF (first leg)
- **D** Indicating a Sartime is required for the second leg

Departure	Use 4 letter designator such as **YMMB**; if not known check the list in the location directory link; if no designator allocated, specify the latitude and longitude in the form **DDMMSDDDMME**.
ETD	enter the estimated departure time in a four figure UTC format **HHMM**
Significant Points	Enter significant points along the route as a four letter designator **YXXX** or in latitude and longitude in the form **DDMMSDDDMME**.
Destination	Enter the destination as a four letter designator **YXXX** or in latitude and longitude form **DDMMSDDDMME**.
Alternate	Enter alternate aerodrome
RMK/:	Enter any other relevant information here such as who has the flight note. For example : *FLT note with (03) 9739 1406 or 0418 358 250.*
SARTIME **DTG:** **To ATS Unit:** **For:** **At:**	Only one SARTIME is permitted per flight notification; use six figure UTC date time group **DDHHMM**; enter the ATS unit who will hold the SARTIME ie CENSAR; select whether for arrival or for departure; enter the destination aerodrome designator or the latitude and longitude in the form **DDMMSDDDMME**.
Endurance	In hours and minutes as :**HHMM**
Persons on Board	up to 20 characters of free text.
Alternate	Enter designator of alternate if applicable

NAIPS DOMESTIC/ICAO FLIGHT NOTIFICATION REQUIREMENTS

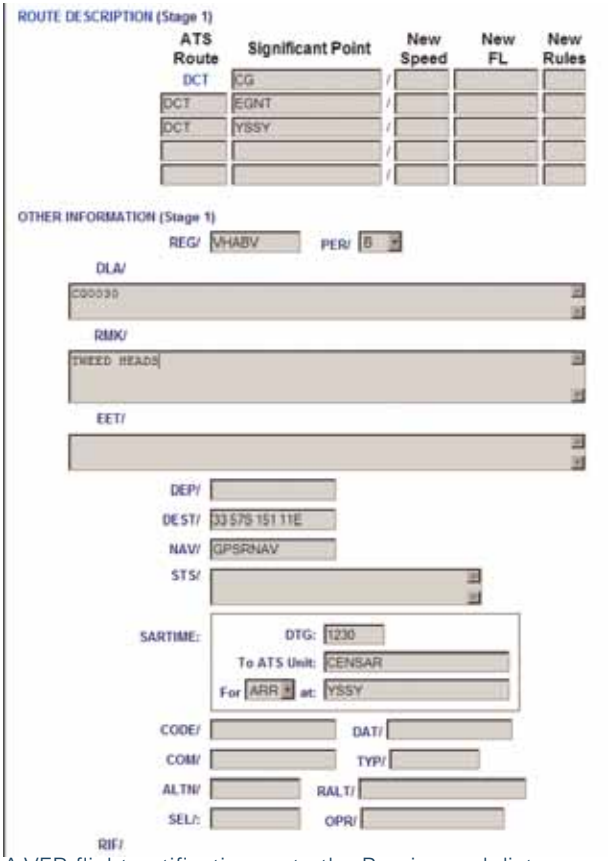


The following is the full flight notification which is required for flights in controlled airspace.

FLIGHT NOTIFICATION SUBMISSION

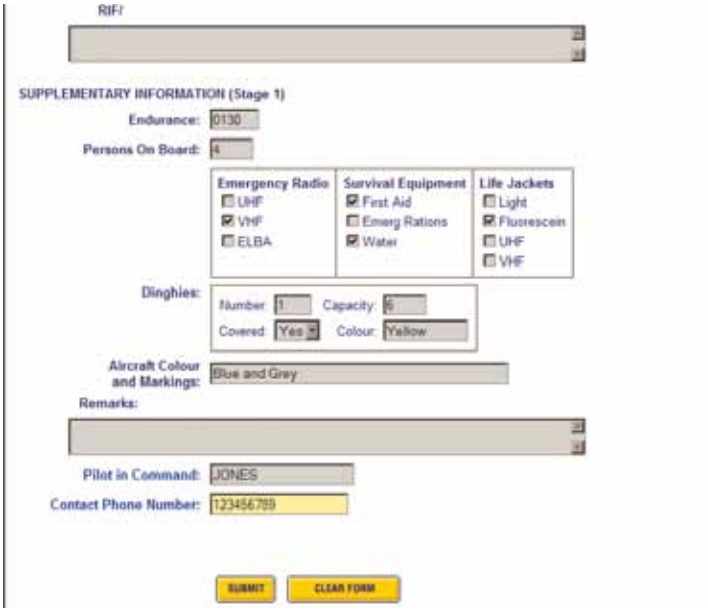
A VFR flight tracking via published routes.

B Aircraft is equipped with an approved GPS, requires Z in Nav/Com equipment and GPSRNAV in field 18 NAV/



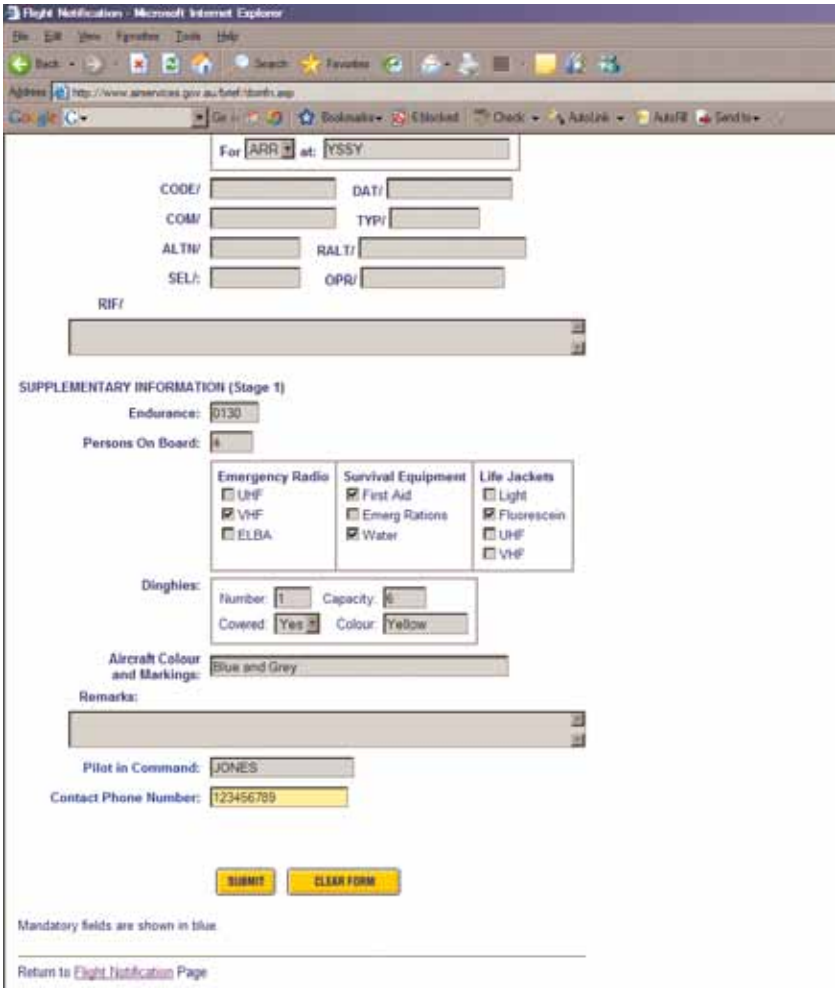
A VFR flight notification, note the Bearing and distance and latitude/longitude in the significant points section of the route:

- **A** Bearing and distance is Location followed by 6 figures DDDMMM
- **B** Latitude/longitude can be either 7 (eg. 23S1413E) or 11 characters (eg. 2330S14320E)



A training flight with airwork being conducted at Coolangatta for 30 minutes

Ⓐ This is indicated by DLA/CG0030 (delay GG for 30 mins) this is the location or area that the aircraft will be operating for a specified time.



VFR flight to a location that does not have a valid code.

- **A** ZZZ is used as the destination code and expanded in field 18 DEST/
- **B** Real place name in field 18 RMK/
- **C** The latitude and longitude of the destination in the format DDMMS DDDMME

Aircraft ID or Flight Number	Use format **XXX**. Use **NOSEND** for practice runs.
Flight Rules	Use V for VFR
Type of Flight	Use G for general aviation
Number of Aircraft	Enter 1 unless a formation
Aircraft Type	Must be in the ICAO designator format for the aircraft ie **P28A** for Warrior; **C150** for Cessna 150. Full list available from Airservices website or NAIPS.
Wake turbulence Category	L for aircraft MTOW of 7,000 KG or less
Nav/Com. Equipment	Use **V** for VHF; **O** for VOR; **F** for ADF; **N** for no serviceable equipment; for GPS enter **Z** and in information enter **NAV/GPSRNAV**
SSR Equipment	**C** for mode C transponder; **N** for no serviceable transponder
ADS Capability	Refers to Automatic Dependent Surveillance; usually not applicable.
Departure	Use the four letter designator such as **YMMB**; if not known check the list in the location directory link; if no designator is allocated, use **ZZZZ** and in the **DEP/:** field specify the location as described below under **DEP/:**
ETD	Enter the estimated departure time in a four figure UTC format **HHMM** or six figure **DDHHMM** if notification is more than 21 hours in advance of ETD and is submitted by internet or briefing office. NAIPS for Windows V 3.4.0 accommodates ETD's up to 7 days in advance.
Initial Cruising Speed	TAS; for knots use the format **Nxxxx**; note always four digits after the **N** eg: N0120
Initial cruising Level	For altitudes use format: **Axxx**; note always three digits after the **A** eg: A065
Destination	Use 4 letter designator such as **YMMB**; if not known check the list in the location directory link; if no designator is allocated, use **ZZZZ** and in the **DEST/:** field specify the location as described below under **DEST/:**
Total EET	Estimated Elapsed Time as **HHMM**
Alternate	Enter four letter designator of alternate if applicable
Route Description	Is used only for stored routes.

ATS Route	Use the designated route identifier; usually not applicable to VFR.
Significant Point	Use the four letter designator or alternatively use either latitude and longitude in degrees (7 characters): **DDSDDDE**; or degrees & minutes (11 characters): **DDMMSDDDMME**; or bearing and distance (10 characters) **YXXXDDDNNN**
New Speed	Enter the new speed to be maintained if a change in TAS of more than 5% occurs at the significant point
New FL	When a change of level at a significant point is planned
New Rules	When a change of flight rules (VFR/IFR) occurs at a significant point

NAIPS (CONTINUED)	
REG/:	Use format **VHxxx**; note: there is no hyphen.
PER/:	Performance category based on VAT (speed at threshold); for most light aircraft this is less than 91 knots which is category **A**
DLA/:	(delay) used for advising operations in a particular area for a given time; format **DLA/XXXX HHMM**
RMK/:	(remark) use plain language.
EET/:	Estimated Elapsed Time; not required for domestic flights.
DEP/:	If **ZZZZ** was used in the departure field enter latitude and longitude in the format **DDMMSDDDMME** or in the magnetic bearing (M) and distance from a known location format as follows: **YXXXDDDNNN** where **D**=degrees magnetic and **N**=nautical miles.
DEST/:	If **ZZZZ** was used in the destination field enter latitude and longitude in the format **DDMMSDDDMME** or in the magnetic bearing (M) and distance from a known location format as follows: **YXXXDDDNNN** where **D**=degrees magnetic and **N**=nautical miles.
NAV/:	Enter significant data related to navigation equipment such as **NAV/GPSRNAV** for GPS.
STS/:	Requirement for special handling ie mercy flight
SARTIME/:	Use six figure UTC group **DDHHMM**; Only one SARTIME is permitted per flight notification
CODE/:	Applies to Mode S transponders
DAT/:	(data) Applies to data link capability
COM/:	Enter significant data relating to communications equipment.
TYP/:	(type) If **ZZZZ** was used in the Aircraft Type field, enter types followed by the number as applicable
ALTN/:	If **ZZZZ** was used in the Alternate field, enter the latitude and longitude of the alternate aerodromes.
RALT/:	Enter the name of any enroute alternative if applicable.
SEL/:	SELCAL code applicable to international aircraft.
OPR/:	Enter name of operator if applicable.
RIF/:	Enter route details to revised destination aerodrome followed by four letter indicator if applicable.

Endurance	In hours and minutes as :**HHMM**
Persons on Board	Up to 20 characters of free text.
Emergency Equipment	Select types carried
Dinghies	Enter number, capacity, cover and colour
Aircraft Colour and Markings	Self explanatory
Remarks	As required
Pilot in Command	Enter initials and name.
Contact Phone Number	Mobile number for preference unless likely to be out of mobile range at the destination.

COMMON AIRCRAFT TYPE DESIGNATORS (ICAO) FOR NAIPS

Auster
J-1 J1
J-5 Autocar ACAR

Beagle
Pup PUP
Airedale AIRD

Beechcraft
Baron 55 BE55
Baron 58 BE58
Bonanza 33 BE33
Bonanza V tail BE35
Bonanza 36 BE36
Musketeer BE23
Sundowner BE23

Bellancia Citabria CH10

Cessna
150 C150
152 C152
172/RG C172
Cardinal C177
182/RG C182
205 C205
210 C210
310 C310
337 C337

de Havilland
DH60 Moth DH60
Tiger Moth DH82
Chipmunk DHC1

Grumman
Trainer AA1
Traveller AA5
Luscombe 8 L8

Mooney
Mark 20 M20
Mark 21 M21
Mark 22 M22
201 M201**
231 MO2K

Partenavia P68 PN68

Piper
J2 Cub J2
J3 Cub J3
Colt PA22
Tripacer PA20
Super Cub PA18
Tomahawk PA38
Cherokee P28A
Archer P28A
Cherokee 235 P28B
Arrow P28R
Cherokee 6 PA32
Comanche PA24
Twin ComanchePA30
Apache PA23
Piper Aztec PA23
Seneca PA34
Seminole PA44

internet briefings

MET and NOTAM briefings are available via the Internet, similar to AVFAX, for areas and locations. This service is available via the Airservices' home page:

http://www.airservicesaustralia.com

When prompted, apply for a user name and password which will be issued immediately.

YOUR USER ID	
YOUR PASSWORD	

Information available via the Internet includes:

- location specific NOTAM;
- FIR and sub-FIR NOTAM;
- head Office NOTAM;
- area forecasts, Area QNH, METAR/SPECI, TAF, SIGMET, AIRMET and ATIS.

FLIGHT INFORMATION OFFICES

Briefing staff provide a flight notification acceptance service and NOTAM, meteorological and other briefing information by telephone and facsimile in response to requests for specific information. Long distance call charges apply.

Telephone: 1800 805 150

AVFAX

Fax number 1800 805 150;

Touch tone is used for requesting data which is then faxed back.
Full details of codes and designators are published in ERSA at GEN.
A phone away card is required.

Each briefing contains a reference number to facilitate updating. Registration is via the help desk on (07) 3866 3573 or fax (07) 3866 3685.

A fast access mode is provided which is suited to auto-dialling.

Five digit product codes are used to request the required material. The first digit is the Product Type Prefix in accordance with the following:

0 used only with a custom code (a code registered by the user which allows up to 41 products by using one code)

1 meteorological information. For use with location or group.

2 NOTAM information only for a single location or group. Only a one-line summary will be received for NOTAMS over seven days old.

3 en route NOTAM for overflying aircraft.

4 meteorological and NOTAM information for single location only.

5 NOTAM with full text regardless of age for single location only.

6 meteorological and NOTAM information for use with group only.

7 GPS RAIM

8 charts pictorial information and special products

9 NOTAM selected by text and number – full text will be provided.

The following four digits are the product code.
Example: 16500 is the code for Forecast Area 65.
Group codes are denote information areas coincident with ARFOR areas.
The complete code list is in ERSA GEN.

DECTALK

Phone 1800 805 150 and when prompted, key in the access code : 1111. The codes are listed in ERSA GEN.

Registration is not required for DECTALK and charges are made via your Phone Away card.

domestic flight notification form

An example of the Australian Domestic Flight Notification form is shown below.

Instructions for completion of the Australian Domestic Flight notification form for both IFR and VFR flights are contained on the following page. In a number of cases, particularly in Item 19, completion is recommended as good practice. If mandatory Items are left incomplete, delays may occur.

Books of flight notification forms are available from the Airservices Publications Centre at a charge. For flights not operating along an ATS route, estimated elapsed times should be provided for locations approximately 30 minutes or 200NM apart.

If a common name is entered into NAIPS in lieu of aerodrome abbreviation or navigational aid/waypoint, the flight notification output will assume that the aircraft is tracking over a navigational aid/waypoint and not the aerodrome; eg, the location HOLBROOK will translate to HBK, not YHBK.

Pilots entering details in terms of latitude and longitude or by the use of bearing and distance must adhere to the correct format. Location abbreviations should be the published in AIP abbreviations.

In instances where NAVAID training is required, but diversion to an alternate aerodrome for that training is likely, and when procedures at the alternative location require the submission of flight notification, the pilot will be required to provide details of both locations in Item 15 (Route), expanded in Item 18(a). For example, for an aircraft requiring PILS at either Sydney, or alternatively Richmond:

DCT BK PEC MQD SY RIC BK DCT

Item 18(a) will show SY PILS or RIC PILS. Pilots not formally required to submit flight notification, or leave a flight note as defined in the preceding paragraph, are nevertheless encouraged to leave a flight note as shown on page 191.

Pilots of VFR flights must include POB when submitting flight notification or when leaving a flight note and are encouraged to notify ATS of any subsequent changes.

Australian Domestic Flight Notification Form — Page 1 / 1

7. Aircraft Identification	8. (a) Flight Rules	Type of Flight
ZFR	I (IFR) V (VFR) Y (IFR/VFR) Z (VFR/IFR)	S N G M

9. No.	Type	Wake Turb Cat	10. Nav/Com Equip (Circle the equipment carried by the aircraft that the pilot is qualified to use)	Surveillance Equip
	C-172	H M L	N or S and\or — D F G H I J L O R T U V W Z (DME, ADF, GNSS, HF, INS, Data Link, ILS, VOR, RNP, TACAN, UHF, VHF, RVSM, Other)	N A C D

13. DEP Aerodrome	ETD	15. Cruising Speed	Level	16. DEST Aerodrome	Total EET	ALTN Aerodrome
YBAF	0100	N 0105	A 045	YBRK	02 05	

15. Route: DCT DBO MLY TNG DCT

16. (a) (info relevant to Stage 1)

(Stage 2)

13. DEP Aerodrome	ETD	15. Cruising Speed	Level	16. DEST Aerodrome	Total EET	ALTN Aerodrome
YBRK	0330	N 0105	A 055	YBAF	02 10	

8. (b) I (IFR) V (VFR) Y (IFR/VFR) Z (VFR/FR)

15. Route: DCT GLA MYB DBO DCT

18. (a) (info relevant to Stage 2)

(Stage 3)

13. DEP Aerodrome	ETD	15. Cruising Speed	Level	16. DEST Aerodrome	Total EET	ALTN Aerodrome
		N (Knots) M (Mach)	A F		HR MIN	

8. (b) IFR V VFR Y IFR/VFR Z VFR/FR

15. Route

18. (a) (info relevant to Stage 3)

18. (b) (Information relevant to all stages)

REG/VH ZFR

PER/

STS / SARTIME		To ATS Unit	Location	Dest Tel No:
Date / Time 230700	Arr / Dep	CENSAR	YBAF	07 40 355 555

Supplementary Information

19. Endurance HR MIN	Aircraft colour / markings	Persons on Board
E/ 05 00	WHITE / RED	P/ 2
E/ 05 00 S/	(Circle if carried) P (First Aid) D (Emerg Ration) M (Water) J (Jackets) E (Emergency Locator)	Dinghies D/ Number Capacity Cover C Colour
E/		P/ 2
		P/

N/ Remarks

C/ Pilot-in-command	Phone	Mobile	FAX	Company
G. RANT	07 3511 7543	07 3217 5890		PRIVATE

Briefing 1800 805 150 FAX 1800 805 150 PILOT PC ACCESS 0198 304 767 CENSAR 1800 814 931

APPENDIX 3

ATS FLIGHT NOTIFICATION - USER GUIDE

ITEM 7 - AIRCRAFT IDENTIFICATION

Enter	Aircraft registration/flight number. ZZZZ and TBA cannot beaccepted.
Requirements	For VH registered aircraft, enter the three letters after the prefix only, eg for VH-ZFR enter ZFR.
	For flight numbers, and other approved callsigns, enter a mixture of figured and letters that do not exceed seven characters; eg QF 611.
	One callsign per flight notification.

ITEM 8 - FLIGHT RULES

Circle	I for Instrument Flight Rules (IFR)
	V for Visual Flight Rules (VFR)
	Y for IFR then VFR
	Z for VFR then IFR
Requirements	If Y or Z is circled, an entry in Item 15 must specify where the change of flight rules will occur; eg YBAF VFR.

Type of flight

Circle	S for scheduled air service
	N for non- scheduled air service
	G for general aviation
	M for military

ITEM 9 - NUMBER OF AIRCRAFT

Enter	Number of aircraft where there are more than one, otherwise leave blank.

Type

Enter	Aircraft type. Where more than one aircraft type is included in a formation, enter the type of the lowest performance aircraft. Additional details regarding the formation must be inserted at Item 18.

Requirements Use the two or four letter ICAO approved aircraft type abbreviations.

For aircraft type abbreviations not approved by ICAO, enter ZZZZ and specify the type of aircraft in Item 18 (b) preceded by TYP/

Wake Turbulence Category

Circle H for aircraft 136,000 KG or more

M for aircraft between 7,000 and 136,000KG

L for aircraft 7,000KG or less

ITEM 10 - EQUIPMENT

Circle the equipment carried by the aircraft that the pilot is qualified to use:

N for no COM/NAV/Approach Aid equipment for the route to be flown or the equipment is unserviceable

S for standard COM/NAV/Approach Aid equipment of VHF/ADF/ILS/ VOR

D for DME

F for ADF

G for GNSS (reserved for future use)

H for HF

I for Inertial NAV

J for Data link

L for ILS

O for VOR

R for RNP type certification

T for TACAN

U for UHF

V for VHF

W for Reduced Vertical Separation Minimum (RVSM)

Z for other equipment

Note: G does NOT mean GPS. If an aircraft is fitted with an approved GPS receiver, circle Z, and in Item 18(b) insert NAV/GPSRNAV.

SURVEILLANCE EQUIPMENT

Circle	N for Nil
	A for Transponder Mode A
	C for Transponder Mode C
	D for ADS equipped aircraft

ITEM 13 - DEPARTURE AERODROME

ITEM 16 - DESTINATION AERODROME

ALTERNATE AERODROME

Enter	Aerodrome abbreviation in four letters.
Requirements	Use the four letter authorised abbreviation.
	For aerodromes without an authorised abbreviation, enter ZZZZ. In Item 18(a) write DEP/ (or as applicable "DEST/ ALTN/") followed by the latitude and longitude of the aerodrome or bearing and distance from a location with an authorised abbreviation.
	In item 18(a), enter the common name of the alternate location after RMK/

Note: For bearing and distance, enter the designator of the location followed by three figures in degrees magnetic followed by three figures in nautical miles, eg BN270120 is a position 120NM, 270 degrees from Brisbane.

AFIL	AFIL (Flight Notification Filed in the Air) can be used instead of the departure aerodrome abbreviations when ATS services are only required for entry to, or to cross controlled airspace. (Time of Departure become the estimate for the point where the ATS service is to commence).

TIME OF DEPARTURE

Enter	Estimated time of departure (ETD) in four figure UTC, or the estimate for the point where the ATS service is to commence (applicable for use with AFIL - as referred to above in the departure aerodrome section).

Requirements	Provide an ETD for every flight stage. ETDs of more than 22 hours at the time of notification cannot be accepted. A change of more than 30 minutes to a submitted ETD should be advised to ATS.

ITEM 15 - CRUISING SPEED

Enter	Enter TAS in knots or enter Mach number.
Requirements	Circle N, then enter zero and three figures for knots; eg, 0180. Circle M, then enter zero and two figures for mach number to the nearest hundredth of a unit; eg, 082.

LEVEL

Enter	First planned cruising level. "A" followed by three figures to indicate altitude in hundreds of feet up to and including 10,000FT eg A085. "F" followed by three figures to indicate flight levels above 10,000FT; eg. F350
Requirements	Cruising levels must be entered in the required format.

ITEM 15- ROUTE

Enter	Details of the planned route, change of level, flight rules and cruise climb.
Requirements locations / published	for For an aerodrome, use the authorised abbreviation; eg YMBL for Marble Bar. For a navaid identifier, use two or three letter abbreviation; eg KSC for Kingscote NDB.
waypoints	For a latitude and longitude identification, use degrees and minutes in an eleven character group; eg 2730S15327E. For a waypoint use assigned designator; eg CANTY. For bearing and distance, enter the designator of the location followed by three figures in degrees magnetic followed by three figures in nautical miles; eg BN270120 is a position 120NM, 270 degrees from Brisbane.
Requirements	For ATS route designator, enter published chart designator;

for route

eg, B456, H62.

Route details must start with DCT (direct) to indicate the flight is planned to track from the departure aerodrome (YSCB for Canberra), to the first en route point, then from the last en route point to the destination (YSSY for Sydney); eg DCT CB SY DCT.

When planning to track direct from the departure aerodrome to the destination aerodrome, ie without the use of navigational aids, enter DCT only.

When operating outside a designated ATS route, enter DCT followed by a significant point; eg DCT PH CKL BIU PH DCT or DCT 1239S14325E 1300S14335E.

When operating in a designated ATS route, enter the name of the location where the route is joined followed by the route designator; eg on a flight departing Ceduna for Griffith via the route designators J49 and B469 enter DCT CD J149 WHA B469 in Item 15.

On survey work in a block or airspace, enter DCT followed by significant points to the survey area, included the point of commencement of survey, then the point of exit from the survey area and the significant points to the destination;

eg, DCT BN KCY GAY YGYM MC BN DCT.

When planning to conduct survey work, a map of the survey area must be provided to ATS with the flight notification.

When planning survey work, write in Item 18(b) the expected delay (DLA) at the commencement of survey; eg DLA/GAY 0130 indicates a delay at Gayndah for 90 minutes.

Note1: A designated route begins and ends at the navaid except where the departure or destination is not serviced by a navaid.

Note 2: Pilots should refer to AIP ENR 3.1 para. 2 "Route Specifications" and AIP ENR 1.1 para. 17 "Navigation Requirements" when planning a route.

Requirements for change of speed/level	Enter the significant point where the change will occur, followed by an oblique stroke, the cruise speed and the level; eg, AY/N0130A080. Both cruise speed and level must be entered even if only one has changed.
Requirements for change of flight rules	Enter details of a change to flight rules following the entry in Items 8 of Y or Z. Enter the location where the change will occur followed by a space and VFR or IFR; eg YBAF VFR. Can accommodate change in level; eg ROM/N0180A090 IFR. Requirements for cruise Enter the letter C followed by an oblique stroke, climb/ block level the point at which the cruise climb or reservation is reservation planned to start, an oblique stroke, the speed to be maintained during the cruise climb or reservation, AND the two levels defining the layer to be occupied during the cruise climb or block reservation, OR one level and the word PLUS; eg C/FERET/N0380F370F390, orC/FERET/N0380F370PLUS

TOTAL EET

Enter	Total estimated elapsed time of the flight as four figures in hours and minutes; eg 0340 and include any aerial work delay noted as DLA in Item

ITEM 18(A).

Enter	Other information relevant to a stage of the flight and information about navaid training, block surveys and other plain language remarks of significance.
EET	Use EET/ to indicate EETs for flights along designated ATS routes at compulsory reporting points and for flights outside designated ATS routes at points approximately 30 minutes flying time or 200NM apart. Enter EET/ followed by the designator, the elapsed time in hours and minutes from the departure point to the significant point, including any DLA time associated with airwork from the last route segment, a space, and other point/time groups with a space in between each one ie; eg EET/BN0035 MLY0100 GAY0204 indicated an elapsed time to Brisbane of 35 minutes, Maleny 60 minutes and Gayndah 124 minutes.

DEP	DEP/ when ZZZZ has been entered in Item 13 followed by latitude and longitude or bearing and distance from a location with an authorised abbreviation; eg DEP/BN090120
DEST	DEST/ when ZZZZ has been entered in Item 13 followed by latitude and longitude or bearing and distance from a location with an authorised abbreviation eg, DEST/2730S1527E
ALTN	ALTN/ when ZZZZ has been entered in item 13 followed by lattitude and longitude or bearing and distance from a location with an approved abbreviation; eg ALTN/2700S15320E.
DLA	DLA/ When aerial work will be conducted at a location followed by the point where the aircraft will be operating, a space, the estimated time in hours and minutes as a four figure group eg; DLA/MDG 0030 RMK/MDG NDB indicated that the aircraft will be delayed at Mudgee for 30 minutes training on the NDB.
RMK/FLT	Insert if flight numbers are used either in RTF phraseologies or for traffic sequencing, and are not entered in Item 7.
RMK/FORM	Insert details of the aircraft taking part in a formation flight if more than one aircraft type is included in the formation. The number, type and wake turbulence category of the second and subsequent types of aircraft are entered, separated by a plus sign; eg, RMK/FORM 2PC9+4F18 M OPS in R577

ITEM 18 (B)

Enter	Other information relevant to ALL stages of the flight.
OPR	OPR/ when name of operator is required.
TYP	TYP/ when an approved aircraft type designator has not been assigned and ZZZZ has been entered in Item 9; eg TYP/ Echo Mk1.
REG	REG/VH enter full aircraft registration; eg REG/VHZFR
PER	PER/ to indicate aircraft performance as described in AIP ENR 1.5 para. 1.2; eg PER/B. IFR aircraft arriving at a controlled aerodrome must insert their performance category.
STS	STS/ for special aircraft handling; eg STS/MED 1, STS/MED 2.

COM	COM/ when changes to communication equipment and ZZZZ has already been entered in Item 10; eg. COM/HF3452.
NAV	NAV/ when changes to navigation equipment and ZZZZ has already been entered in Item 10; eg NAV/GPSRNAV.
DAT	Datalink capability as follows: DAT/S Satellite DAT/H HF DAT/V VHF DAT/M S SR Mode S
CODE	CODE/ (reserved for future use).

STS/SARTIME

Requirements	Date/time as a six figure group. Only one SARTIME to be entered as per flight notification; eg 080430. If more than one SARTIME is desired, then TBA can be entered as remark in Item 18(a) of each stage. "For Arrival At" (or departure) aerodrome for cancellation of SARTIME enter location as: authorised aerodrome abbreviation, or navaid identifier, or latitude/longitude ZZZZ cannot be accepted.

ITEM 19 - SUPPLEMENTARY INFORMATION

Enter	Additional information relevant to the flight for search and rescue purposes (optional).
Requirements	Fuel endurance to be entered for each stage of flight in hours and minutes after E/; eg 0430 hours. Under "dinghies", enter number of dinghies carried, the total capacity of ALL dinghies and colour. Persons on board to be entered as the total number carried for each flight. Enter TBA if the number is to be advised after time of filing flight notification. Survival equipment to be circled as follows:

domestic flight notification form

- P - First Aid
- D - Emergency Rations
- M - Water
- J - Jackets

"Remarks" is provided for any additional survival equipment carried. Pilot in command should include telephone, mobile and fax number, and company name.

flight note

case with an AVFAX or NAIPS Flight Notification. It is a document, left with a responsible person which gives full details of the planned flight and an expected time of arrival at the destination. It would be used for search and rescue purposes should you fail to cancel the Flight Note by the time you have nominated.

Thus a Flight Note does not provide an official SARWATCH but relies on action by the responsible person calling the AusSAR number (1800 815 257) on the form.

The recommended format, provided by Australian Search and Rescue (AusSAR), is shown below. The forms (called AMSA 104) are available from the AusSAR web site at www.amsa.gov.au/forms/index.asp. It is in the Search and Rescue block under Flight Note.

Note that, in order to be fully effective, complete details of the planned tracks and landing points should be provided on the Flight Note.

FLIGHT NOTE EXAMPLE

Australian Government
Australian Maritime Safety Authority

FLIGHT NOTE

Note: All times are local at that location
PLEASE PRINT CLEARLY - USE BLACK INK IF POSSIBLE

Latest cancellation time at final destination (local)			Date
		1500	15/8/01

Call-sign	Type	Navaids carried and used (include GPS)	
ZFR	C-172	VOR/NDB/GPS	

Pilot	Mobile phone No.	Home contact (name & phone)	TAS
A. BROWNE	0470070007	Christine Browne-0730073007	105 KT

Complete a separare line for each flight sector

DEP AD / Point & phone No.	ETD (Local time)	Route (Turning points)	DEST & phone No.	POB	Endurance Hr	Endurance Min
YGDI 0470070007	0830	GDI-TWB-AF	YBBN	3	05	00

Remarks
(eg mobile phone numbers of passengers / registration if different from call-sign / any other useful information to aid Search and Rescue)

Note: Remember to turn on mobile phone after landing

Emergency equipment
(tick boxes as appropriate)

ELT ☑ Fixed ☑ Portable Frequency (if known) ☐ 406MHz ☐ 121.5MHz

First Aid ☑ **Emerg. Rations** ☑ **Water** ☑ **Lifejackets** ☐ **Liferaft** ☐ capacity / colour 121.5/302

Other signalling / life-saving devices

Aircraft colour / markings	Operating company name & contact No.
White/Blue	A. Browne 0407 007 007

The holder of this flight note should contact AusSAR if the pilot has not arrived at the destination by the cancellation time shown above. Any delay could be crucial to the safety of the occupants of the aircraft.

AusSAR: 1800 815 257 (freecall)

Copies of this form can be obtained from AMSA .amsa.gov.au/Forms/index.asp

AMSA 104 (11/05)

in-flight information

PILOT RESPONSIBILITY

Pilots are responsible for requesting information necessary to make operational decisions.

OPERATIONAL INFORMATION

Information about the operational aspects of the following subjects is normally available from ATS:

- meteorological conditions;
- air routes and aerodromes, other than ALAs;
- navigational aids;
- communications facilities;
- ATS Procedures;
- airspace status;
- hazard alerts;
- search and rescue services;
- maps and charts; and
- regulations concerning entry, transit and departure for international flights.

IN-FLIGHT INFORMATION

The in-flight information services are structured to support the responsibility of pilots to obtain information in-flight on which to base operational decisions relating to the continuation or diversion of a flight. The service consists of three elements:

- Automatic Broadcast Services.
- On Request Service, and
- Hazard Alert Service.

AUTOMATIC BROADCAST SERVICES

The automatic broadcast services consist of:

- Automatic Terminal Information Service (ATIS)
- Automatic En Route Information service (AERIS),
- Automatic Weather Information Broadcast (AWIB), and
- Meteorological Information for Aircraft in Flight (VOLMET).

ATIS

At aerodromes specified in ERSA the normal operational information required by aircraft prior to take-off or landing is broadcast automatically and continuously either on a discrete frequency or on the voice channel of one or more radio navigation aids. The broadcast may be pre-recorded or computerised.

When control zones are deactivated the ATIS may be used to broadcast operational information of an unchanging nature. This information may include PAL frequency, preferred runways and noise abatement procedures. It may also include the expected reopening time of the tower. Pilots are encouraged to monitor the ATIS outside the normal hours of the tower. There is no need to nominate receipt of the ATIS code with CTAF reports.

The following information is transmitted at civil aerodromes: (aerodrome) TERMINAL INFORMATION (code letter ALPHA, BRAVO, etc, as assigned to each separately prepared transmission). ZULU is not used. TIME (hh mm UTC) {Time of observations if appropriate} Type of approach expectation; eg, "EXPECT ILS APPROACH", etc

One runway in use:

RUNWAY (number), [DAMP], [WET], [WATER PATCHES] [FLOODED] (if applicable)

or

More than one runway in use:

RUNWAY/S (number/s) AND (number/s) FOR ARRIVALS,
RUNWAY/S (number/s) AND (numbers/s) FOR DEPARTURES
[DAMP] [WET] [WATER PATCHES] [FLOODED] (if applicable)
Holding delay, if appropriate; eg "...MINUTES HOLDING MAY BE EXPECTED", etc (when being used) LAND AND HOLD SHORT OPERATIONS IN PROGRESS

WIND

WIND DIRECTION quoted as either:

A. SINGLE MEAN DIRECTION
B. TWO VALUES representing variation in wind direction will be given whenever;
   i the extremes in wind direction vary by 60° or more, or
   ii the variation is considered to be operationally significant (eg, the variation is less than 60°, but the variation from the mean results is either a downwind and/or significant cross-wind component on a nominated runway)
C. VARIABLE will be used when the reporting of a mean wind direction is not possible, such as:
   i in light wind conditions (3KT or less) or
   ii the wind is veering or backing by 180° or more (eg, passage of thunderstorms, or localised wind effect).

WIND SPEED quoted as either:

A. CALM (less than 1KT, eg "WIND CALM")
B. SINGLE MAXIMUM VALUE whenever the extremes between minimum and maximum are 10KT or less (eg, "WIND 250 DEGREES MAXIMUM 25 KNOTS")
C. TWO VALUES REPRESENTING MINIMUM AND MAXIMUM VALUES whenever the extremes in wind vary by more than 10KT (eg,"WIND 250 DEGREES MINIMUM 15 KNOTS, MAXIMUM 28 KNOTS")

Note: When quoting a wind with variations in speed and direction, the above criteria may be varied in order to indicate the true cross-wind and/or downwind.

Where threshold wind analysers are installed and the wind at the threshold of a duty runway varies from that of the central wind analyser or the threshold wind on the other duty runway by 10° or 5KT or more and the variation is anticipated to continue for more than 15MIN , threshold winds may be broadcast on the ATIS; eg. THRESHOLD WIND RUNWAY…

(number),…/…, RUNWAY…(number),…/…

VISIBILITY (distance is reported as appropriate:

A. T>10KM – "GREATER THAN WUN ZERO KILOMETRES" or actual distance "..KILOMETRES";

B. Between 6KM and 10KM (inclusive) – "..KILOMETRES";

C. Up to and including 5,000M – "..METRES"; and

D. <1,500M – RVR is reported when available).

PRESENT WEATHER (as applicable; eg, showers in area)
or
CAVOK

CLOUD (below 5,000FT or below MSA, whichever is greater; cumulonimbus, if applicable; if the sky is obscured, vertical visibility when available).

TEMPERATURE (if appropriate to the aerodrome traffic)

DEW POINT

QNH

Any available information on significant meteorological phenomena in the approach, take-off and climb-out.

* ON FIRST CONTACT WITH (eg, GROUND, TOWER, APPROACH) NOTIFY RECEIPT OF (code letter of the ATIS broadcast)

* This contact information may not be transmitted when recording space is limiting.

At aerodromes where a Department of Defence (DOD) tower is operating, the ATIS information follows the same sequence as in above paragraph down to and including "WIND" information, except that "holding delay:, if relevant is given in the second last item. The DOD sequence after "WIND" is as follows:

QNH

TEMPERATURE (if appropriate to the aerodrome traffic)

CLOUD (below 5,000FT or below MSA, whichever is greater; cumulonimbus, if applicable; if the sky is obscured, vertical visibility when available).

VISIBILITY (distance is reported as appropriate:

A. >10KM – "GREATER THAN WUN ZERO KILOMETRES" or actual distance "..KILOMETRES"

B. Between 6KM and 10KM (inclusive) – "..KILOMETRES";

C. Up to and including 5,000M – "...METRES"; and

D. <1,500M – RVR is reported when available).

PRESENT WEATHER (as applicable; eg, showers in area)
or
CAVOK

Other significant information, including holding delay (eg,"...MINUTES HOLDING MAY BE EXPECTED", etc and or significant meteorological phenomena in the approach, take-off and climb-out).

* ON FIRST CONTACT WITH (eg, GROUND, TOWER, APPROACH) NOTIFY RECEIPT OF (code letter of the ATIS broadcast)
* This contact information may not be transmitted when recording space is limiting.

At locations where runway threshold wind analysers are installed, a tower controller must provide a departing aircraft with the wind at the upwind area of the runway if it varies from the ATIS broadcast by 10° or 5KT or more, and the variation is anticipated to continue for more than 15MIN. Such information shall be passed by use of the phrase "WIND AT UPWIND END…/…"

WIND SHEAR

When moderate, strong or severe wind sheer has been reported on the approach or take-off paths, or has been forecast, the information will be included on the ATIS in the following format, eg:

- WIND SHEAR WARNING - CESSNA 210 [(wake turbulence category) CATEGORY AIRCRAFT (if military CATIS)] REPORTED MODERATE WIND SHEAR ON APPROACH RUNWAY 34 AT THE TIME OF 0920, (plus, if available, wind shear advice issued by MET, eg: FORECAST WIND AT 300 FEET ABOVE GROUND LEVEL 360 DEGREES 45 KNOTS); or
- PROBABLE VERTICAL WIND SHEAR FROM 0415 TO 0430- FORECAST WIND AT 200 FEET ABOVE GROUND LEVEL 110 DEGREES 50 KNOTS.

AERIS

The Automatic En Route Information Service continuously broadcasts routine meteorological reports (METAR) from a network of VHF transmitters installed around Australia.

The information broadcast on the individual transmitters caters primarily for the needs of aircraft operating in control areas within VHF range of the facility.

The network frequencies, the operational information and transmitter locations are shown on pages 149.

AERODROME WEATHER INFORMATION SERVICE (AWIS)

Broadcasts of actual weather conditions may be made on navigation aids from AWS sites which use BoM AWS equipment or specific AWS that have met BoM standards for acceptance into the BoM network.

Basic AWS's provide wind direction and speed, temperature, humidity, pressure setting and rainfall. Advanced AWS's provide automated cloud and visibility elements which will be appended to the meteorological report as remarks, for guidance only.Information provided in AWIS broadcasts is in similar format to that of an ATIS broadcast and will contain some of the following additional information:

- test transmissions are identified as "TEST"
- station identifier as a plain language station name
- identifier "AWS AERODROME WEATHER"
- wind direction in degrees Magnetic and speed in Knots
- altimeter setting (QNH)
- temperature in whole degrees Celsius
- low cloud below 12,500FT (*)
- visibility (*)
- dew point in whole degrees Celsius (**)
- percentage relative humidity (**) and
- rainfall over the previous ten minutes (**)

(*) Provided from advanced AWS as guidance material (See page 132 for information on cloud and visibility output)

(**) Provided as supplementary information

Information broadcast from the AWS specified above is is considered to be "real time" data. When information is not available about a particular item, either because of invalid data or an inoperative sensor, the element of the broadcast will be identified as "CURRENTLY NOT AVAILABLE"; eg,

"TEMPERATURE CURRENTLY NOT AVAILABLE".

The integrity of the barometric system in BoM accepted AWS is such that they are an approved source of QNH. Therefore, QNH from these AWS's may be used in accordance with ENR 1.5 para. 5.4 to reduce the published minima for DME arrival procedures, and the published landing, circling and alternate minima. Information derived from other sensors within the AWS, eg wind and temperature, does not have the same degree of integrity and should be used at pilot discretion.

When AWIS information is available after the hours of control tower staff and the aerodrome is uncontrolled, reference will be made to its availability in ATIS ZULU.

The availability of AWIS is contained in ERSA FAC and MET information for appropriate locations.

ON REQUEST SERVICE - FLIGHTWATCH

FLIGHTWATCH is the generic radio callsign on the On-request Service to respond to in-flight requests for operational information from pilots operating in all classes of airspace.

FLIGHTWATCH is provided on FIS frequencies; however, aircraft operating in CTA outside the range of a FIS VHF outlet may request operational information on the ATC frequency in use. Due to workload considerations, ATC may require that pilots request the information on an HF FIS frequency.

When requesting information, pilots must include the frequency on which they are calling; eg 'FLIGHTWATCH, PAPA GOLF KILO, ONE TWO THREE DECIMAL ONE, REQUEST ACTUAL WEATHER SYDNEY"

FLIGHTWATCH will respond with information in an abbreviated form, paraphrased into brief statements of significance. The full text of messages will be provided on request.

FLIGHTWATCH frequencies and their distribution are shown at ERSA GEN.

HAZARD ALERT SERVICE

Hazard Alerts contain information, assessed by ATS to be of an unexpected and critical nature, that could assist pilots to avoid hazardous situations. Hazard Alerts will be:

- broadcast on the appropriate ATS frequencies in the hour following the observed or notified onset of the conditions and, as necessary,
- directed to those aircraft maintaining continuous communications with ATS (at the time the hazard is assessed) that are within one hour flight time of the hazardous condition.

Hazard Alerts include:

- SIGMET,
- AIRMET,
- observations, pilot reports, or amended forecasts indicating that weather conditions at the destination have unexpectedly deteriorated below the IFR or VFR alternate minima, and any additional information that could possibly assist the pilot in the avoidance of hazardous situations.

Hazard Alert Information, or its availability, will be directed or broadcast on the appropriate ATS frequencies;

eg "ALL STATIONS HAZARD ALERT MELBOURNE. WEATHER OBSERVATION NOTIFIES UNEXPECTED DETERIORATION BELOW THE IFR ALTERNATE MINIMA."

eg "ALL STATIONS HAZARD ALERT DUBBO. Pilot reports unexpected deterioration below the VFR alternate minima".

Note: Broadcasts will normally be made on receipt, H+15, and H+45.

When appropriate, ATC towers may provide advice about Hazard Alert Information on the ATIS.

INFORMATION BY PILOTS

A pilot in command becoming aware of any irregularity of operation of any navigational or communications facility or service or other hazard to navigation must report the details as soon as practicable. Reports must be made to the appropriate ATS unit, except that defects, or hazards on a landing area must be reported to the person or authority granting use of the area.

When a landing is made on a water-affected runway, the pilot is requested to advise ATS of the extent of water on the runway and the braking characteristics experienced.

The following terms should be used to describe water on a runway:

DAMP	The surface shows a change of colour due to moisture.
WET	The surface is soaked but there is no standing water.
WATER PATCHES	Patches of standing water are visible.
FLOODED	Extensive standing water is visible.

The following terms should be used to describe braking characteristics experienced:

GOOD	Pilots should not expect to find the conditions as good as when operating on a dry runway, but should not experience any directional control or braking difficulties because of runway conditions.
MEDIUM	Braking action may be such that the achievement of a satisfactory landing or accelerate- stop performance, taking into account the prevailing circumstances, depends on precise handling technique.
POOR	There may be a significant deterioration both in braking performance and directional control.
BUSHFIRES	During the bush fire danger period, pilots in command of an aircraft should notify the nearest ATS unit promptly of any evidence of bush fires observed which they believe have not been reported previously.

section 3 – operations

classes of airspace

Australian airspace is classified in accordance with an ICAO international standard.

The details, as they apply to VFR operations, are summarised as follows.

AUSTRALIAN AIRSPACE ORGANISATION WITH REFERENCE TO VFR OPERATIONS

CLASS	FLIGHT RULES	ATC CLEARANCE	RADIO COM REQUIREMENTS	TRANSPONDER REQUIRED?	SEPARATION PROVIDED	SERVICE PROVIDED
A	High level airspace - IFR only (without permission)					
C	IFR, VFR & SVFR	Required	Yes	Yes	VFR from IFR; SVFR from SVFR	1. ATC service for separation from IFR 2. VFR/VFR traffic INFO and traffic avoidance advice on request
D	IFR, VFR & SVFR	Required	Yes	No	SVFR from SVFR when VIS is less than VMC; Takeoff & landing at controlled aerodromes	ATC service; traffic information on all other flights
E	IFR & VFR	Required for IFR but not for VFR	Yes	Yes	Nil	FIS. Radar information service on request
G	IFR & VFR	Not required	Yes, for operation at A050 and above or at CTAF (R) or in reduced VMC	**Not below** A100 but recommended squawk 1200	Nil	FIS
GAAP CTR	IFR, VFR, SVFR	Yes	Yes	No	Only IFR in IMC from VFR	ATC service

All references to transponders means with a serviceable Mode A & C capability.

The VMC applicable to the various classes of airspace are provided on pages 218-224.

PRE-FLIGHT ALTIMETER CHECK (AIP ENR 1.7)

GENERAL

Whenever an accurate QNH is available and the aircraft is at a known elevation, pilots must conduct an accuracy check of the aircraft's altimeter at some point prior to takeoff. In order of priority , the pilot should use tarmac, threshold or airfield reference point elevation for the check.

Note: Where the first check indicated that an altimeter is unserviceable, the pilot is permitted to conduct a further check at another location on the airfield; for example, the first on the tarmac and the second at the runway threshold (to determine altimeter serviceability).

VFR ALTIMETERS

With an accurate QNH set, a VFR altimeter(s) should read site elevation to within 100FT (110FT at test sites above 3,300FT) to be accepted as serviceable by the pilot. If an aircraft fitted with two VFR altimeters continues to fly with one altimeter reading 100FT (110FT) or more in error, the faulty altimeter must be placarded unserviceable and the error noted in the maintenance release.

VFR altimeters are not permitted for aeroplane operations above FL200. VFR flights operating above FL200 must be equipped with an altimeter calibrated to IFR standards.

ACCURATE QNH AND SITE ELEVATION

A QNH can be considered accurate if it is provided by ATIS, tower or an automatic remote-reporting aerodrome sensor. Area or forecast QNH must not be used for the test.

Site elevation must be derived from aerodrome survey data published by Airservices or supplied by the aerodrome owner.

altimeter setting rules

GENERAL

Heights measured from a QNH or Area QNH datum must be expressed in full, eg 3,000FT as "THREE THOUSAND" and 1,800FT as "ONE THOUSAND EIGHT HUNDRED", adding, if necessary , "ON… (QNH)".

Expressions of height measured from the 1013.2HPA datum must always include the words "FLIGHT LEVEL".

Flights cruising at or below the transition altitude must change the Area QNH altimeter setting when advised of a change by ATS. Pilots of aircraft not using radio must use the QNH setting obtained by setting the altimeter to aerodrome elevation before take-off.

TRANSITION LAYER, ALTITUDE AND LEVEL (AIP ENR 1.7)

The system of altimetry used in Australia makes use of a transition layer between the transition altitude which is always 10,000FT and the transition level of FL110 to separate aircraft using QNH from those using 1013.2 HPa as a datum.

For all operations at or below the transition altitude, the altimeter reference will be:

- the current local QNH of a station along the route
- within 100nm of the aircraft; or

For cruising at and above the transition level, the Standard Pressure altimeter setting of 1013.2 HPa must be used.

The positions to change between QNH and 1013.2 HPa are shown in the diagram on the next page.

QNH is available from a reporting station or from the ATIS, TAF, AFOR, AERIS or from ATS. Cruising within the transition layer is not permitted.

AREA QNH

Area QNH is a forecast value which is valid for a period of 3 hours and normally applies throughout an Area QNH Zone (AQZ).

Area QNH Zones will be subdivided, if necessary, to meet the following standards:

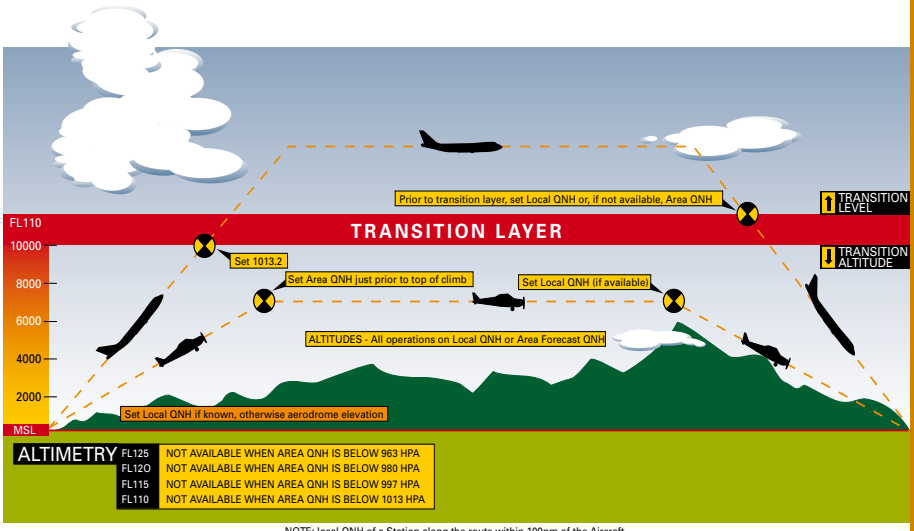
- Area QNH forecasts are to be within +- 5 HPa of the actual QNH at any lowlevel point (below 1,000 FT AMSL) within or on, the boundary of the appropriate area during the period of validity of the forecasts.
- Area QNH must not differ from an adjoining Area QNH by more than 5 HPa.

LOCAL QNH

Local QNH, whether provided by ATS, AWS or Aerodrome Forecast (TAF) or by using the altimeter subscale to indicate airfield elevation AMSL, is used as shown in the diagram on the next page.

LIMITATIONS

To retain a minimum buffer of 1,000FT above the transition altitude, FL110 will not be available for cruising when the Area QNH is less than 1013.2 HPa. With a progressive decrease in the value of the Area QNH, FL115 and FL120 will not be available when the Area QNH is below 997 HPa and 980HPa respectively.



NOTE: local QNH of a Station along the route within 100nm of the Aircraft

visual flight rules

VISUAL FLIGHT RULES (VFR) (CAR 172)

VFR flight may only be conducted:

- in VMC; (see pages 218-224)
- provided that, when operating at or below 2,000FT above the ground or water, the pilot is able to navigate by visual reference to the ground or water;
- at sub-sonic speeds; and
- in accordance with the 250 KT IAS speed restrictions identified in AIP ENR 1.1. (see page 78)

Unless the pilot in command holds a command instrument rating or night VFR (NGT VFR) rating and the aircraft is appropriately equipped for flight at night, a VFR flight must not depart from an aerodrome:

- before first light or after last light (see page 110); and
- unless the ETA for the destination (or alternate) is at least 10 minutes before last light after allowing for any required holding.

If the pilot in command only holds a NGT VFR agricultural rating, a NGT VFR flight must not be conducted in controlled airspace. NGT VFR flight is restricted to CHTR, AWK and PVT operations in aeroplanes not exceeding 5,700KG maximum take-off weight, helicopters, airships and balloons. Passenger carrying CHTR flights in singleengine (non-turbine powered) aircraft are not permitted to operate under VFR at night.

SPECIAL VFR

By day, when VMC does not exist, the ATC unit responsible for a CTR may issue, at pilot request, a Special VFR clearance for flight in the CTR, or in a CTA next to the CTR for the purpose of entering or leaving the CTR, provided:

- the Special VFR flight will not unduly delay an IFR flight;
- the flight can be conducted clear of cloud;
- the visibility is not less than 800M for helicopters or 3,000M for aeroplanes; or for balloons, not less than 100M below 500FT AGL and 3,000M at and above 500FT AGL.
- a helicopter will be operated at such a speed that the pilot has adequate opportunity to observe any obstructions or other traffic in sufficient time to avoid collisions; and

- the flight can be conducted in accordance with the requirements of CAR 157 with regard to low flying, (see page 29)

Note: Special VFR is not permitted in Class E airspace.

DETERMINATION OF VISIBILITY FOR VFR (CAR 174)

Flight visibility shall be determined by the pilot in command from the cockpit of the aircraft while in flight.

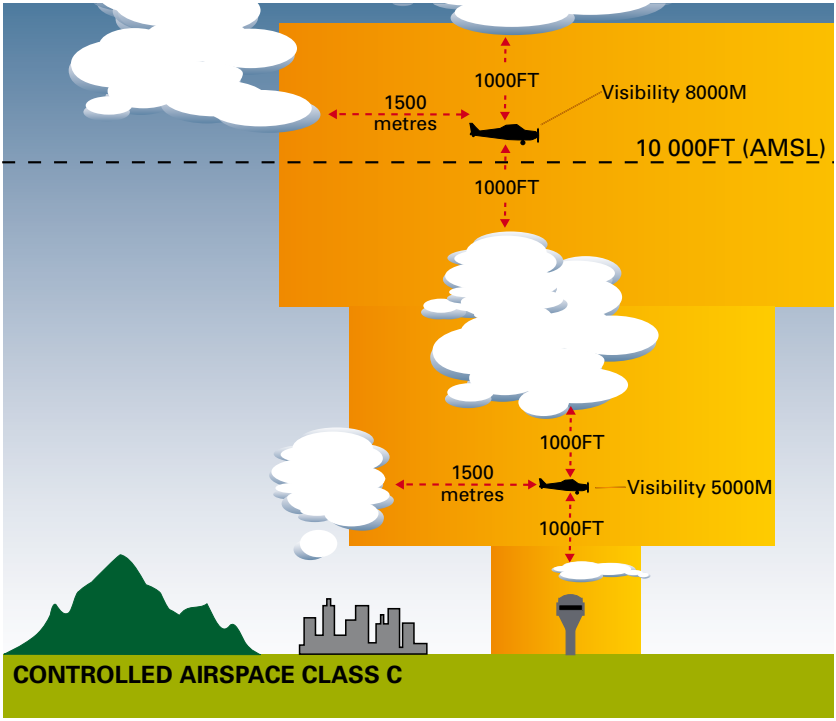
Subject to CAR 257, the pilot in command of an aircraft operating under the Visual Flight Rules is responsible for determining the visibility for the take-off and landing of the aircraft.

In determining visibility for the purposes of this regulation, the pilot in command shall take into account the meteorological conditions, sunglare and any other condition that may limit his or her effective vision through his or her windscreen.

VISUAL METEOROLOGICAL CONDITIONS (VMC) – TAKE-OFF, EN ROUTE, AND LANDING

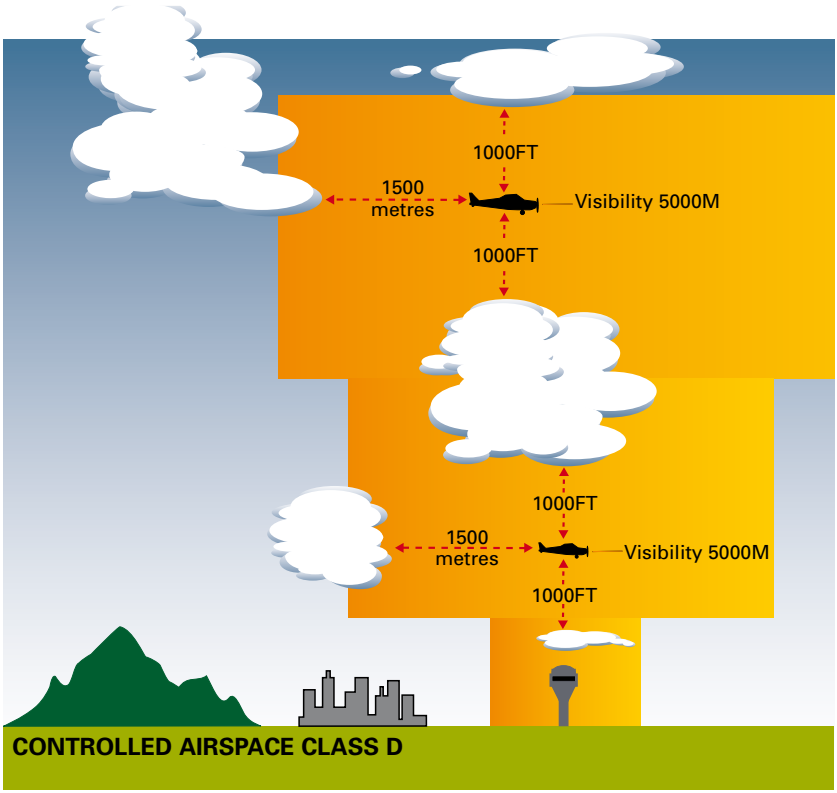
CONTROLLED AIRSPACE – CLASS C (AIP ENR 1.2)

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes Helicopters and Balloons	At or above 10,000FT AMSL	8,000 M	1,500M horizontal 1,000FT vertical	
	Below 10,000FT AMSL	5,000M		ATC may permit operations in weather conditions that do not meet this criteria (Special VFR)



CONTROLLED AIRSPACE – CLASS D (AIP ENR 1.2)

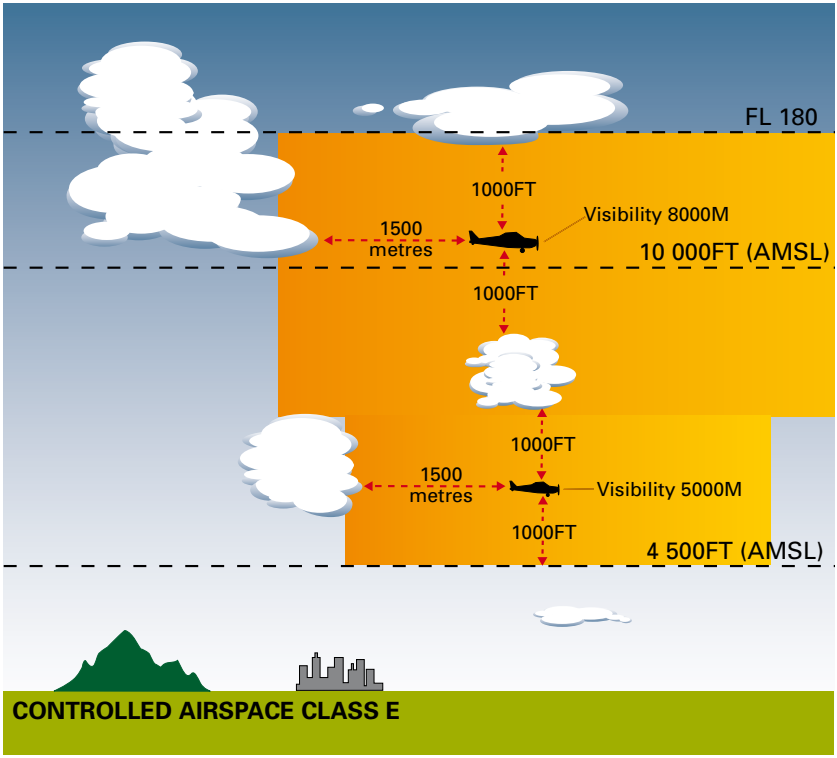
Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes Helicopters and Balloons	Within Class D CTR and CTA	5,000M	1,500M horizontal 1,000FT vertical	ATC may permit operations in weather conditions that do not meet these criteria (Special VFR)



VMC

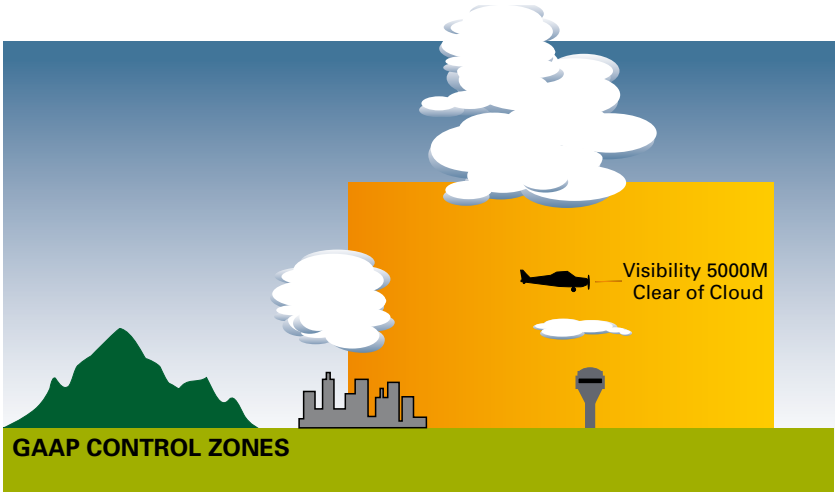
CONTROLLED AIRSPACE – CLASS E (AIP ENR 1.2)

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes Helicopters and Balloons	At or above 10,000FT AMSL	8,000M	1,500M horizontal 1,000FT vertical	
Aeroplanes Helicopters and Balloons	Below 10,000FT AMSL	5,000M		



GAAP CONTROL ZONES (AIP ENR 1.2)

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes Helicopters and Balloons	Within GAAP CTR	5,000M	Clear of Cloud	ATC may permit operations in weather conditions that do not meet this criteria (Special VFR)



VMC

NON-CONTROLLED AIRSPACE – CLASS G (AIP ENR 1.2)

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes	At or above 10,000FT AMSL	8,000M	1,500M horizontal 1,000FT vertical	
	Below 10,000FT AMSL	5,000M	1,500M horizontal 1,000FT vertical	
	At or Below 3,000FT AMSL or 1,000FT AGL whichever is the higher	5,000M	Clear of cloud and in sight of ground or water	Carriage and use of radio is required when operating to these conditions for communications on the CTAF when within the prescribed distance of an aerodrome, or on the area VHF whilst En Route
Helicopters	As for aeroplanes except:			
	Below 700Ft above ground or water	800M	Clear of Cloud	See note below

Additional Conditions

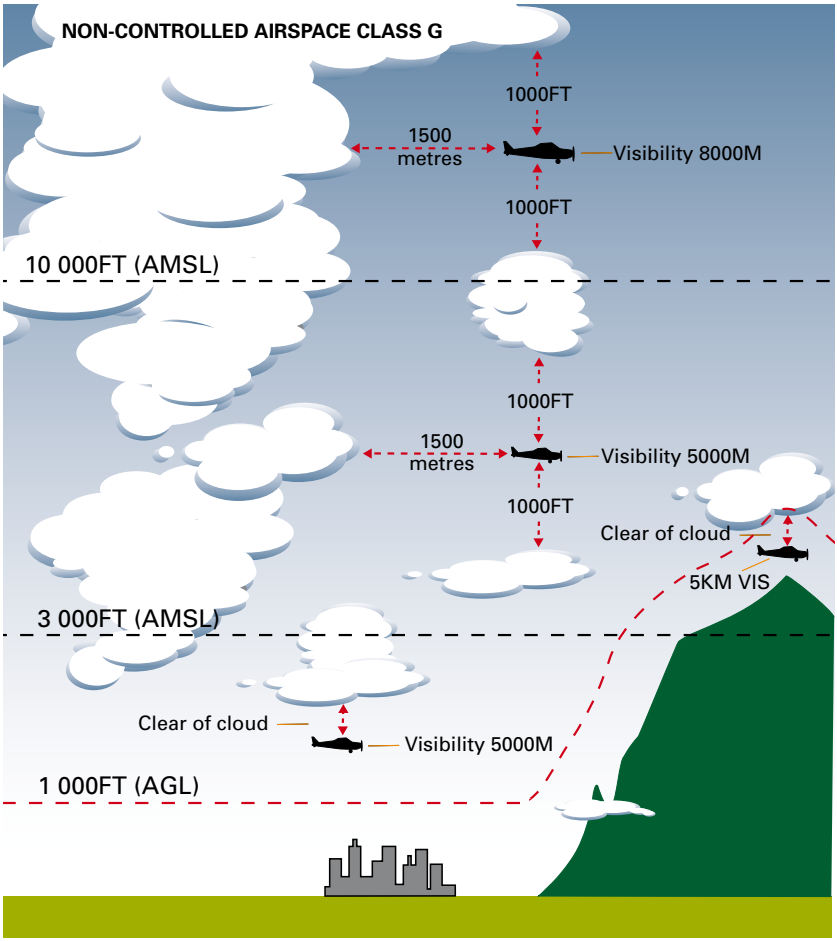
Note: This exception is only applicable if the helicopter is operated;

A. by day;

B. at such a speed that the pilot in command has an adequate opportunity to observe any obstructions or other air traffic in sufficient time to avoid a collision; and

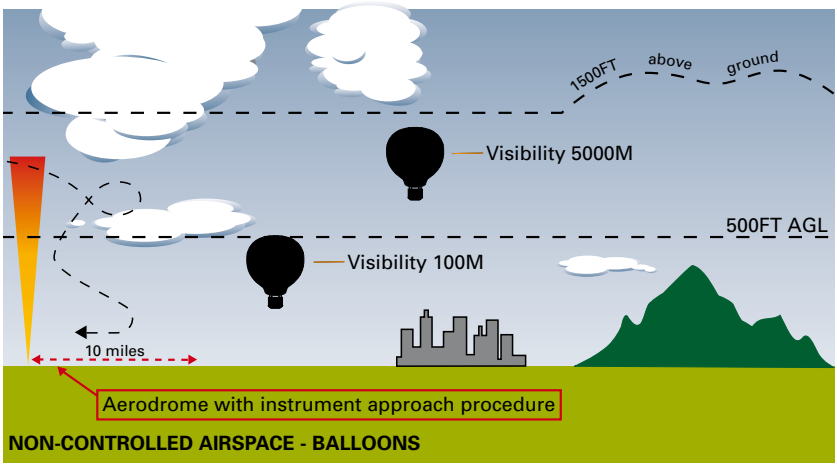
C. if less than10NM from an aerodrome for which an instrument approach has been approved –
in the following circumstances:

1. the flight is conducted in accordance with the requirements relating to reporting, broadcast and maintaining a listening watch as set out in AIP ; and
2. maintain a separation of at least 500FT vertically from any aircraft that is less than 10NM from the aerodrome and conducting an IFR operation.


NON-CONTROLLED AIRSPACE CLASS G
1000FT
1500
metres
Visibility 8000M
1000FT
10 000FT (AMSL)
1000FT
1500
metres
Visibility 5000M
1000FT
Clear of cloud
5KM VIS
3 000FT (AMSL)
Clear of cloud
Visibility 5000M
1 000FT (AGL)

NON-CONTROLLED AIRSPACE – BALLOONS

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical
Balloons	As for aeroplanes, and, in addition:		
AGL	Below 1,500FT	5,000M	Clear of Cloud
Additional Conditions			
No vertical clearance from cloud below the balloon is required if the top of the cloud is at or below 500FT above ground or water and the balloon is at least 10 NM from an aerodrome for which an instrument approach is prescribed.			
Balloons	Below 500FT AGL	100M	Not Applicable
Additional Conditions			
By day only, provided the balloon is at least 10 NM from an aerodrome for which an instrument approach is prescribed.			



NON-CONTROLLED AIRSPACE - BALLOONS

OPERATION OF TRANSPONDERS (AIP ENR 1.6)

Note: Background information on Transponders and TCAS is included on page 83.

Except as indicated below, ATS will assign a temporary discrete code for each flight for aircraft operating in controlled airspace, and for aircraft participating in Radar Information Services (RIS).

Unless otherwise advised by ATC or in accordance with GAAP procedures, pilots of Mode 3A transponder-equipped aircraft operating in Australian airspace must activate their transponders, and where a Mode 3C capability is also available it must be activated simultaneously with Mode 3A (ALT).

Pilots must ensure that transponders are activated and that altitude function is selected as:

- Primary radar coverage only exists within 50NM of major airports and the remainder of the radar surveillance system relies on transponder information; and
- Traffic Collision Avoidance System (TCAS) relies on transponder information for its pilot alerting and collision avoidance functions.

When operating in Australian airspace, transponder-equipped aircraft must select and use codes in accordance with the following criteria:

- Civil flights in controlled airspace - the assigned temporary discrete code, otherwise 3000.
- Civil flights OCTA participating in RIS - the assigned temporary discrete code.
- Civil IFR flights OCTA not participating in RIS - 2000.
- Civil VFR flights OCTA not participating in RIS – 1200.
- Civil flights not involved in special operations or SAR operating OCTA in excess of 15NM offshore – 4000.
- Civil flights engaged in littoral (coastal) surveillance - 7615.

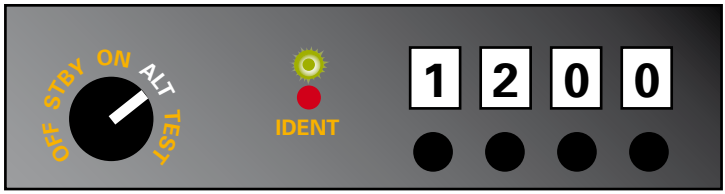
Pilots of flights which will require a RIS and/or a clearance into controlled airspace, and for which a discrete code has already been coordinated, must select that code and "ALT" immediately prior to making their RIS /clearance request.

ATC radar services

A pilot must not operate the special identification function "IDENT" (SPI) unless requested by ATC. **Note that "squawk" does not mean press IDENT (SPI).**

A pilot departing from a radar controlled aerodrome must leave the transponder selected to STANDBY until entering the departure runway, and on arrival select STANDBY or OFF as soon as practable after landing.

VFR OCTA



When operating in, or in the vicinity of a GAAP control zone a transponder should be selected to:

- STANDBY - for flights wholly within a GAAP CTR,
- ALT - prior to take-off departing a GAAP CTR, or
- ALT - when operating in GAAP lanes of entry.

Pilots must select the transponder to STANDBY before effecting an SSR code change and returning the transponder to ON/ALT.

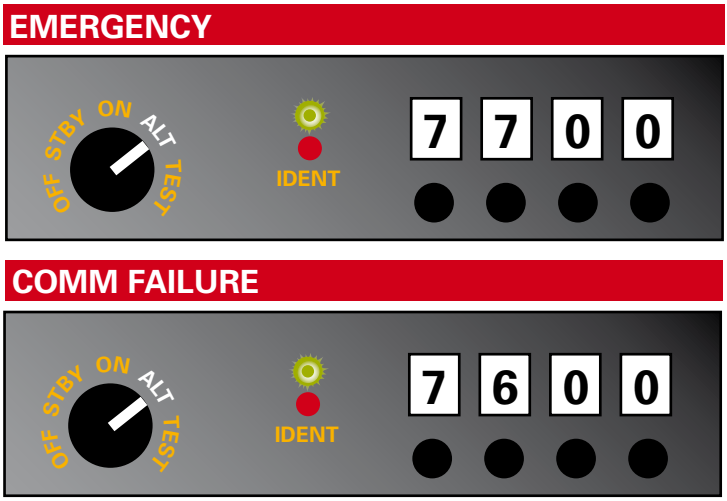
Note: This action is required to prevent possible loss of displayed aircraft position/label information and possible misidentification of aircraft in automated Australian ATC systems due to temporary selection (while effecting the change) of a code already in use.

When acknowledging code setting instructions or changes to settings, the pilot must read back the code to be set.

TRANSPONDER EMERGENCY CODES

The pilot of an aircraft encountering an emergency in flight, other than loss of twoway communications, should select code 7700 unless he/she has specific reason to believe that maintaining the assigned code would be the better course of action.

TSET TLA



The pilot of an aircraft losing two-way communications must set the transponder to code 7600. (See page 388)

A radar controller observing a 7600 code shall request the pilot to operate the identification (SPI function). If the identification signal is received, further control of the aircraft will be continued using the identification transmission to acknowledge receipt of instructions issued.

If the identification is not received, the aircraft must continue with the transponder on code 7600 and follow radio failure procedures (see pages 388-392)

RADIO COMMUNICATIONS PROCEDURES

Pilots requesting radar services should address their request to the ATS unit with which they are communicating.

Where an Area Approach Control Centre (AACC) is not established, the pilot will be advised the time or place to transfer to radar.

Where an AACC is established, procedural and radar control may be provided on a common frequency. The callsign identifies the service being provided - eg. …CENTRE, …APPROACH,.. DEPARTURES.

ATC radar services

IDENTIFICATION PROCEDURES

Before exercising radar control there will be positive identification of the aircraft concerned. However, radar services will not be provided until after the aircraft is within controlled airspace.

RADAR VECTORING PROCEDURES

On receipt of radar heading instructions the pilot must, unless otherwise instructed, immediately commence a rate 1 turn, or the standard rate of turn for the aircraft type, and then maintain the heading given.

Aircraft will normally be vectored on routes along which the pilot can monitor navigation.

When an aircraft is given a vector which will take it off an established route, the pilot will be advised of the reason for the vector, unless it is self-evident.

When an aircraft reports unreliable directional instruments, the pilot will be requested, prior to the issuance of manoeuvring instructions, to make all turns at an agreed rate and to carry out the instructions immediately on receipt.

When aircraft are radar vectored, the controller will assign altitudes which allow for terrain clearance. However, in VMC by day, an aircraft may be permitted to arrange its own terrain clearance. In such instances the aircraft will be instructed to CLIMB (or DESCEND) TO (level) VISUAL.

Pilots being radar vectored will be routinely advised of their position to enable pilot navigation in the event of radio or radar failure.

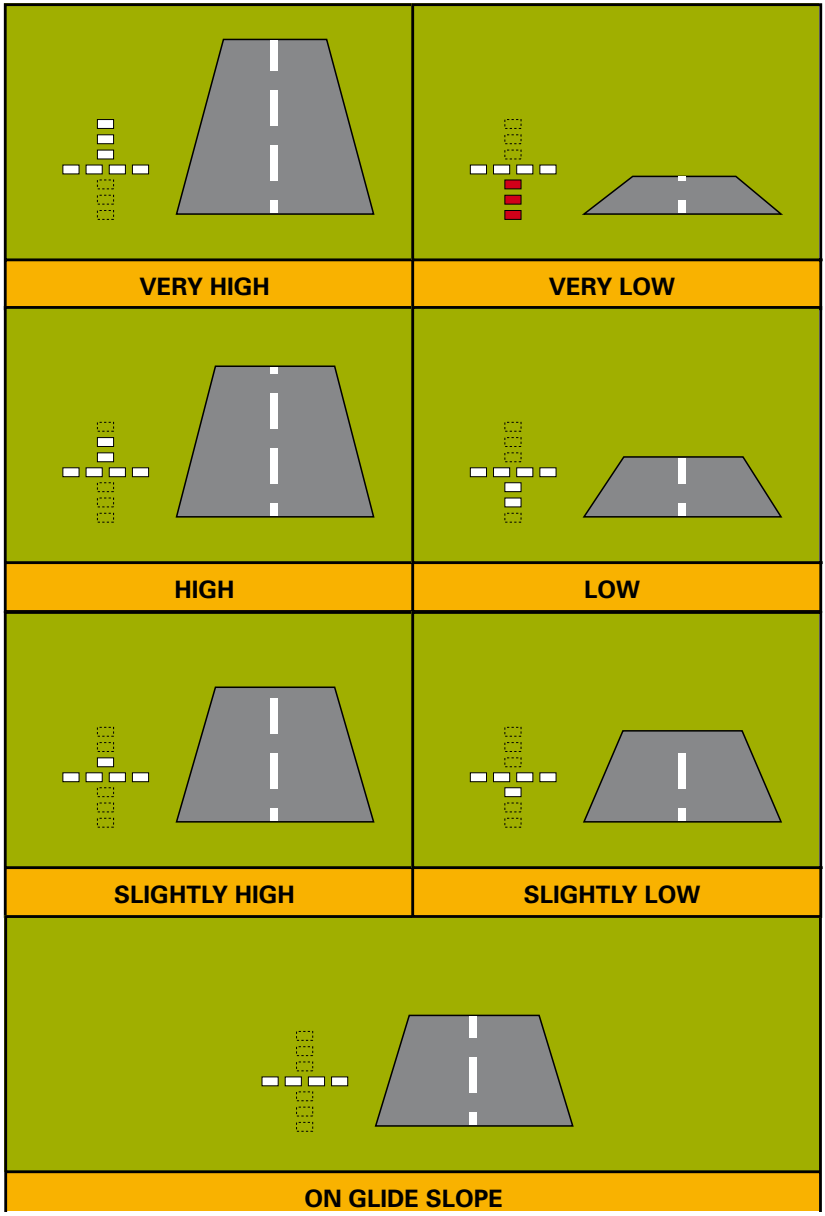
The interval between ATC transmissions will be kept short to enable the pilot to quickly recognise a communication failure. When aircraft are on headings that could infringe terrain clearance or separation standards, the intervals between transmissions will not exceed 30 seconds.

Before take-off, ATC may indicate a requirement for a departing aircraft to assume a heading after take-off, followed by frequency change instructions if appropriate. Radar headings, other than those assigned for a Standard Radar Departure (SRD), will only be issued for a visual departure by day in VMC.

Arriving aircraft may be radar vectored to:

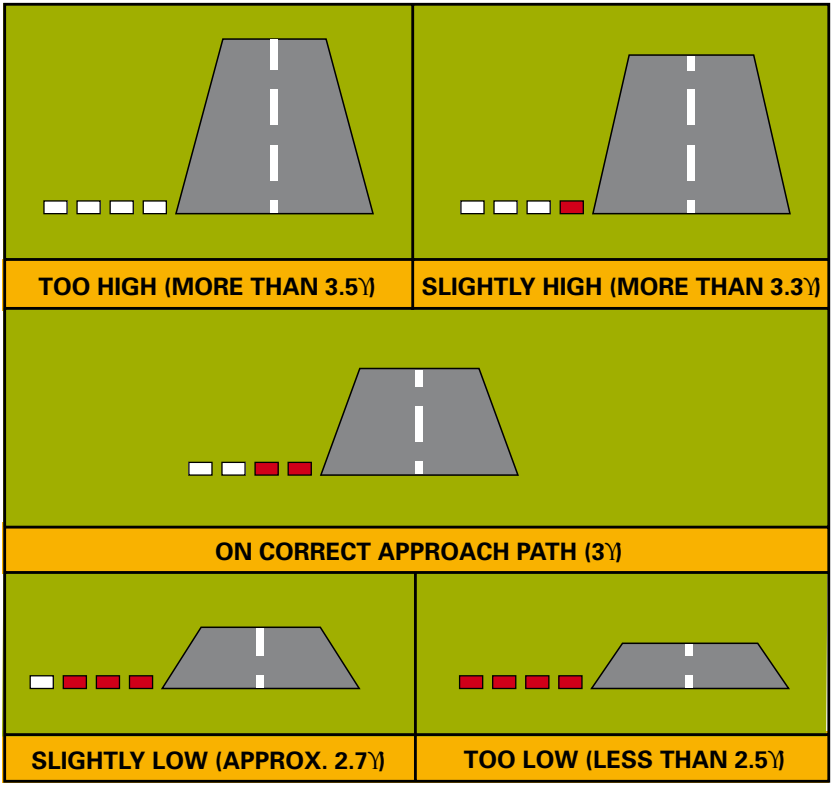
- establish for a radar or pilot-interpreted approach;
- a position from which a visual approach can be made;
- avoid areas of hazardous weather or severe turbulence;
- expedite traffic flow or conform to noise abatement requirements.

T-VASIS (AIP AD 1.1)



PAPI

PAPI (AIP AD 1.1)



INTERPILOT AIR-TO-AIR COMMUNICATION (AIP GEN 3.4)

In accordance with regional agreements, 123.45MHZ is designated as the air-to-air VHF communications channel. Use of this channel will enable aircraft engaged in flights over remote and oceanic areas out of range of VHF ground stations to exchange necessary operational information and to facilitate the resolution of operational problems.

AERODROME FREQUENCY RESPONSE UNIT (AFRU) (AIP GEN 3.4)

To assist pilots' awareness of inadvertent selection of an incorrect VHF frequency when operating into non-controlled aerodromes, a device known as an Aerodrome Frequency Response Unit (AFRU) may be installed. An AFRU will provide an automatic response when pilots transmit on the traffic frequency for the aerodrome at which it is installed.

The features of the AFRU are as follows:

- when the aerodrome traffic frequency has not been used for the past five minutes, the next transmissions over two (2) seconds long will cause a voice identification to be transmitted in response, eg, "GOULBURN CTAF".
- . when the aerodrome traffic frequency has been used within the previous five (5) minutes, a 300 millisecond tone will be generated after each transmission over two (2) seconds long.

A series of three (3) microphone clicks within a period of five (5) seconds will also cause the AFRU to transmit a voice identification for the particular aerodrome.

In the event that the transmitter in the AFRU becomes jammed for a period of greater than one minute, the unit will automatically shut down.

The operation of the AFRU provides additional safety enhancements by confirming the operation of the aircraft's transmitter and receiver, the volume setting, and that the pilot has selected the correct frequency for use at that aerodrome.

CERTIFIED AIR/GROUND RADIO SERVICE (AIP GEN 3.4)

A Certified Air/Ground Radio Service is an aerodrome-based radio information service, which may operate at non-controlled aerodromes. The service is a safety enhancement facility which provides pilots with operational information relevant to the particular aerodrome. The service is operated by or for the aerodrome operator within the hours published, on the CTAF assigned to the particular aerodrome. It is not an air traffic service.

The service is not a separation service.

The call-sign of the service is the aerodrome location followed by "Radio"; eg, "Ayers Rock Radio". The radio operators of the service have been certified to meet a CASA standard of communication technique and aviation knowledge appropriate to the service being provided.

When a CA/GRS is operating on the CTAF, pilot procedures are unchanged from the standard non-controlled operating and communication procedures.

The operational information provided by a CA/GRS assists pilots in making informed operational decisions. Pilots retain authority and responsibility for the acceptance and use of the information provided.

Aircraft making the normal inbound or taxiing broadcast receive a responding broadcast from the CA/GRS operator, conveying the following information:

- Confirmation of correct CTAF selection.
- Current known, relevant traffic in the vicinity and on the manoeuvring area of the aerodrome. Traffic information may include some or all of the following:
  - the call-sign, aircraft type, position and intention; or
  - where circuit flying is in operation, general advice on the number of aircraft in the circuit, and position in the circuit if relevant.

Note: This information is provided to assist pilots in arranging self-separation.

- Weather condition and operational information for the aerodrome. The information which may be advised includes:
  - runway favoured by wind or for noise abatement,
  - wind direction and speed,
  - runway surface conditions,

- aerodrome QNH,
- aerodrome surface temperature, and
- estimated cloud base and visibility and present weather.

This information will be provided by means of an Automatic Aerodrome Information Service (AAIS) broadcast on a discrete published frequency (similar to ATIS). Pilots should monitor the published AAIS frequency before making the taxiing or inbound broadcast and indicate that the AAIS information has been received when making the inbound or taxiing broadcast.

Other operational information of a local nature, relevant to the safety of operations at the aerodrome.

The CA/GRS will provide emergency services call-out if requested by the pilot in an emergency or, if in the opinion of the operator, a call-out is warranted.

The weather information provided by the service is derived from approved measuring equipment, which meets BoM aeronautical precision standards. QNH provided by a CA/GRS or AAIS may be used to reduce landing, circling and alternate minima in accordance with AIP ENR 1.5 (QNH Sources).

The CA/GRS operator may act as a representative of an air operator (where formal agreement with the operator has been established) for the purposes of holding SARWATCH.

UNICOM (AIP GEN 3.4)

UNICOM (Universal Communications) is a non-ATS communications service provided on the CTAF to enhance the value of information normally available about a noncontrolled aerodrome.

The primary purpose of the frequency used for UNICOM where the frequency is the CTAF is for pilots to be able to exchange relevant traffic information. Services available from a UNICOM should be considered as secondary and must not detract from the interchange of traffic information between pilots.

Persons providing a Unicom service are required to be licensed by the Australian Communication Authority (ACA). Detailed information regarding the licensing and use of equipment may be obtained by contacting the ACA in the appropriate State or Territory capital city.

Participation in Unicom services relates to the exchange of messages concerning:

- fuel requirements;
- estimated times of arrival and departure;
- aerodrome information;
- maintenance and servicing of aircraft including the ordering of parts and materials urgently required;
- passenger requirements;
- unscheduled landings to be made by aircraft; and
- general weather reports;
- basic information on traffic.

This information is available to all aircraft during the times that Unicom is operating.

Weather reports, other than simple factual statements about the weather, may not be provided by Unicom operators unless they are properly authorised to make weather observations under CAR 120.

The Unicom operator is solely responsible for the accuracy of any information passed to an aircraft, while the use of information obtained from a Unicom is at the discretion of the pilot in command.

Unicom operators must comply with the requirement of CAR 83 (2).

RADIO TELEPHONY REQUIREMENTS OUTSIDE CONTROLLED AIRSPACE (AIP GEN 3.4)

When initiating a transmission to Air Traffic Services (ATS), you should commence the transmission with the with the callsign of the unit being addressed followed by the aircraft callsign eg "Brisbane Centre, Alpha Bravo Charlie ....."

When you read back an ATS message you should add the aircraft callsign at the end of the transmission.

Broadcasts by aircraft in the vicinity of non-controlled aerodromes should be prefixed with the location followed by the word "traffic" and the aerodrome name should also be added to the end of the transmission eg "Bathurst traffic ..... Bathurst". This is to emphasise the location in situations where more than one aerodrome may use the CTAF concerned.

All transmissions between aircraft should be prefixed with the aircraft callsign. When calling FLIGHTWATCH add the frequency in use to the initial transmission. This assists the operator in monitoring multiple frequencies.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)

A CTAF is used for traffic broadcasts when operating in the vicinity of a non-controlled aerodrome.

"In the vicinity" is defined as within 10 NM from the aerodrome and at such a level that you may conflict with operations at that aerodrome (CAR 166).

If radio equipped you should monitor and broadcast on the CTAF when in the vicinity of any non-controlled aerodrome (AIP ENR 1.1). At CTAF (R) designated aerodromes, radio is mandatory.

Unless otherwise specified in ERSA or on charts, the CTAF frequency is 126.7 MHZ. This is termed the MULTICOM.

Mandatory Radio

Where the CTAF for a particular aerodrome is designated (R) on charts eg "119.9 (R)", the use of radio and the making of prescribed broadcasts, is mandatory when operating in the vicinity of such aerodromes.

Non-radio Traffic

You should be aware that aircraft not equipped with radio may be operating at any non-controlled aerodromes other than those designated CTAF (R).

sartime

COMMUNICATIONS

A pilot of other than an IFR RPT flight may nominate a SARTIME for departure either as part of the arrival report or when submitting flight notification by the phrase "SARTIME FOR DEPARTURE". SAR alerting action will be initiated if a report is not received by the nominated SARTIME for departure. CENSAR may be contacted via FLIGHTWATCH or on 1800 814 931.

VFR operations

VFR OPERATIONS IN CLASS E & G AIRSPACE

SUMMARY OF REPORTS AND BROADCASTS – VFR AIRCRAFT IN CLASSES E & G AIRSPACE

Situation	Frequency	Requirement
Before taxiing	CTAF	Broadcast
Entering runway for takeoff	CTAF	Broadcast and include intentions
Turning downwind	CTAF	Broadcast
Turning base	CTAF	Broadcast
Turning final	CTAF	Broadcast and include intentions
Clear of the runway	CTAF	Broadcast
By 10NM inbound or overflying	CTAF	Broadcast position lev and intentions.
Joining circuit	CTAF	Broadcast
Straight-in approach at 3NM and 1NM	CTAF	Broadcast and include intentions with 1NM broadcast
For clearance into controlled airspace	ATC	Report
Before and on completion of over-water stage; (AIP ENR 1.1) see page **151**	ATS	Report if requesting schedules.

BROADCASTS

In accordance with CAR 166 and 166A the following broadcasts on the CTAF and in the standard format are required from radio equipped aircraft at non-controlled aerodromes (AIP ENR 1.1):

- by 10NM inbound or overflying
- straight-in-approach at 3NM and 1NM (including intentions)
- before entering the runway for takeoff (including intentions and the runway concerned)

In addition, the following broadcasts are recommended:

- before taxiing (including destination or departure quadrant or intentions and the runway be used)
- turning downwind
- turning base
- turning final
- entering the circuit
- clear of runway

The standard broadcast format is:

{location} Traffic, {aircraft type}, {Callsign}, {position/intentions}, {location)
eg, "Bundaberg Traffic, Cessna 172 Zulu Foxtrot Romeo, taxiing for Archerfield, Runway 34 Bundaberg".

USE OF RADIO

Carriage and use of radio is required at aerodromes depicted on charts and in ERSA as <frequency>(R). At these aerodromes, pilots must commence monitoring and broadcasting on the CTAF prior to and during all operations in the vicinity of the aerodrome. (AIP ENR1.1) "In the vicinity" is defined as within 10NM and at a height that could result in conflict with operations at that aerodrome (CAR 166).

It should be remembered that, unless the non-controlled aerodromes is designated (R) on charts and in ERSA, operations by non-radio aircraft must be expected.

CIRCUIT DIRECTION

Left-hand circuits must normally be made. Right-hand circuit requirements are listed in ERSA.

An aircraft is permitted, however to execute a turn opposite to the circuit direction on to course if:

- it has climbed straight ahead to 1,500FT above aerodrome elevation; or
- it is at least 3NM from the aerodrome.

FINAL APPROACH

The turn on to final approach must be completed by a distance that is common to operations at the particular aerodrome but in any case not less than 500M from the runway threshold (CAR 166).

SEPARATION MINIMA FOR TAKE-OFF

An aircraft must not commence take-off until;

- a preceding departing aircraft using the same runway has;
  - crossed the upwind end of the runway; or
  - commenced a turn; or
  - if the runway is longer than 1,800m, become airborne and is at least 1,800m ahead; or
  - if both aircraft have a MTOW below 2,000kg, the preceding aircraft is airborne and is at least 600m ahead.
- a preceding landing aircraft using the same runway, has vacated it and is taxing away from the runway; or
- a preceding aircraft, using another runway, has crossed or stopped short of the take-off aircraft's runway.

At aerodromes where gliders operate to a common circuit pattern from a parallel strip outside the runway strip, the above separation minima shall apply to aircraft landing or taking off on either runway as if they were a single runway, but aircraft taxiing or stationary on the runway must not affect operations on the other side.

Where gliders and glider tugs operate to a contra- circuit, simultaneous operations are permitted.

Position in the circuit should be broadcast if considered of value to other aircraft for separation purposes.

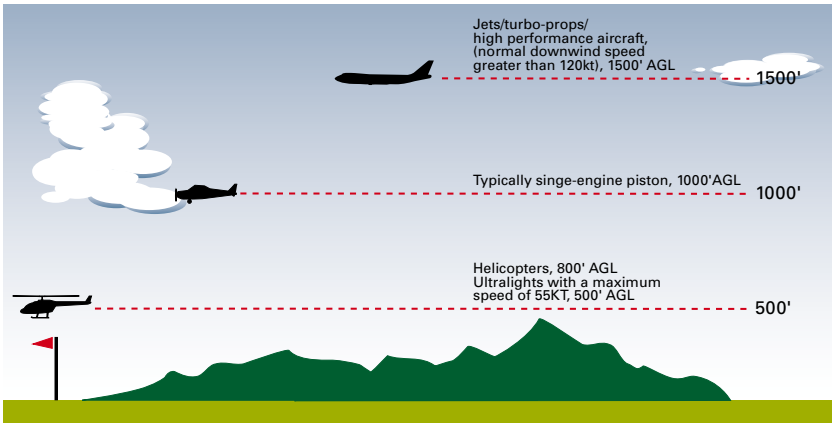
CIRCUIT HEIGHT

By convention, the following circuit heights are flown;

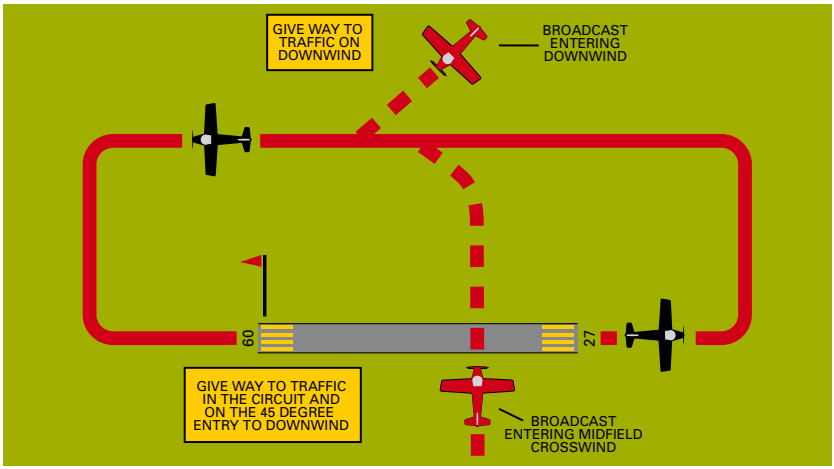
- jets, 1500FT AGL
- piston/turbo prop, 1000FT AGL; and
- helicopters, 800FT AGL.

Circuit heights for aerodromes which have specific requirements are published in ERSA.

circuit procedures

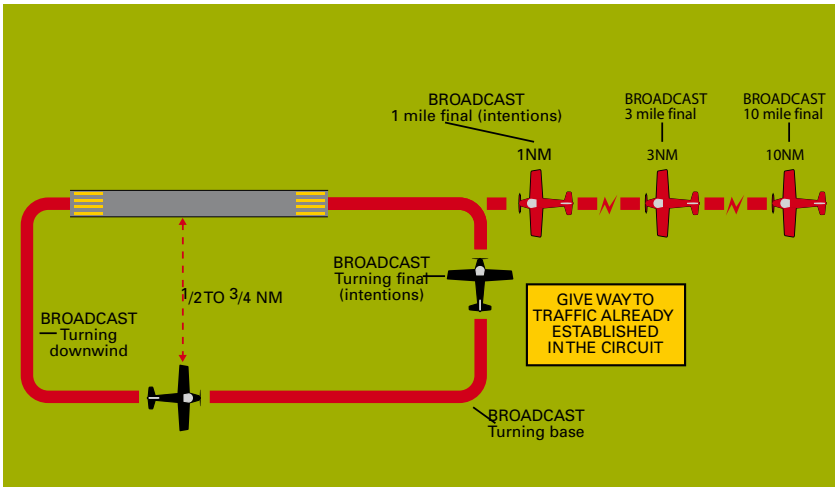


JOINING THE CIRCUIT

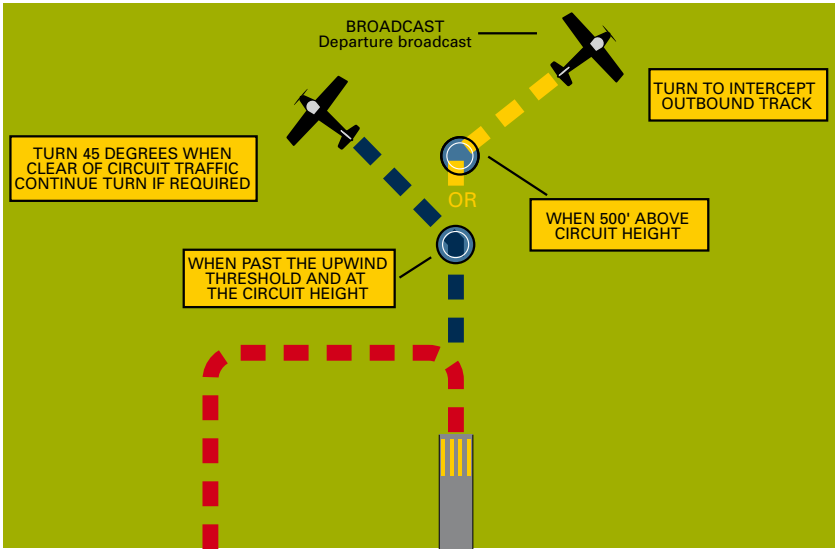


circuit procedures

STRAIGHT--IN APPROACH AND CIRCUIT BROADCASTS



DEPARTING THE CIRCUIT



CLIMB AND CRUISE PROCEDURES

Pilots of radio-equipped VFR aircraft must listen out on the appropriate VHF frequency (CAR 243) and announce if in potential conflict. Pilots intercepting broadcasts from aircraft in their vicinity which are considered to be in potential conflict with their own aircraft must acknowledge by transmitting own callsign and, as appropriate, aircraft type, position, actual level and intentions.

ARRIVAL INFORMATION

When approaching an aerodrome and in the vicinity, all radio-equipped aircraft must broadcast on the CTAF:

- callsign and aircraft type;
- position (reported as distance with either the radial bearing, or quadrant from the aerodrome);
- level; and
- intentions.

"Bundaberg Traffic, Zulu Foxtrot Romeo, Cessna 172, One Five miles West, Two Thousand Five hundred, Inbound, Circuit area Bundaberg at time Zero Two"

landing

LANDING MANOEUVRES

An aircraft approaching a non-controlled aerodrome for a landing must join on the upwind, crosswind or down-wind leg of the circuit unless it is :

- following an instrument approach procedure in IMC; or
- conducting a visual circling procedure in IMC after completion of an instrument approach procedure; or
- conducting a straight-in approach in accordance with the paragraphs below.

landing

The runway to be used for landing must be:

- the most into-wind runway; or
- when operational reasons justify, any other available landing direction provided the nominated circuit is executed without conflict to landing or takeoff traffic using the most into-wind runway; and
- serviceable and cleared of ground maintenance equipment and personnel.

When approaching for a landing, and within 3NM of the aerodrome, all turns must be made to the left except:

- where right hand circuits are specified for the aerodrome; or
- when entering the upwind, crosswind or downwind leg.

Any aircraft complying with the following conditions may make straight-in visual approaches to non-controlled aerodromes:

- The aircraft must be equipped with VHF radio and be able to communicate on the CTAF.
- The pilot in command must be able to determine the wind direction and runway in use at the aerodrome from;
  - AWS or UNICOM; or
  - radio contact with a ground-based radio communication service, a company agent or an aircraft operating at the aerodrome; or
  - visual indications, if the information cannot be determined by the above means.

Aircraft conducting a straight-in approach at a non-controlled aerodrome in accordance with the above paragraphs, must observe the following procedure:

- The pilot must ensure that a general broadcast is made, on the CTAF (RPT only), as close as practicable to 15NM from the aerodrome. This broadcast must include the position of the aircraft and the intention to carry out a straight-in approach at that aerodrome.
- The pilot in command must not commence a straight-in approach to a runway when the reciprocal runway direction is being used by aircraft already established in the aerodrome traffic pattern.

- All manoeuvring to establish the aircraft on final approach must be conducted outside a 5NM radius from the intended landing runway threshold.

Note: Within 5NM, pilots are expected to make only minor corrections to line up accurately on final approach. This will enable pilots conforming to the aerodrome traffic pattern to optimise their visual scan for traffic along the final approach path.

- As close as practicable to 5NM from the intended landing runway threshold, the pilot in command must ensure that a broadcast is made, stating that the aircraft is established on final approach at that distance and identifying the runway to be used.
- The aircraft's landing lights, anti-collision lights and strobe lights, where fitted, must be illuminated when within 5NM of the intended landing runway threshold and must remain illuminated until after the aircraft has landed.
- An aircraft flying a standard aerodrome traffic pattern and established on base leg or final approach for any runway has priority over an aircraft carrying out a straight-in approach.

SEPARATION MINIMA FOR LANDING

An aircraft must not continue its approach to land beyond the threshold runway until:

- a preceding departing aircraft using the same runway is airborne, and:
  - has commenced a turn; or
  - is beyond the point on the runway at which the landing aircraft could be expected to completed its landing roll and there is sufficient distance to manoeuvre safely in the event of a missed approach;
- a preceding landing aircraft using the same runway has vacated it and is taxiing away from the runway;
- a preceding aircraft using another runway, has crossed or stopped short of the landing aircraft's runway.

At aerodromes where both powered aircraft and gliders operate together using separate parallel runways or strips, simultaneous operations are permissible where gliders and tugs operate on contra circuits to powered aircraft.

Where gliders and powered aircraft operate together in the same circuit pattern

- the two runways or strips shall be treated as one runway but
- stationary or taxing aircraft on one runway must not affect operations on the other.

Note: Pilots are reminded of their obligations to see and avoid all other aircraft (CAR 163A).

TAXIING AFTER LANDING

After landing, the runway strip should be vacated as soon as practicable. Aircraft should not stop until clear of the runway strip.

SARTIME AND SARWATCH

Pilots wishing to cancel SARWATCH may do so by reporting to ATS. When cancelling SARWATCH, pilots must include:

- the aircraft radio callsign;
- place of arrival or point from which SARWATCH services are no longer required;
- the words "CANCEL SARWATCH"; and
- when communicating with a unit other than that nominated, the name of the ATS unit to which the report shall be relayed.

SARWATCH may be cancelled in combination with a pilot report of changing to a CTAF, or in the circuit area, or after landing.

ATS will acknowledge "CANCEL SARWATCH" reports with a read-back of the place of arrival, if appropriate, and the words "SARWATCH TERMINATED".

SARTIME

When operating on a SARTIME, the pilot must cancel SARTIME by the time nominated and, during the contact with ATS, include the words "CANCEL SARTIME".

ATS will acknowledge "CANCEL SARTIME" reports with a readback of the place of arrival, if appropriate, and the words "SARTIME CANCELLED".

Pilots may cancel SARTIME via:

- FLIGHTWATCH on a FIS VHF outlet as shown in ERSA, or on HF;
- relay through another pilot.
- telephone to CENSAR on 1800 814 931, or
- ATS when telephone facilities are not available.

For SARTIME flights, pilots of single VHF radio-equipped aircraft must cancel SARTIME either after landing or at or before reaching 10 NM from the non-controlled aerodrome.

SARTIME FOR DEPARTURE

Only one SARTIME may be current at any time therefore, when submitting flight notification, only a SARTIME from the aerodrome of initial departure may be nominated. Subsequently, a SARTIME for departure from an intermediate aerodrome may be nominated either by radio on arrival or by telephone after landing.

Nominating a SARTIME by radio on arrival at an intermediate aerodrome provides SARTIME for the intermediate landing as well as for the subsequent takeoff and may also be used where communications on the ground cannot be reasonably assured.

SAR alerting action will be initiated if a taxiing or departure report is not received by the nominated SARTIME.

general

GENERAL (AIP ENR 1.1)

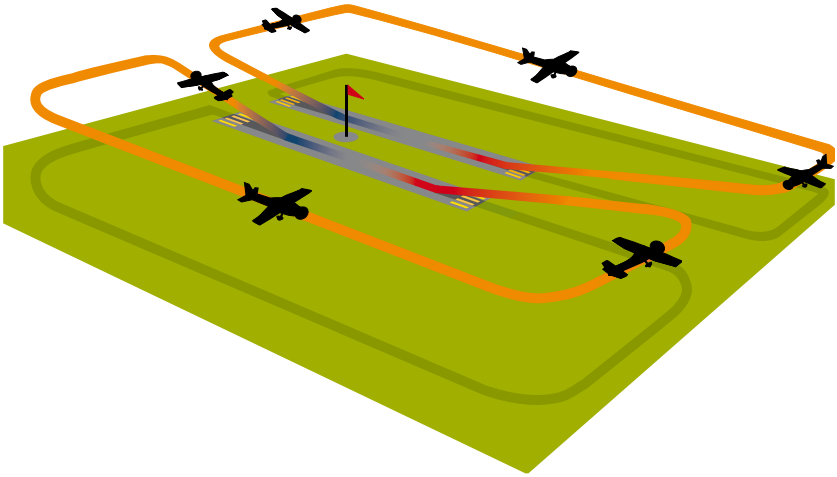
General Aviation Airport Procedures (GAAP) cater for high-density operations in VMC.

There are a number of GAAP airports in Australia and the general operating procedures for them are outlined in this section.

Because each GAAP airport is unique, special procedures have been developed to take local conditions into account. These special procedures are listed in ERSA for a particular aerodrome and must be read in conjunction with this section.

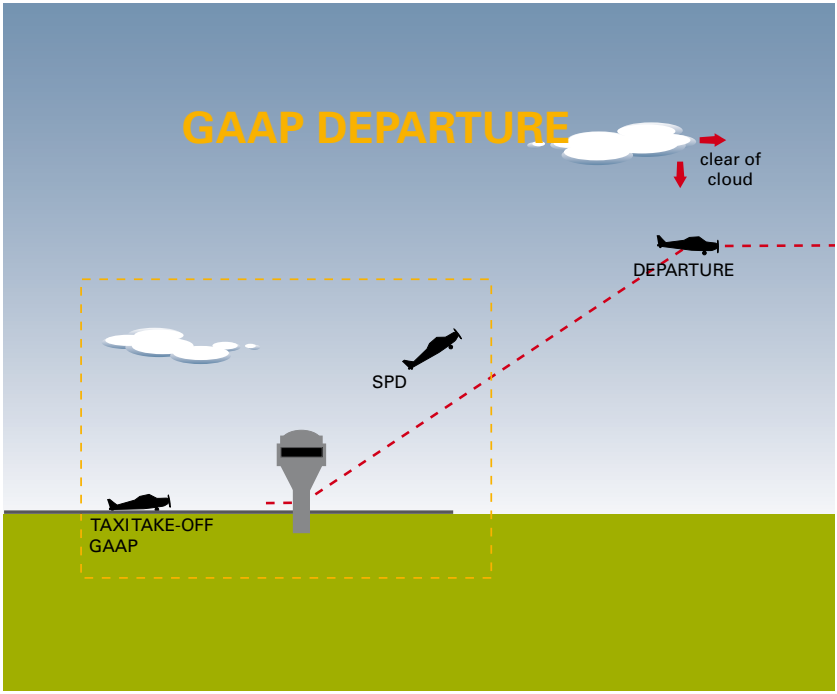
For extra guidance you can also refer to the Visual Pilot Guides produced for each GAAP aerodrome.

Where a GAAP aerodrome is equipped with parallel runways, simultaneous contracircuits may be conducted by day, and separate Tower frequencies are used. Aircraft operations are regulated independently in each circuit. An ATC clearance is required to enter the opposite circuit or airspace. Where operations are confined to a single runway, ATC will specify the circuit direction.



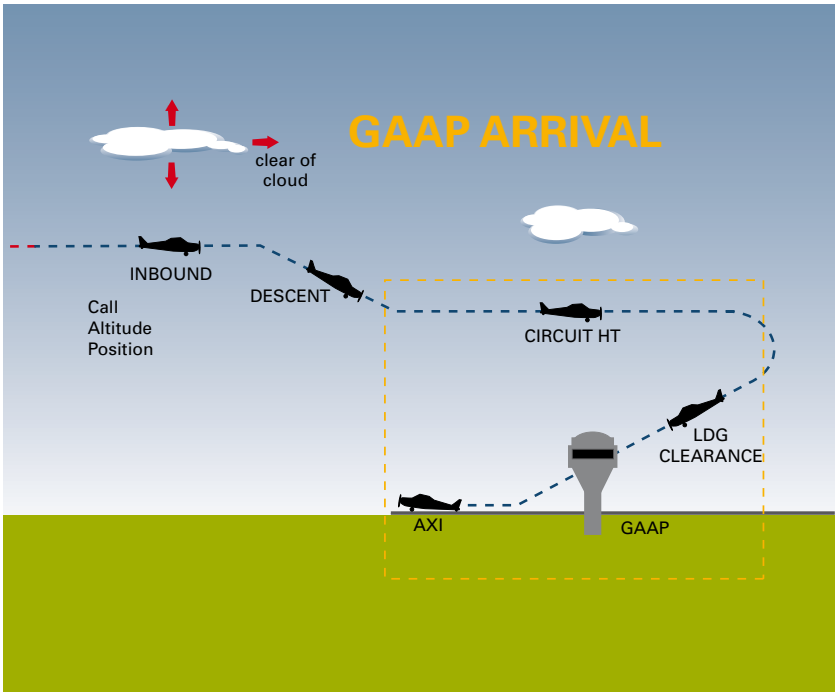
Pilots unsure of the procedures at a particular GAAP Control Zone (CTR) should advise ATC on first contact.

Pilot: "Unfamiliar with location"



DEPARTURE

1. Obtain ATIS and plan taxi route.
2. Request clearance to cross any runway as applicable.
3. Taxi to run-up bay under your own observations.
4. Complete run-ups and pre-flight checks.
5. Taxi to the holding point for the correct runway, obtain ATC clearance to cross runways.
6. Call "READY" at the Holding point when you require no backtracking.
7. Depart from the circuit by extending the appropriate leg of the circuit and not above the prescribed altitude for the aerodrome.
8. Track clear of the inbound reporting points.
9. Once clear of the GAAP CTR, change to the appropriate area frequency or the appropriate approach frequency.



ARRIVAL

1. Track towards a GAAP inbound reporting point where possible.
2. Obtain the ATIS where possible and plan taxi route.
3. Call Tower with your inbound report when established overhead the inbound reporting point at the correct altitude (if unfamiliar with the aerodrome, advise ATC with the initial call).
4. Follow ATC instructions.
5. Once clear of the runway, contact SMC with callsign and request a clearance to cross runway as applicable.
6. Taxi under own observations to your parking area.
7. SARTIME Cancellation

PILOT RESPONSIBILITIES

A PILOT MUST:

- sight and maintain separation from other aircraft whilst operating in the GAAP CTR;
- comply with ATC instructions while ensuring that separation is maintained from other aircraft;
- immediately advise ATC if unable to comply with a control instruction;
- advise ATC if unable to sight traffic, or if traffic is lost;
- as a GAAP aerodrome is usually busy, a vigilant lookout is required at all times;
- with parallel operations in progress, pilots should ensure they do not overshoot final or drift into the opposite circuit on upwind.

PROVISION OF SEPARATION

In VMC (see page 218), the pilot in command is primarily responsible for separation from other aircraft. ATC controls runway operations with landing and take-off clearances and facilitates a high movement rate by providing traffic information and/or sequence instructions. To aid in the provision of separation, ATC will determine the status of operation in the GAAP CTR as follows:

- **Unrestricted VFR Operations:** There are no weather - related restrictions to aircraft operations.
- **Restricted VFR Operations:** ATC may apply weather- related restrictions to VFR operations to facilitate the movement and separation of IFR aircraft. ATC will then broadcast on the ATIS "**Restricted VFR Operations**". The actual restriction imposed may be specified individually to aircraft, although general restrictions may be notified on the ATIS; eg, "**Start Approval Required**".

When an aircraft is operating in conditions less than VMC, ATC will provide separation within GAAP CTR.

TRAFFIC INFORMATION SHALL BE ISSUED BY ATC WHEN:

The pilot of one aircraft is required to give way to, follow, or otherwise adjust the aircraft's flight path relative to that flown by another aircraft; and/or

The relative positions of aircraft cannot be established, and a collision or near

miss may be likely unless one or both aircraft adjust their respective flight paths. In this case an alerting service will be prefixed by the cautionary word "**ALERT**"

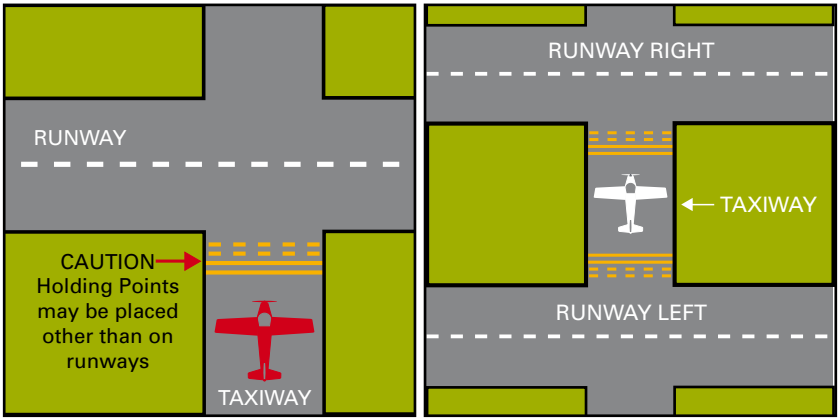
The provision of traffic information does not absolve the pilot from keeping a good lookout and manoeuvring as required to avoid other traffic.

CLEARANCES - ALL OPERATIONS

INDIVIDUAL CLEARANCES ARE REQUIRED FOR:

- take-off and landing;
- entering, crossing or taxiing along all runways;

An instruction to HOLD SHORT OF RUNWAY (number) [LEFT or RIGHT] requires a pilot to hold at a marked holding point or hold short of the runway strip.



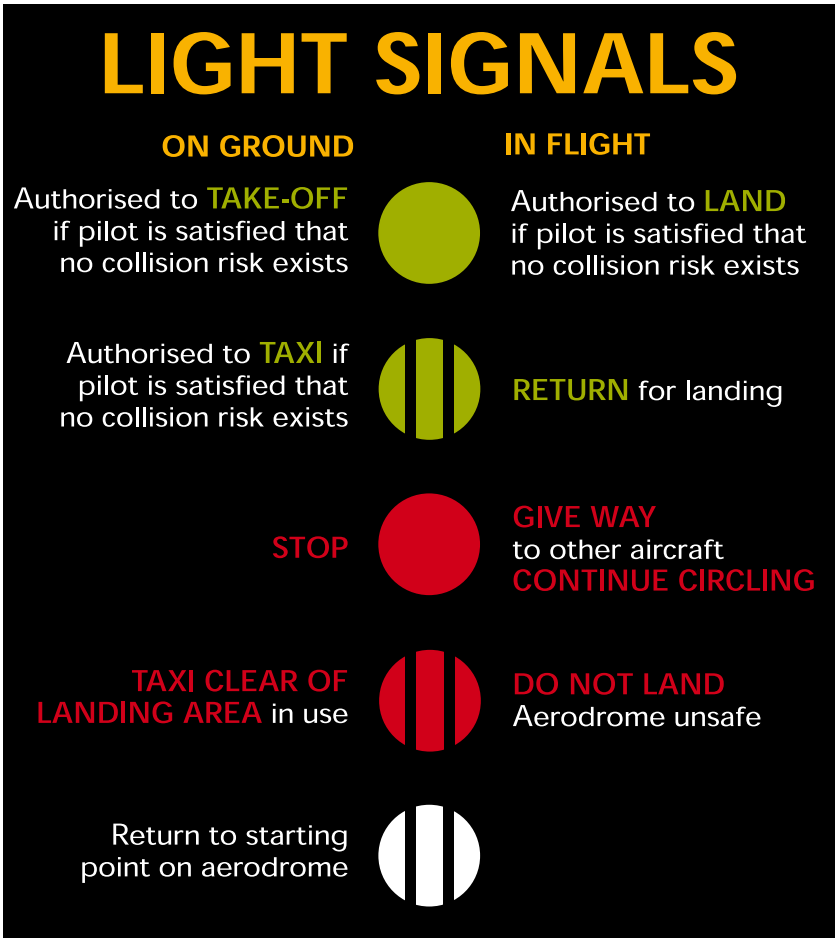
- turns in a direction contrary to the circuit for a particular runway;

  An ATC circuit entry instruction constitutes a clearance for a contrary turn, if required to comply with the instruction.

- circuits at a height different to the circuit altitude published in ERSA for the particular GAAP aerodrome; and
- operations on routes or at altitudes different from those published in ERSA for a particular GAAP aerodrome.

A clearance is required prior to operations in a GAAP CTR. A clearance to take off, or instruction for circuit entry or transit, constitutes this clearance.

A pilot must not make a flight under the VFR in a GAAP Control Zone when VMC does not exist. At pilot request, ATC may authorise operations, in less than VMC within these zones, by the issue of a **SPECIAL VFR** clearance.



TAXI PROCEDURES

GENERAL INFORMATION

A GAAP aerodrome caters for high-density traffic and as such, much of the responsibility for safety rests with the pilot in command. If you are taxiing at a GAAP aerodrome and do not intend to depart, then a call to the Surface Movement Control (SMC) advising your intentions is good airmanship.

If you are unfamiliar with the aerodrome, you should ask SMC for "**Detailed Taxi Instructions**".

ATIS

The ATIS is normally available on a discrete VHF or NDB frequency and must be obtained before beginning to taxi. It contains essential information regarding the runway to be used depending on your departure track. An ATIS proforma is located on page 255 and may be photocopied for further use.

An example of a typical ATIS broadcast is:

Moorabbin information ROMEO; runways 35; departures and arrivals east: runway 35 right frequency 118.1; arrivals and departures west runway 35 left frequency 123.0; wind 330 degrees 20 gusting 30; crosswind up to 15; QNH 1018; temperature two zero; cloud: few at 3000; visibility greater than 10KM; Moorabbin information ROMEO.

If the nominated runway is not operationally suitable, the pilot in command must advise ATC by using the phrase '**REQUIRE RUNWAY** (number) [LEFT or RIGHT)".

If another runway is preferred, but not operationally required, the pilot in command must advise ATC by using the phrase "**REQUEST RUNWAY** (number) [LEFT OR RIGHT]".

When ATIS is not available, terminal information will be provided by ATC. This will include runway, traffic patterns and QNH. Landing information may be requested with the inbound report.

ATIS information, where available, must be obtained prior to taxiing.

LISTENING WATCH

No apron information is given concerning aircraft taxiing, or about to taxi.

A continuous listening watch on the SMC frequency must be maintained while taxiing or when conducting ground operations on the manoeuvring area.

TAXI CLEARANCE

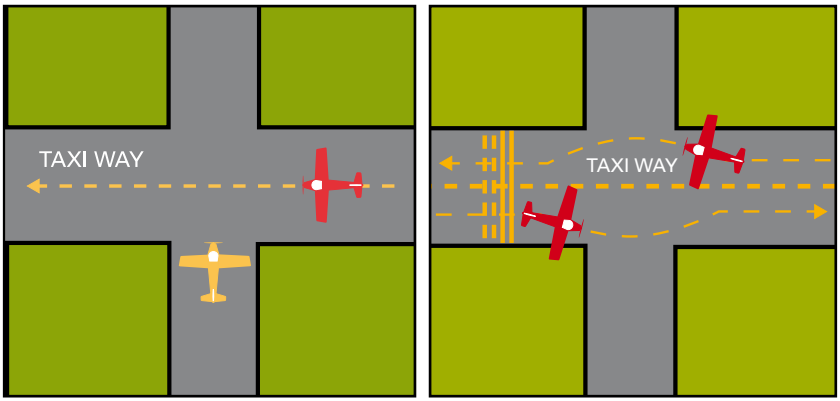
Neither a Taxi call or Taxi Clearance is required at a GAAP Aerodrome. However, pilots should plan the route along which the aircraft will be taxied in anticipation of ATC clearances to cross, enter or taxi along runway.

outbound

LOOKOUT & GIVE WAY

A good lookout is required at all times when taxiing at a GAAP aerodrome.

At GAAP aerodromes, information is not given concerning aircraft taxiing, or about to taxi, on apron areas.



Yellow Aircraft is required to give way to Red Aircraft

REMEMBER:

- you may cross from the dashed side without permission (such as vacating the runway offer landing).
- at the GAAP aerodrome you need permission to cross or enter any runway.
- at the towered non-GAAP aerodromes you need permission to cross from the continuous side for all runways.

Common GAAP Readbacks

1. Route clearance
2. Runway clearance
3. Runway in use
4. Level/altitude
5. QNH
6. Transponder code
7. Radio frequency
8. Turns/headings
9. Speed
10. Conditional clearances

ATIS

ATIS frequency _____ or _____

Terminal Information _____

Runway _____ Wind _____ Crosswind _____

TEMP/QNH _____ Cloud/VIS _____

ATIS

ATIS frequency _____ or _____

Terminal Information _____

Runway _____ Wind _____ Crosswind _____

TEMP/QNH _____ Cloud/VIS _____

DEPARTURE INTO ADJOINING CTA

When departing into controlled airspace, route and level clearances override published GAAP procedures and will be taken into account by ATC.

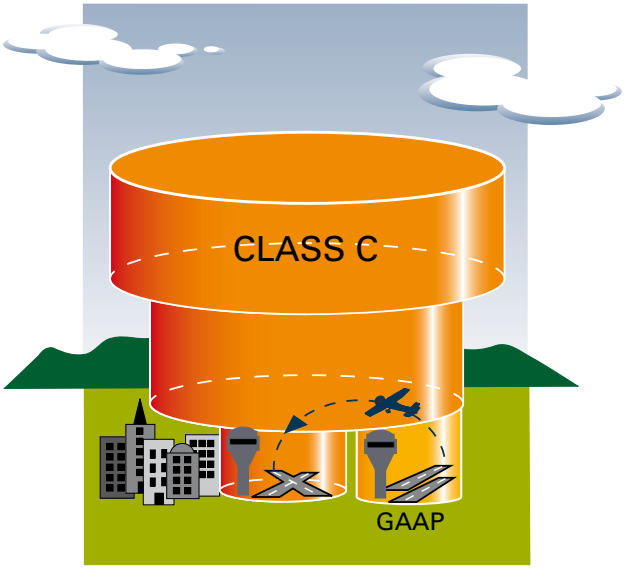
When prior flight details have not been lodged and the intention is to depart VFR into controlled airspace, the following information must be provided to ATC before the taxi call:

- aircraft callsign and "**FLIGHT DETAILS FOR DEPARTURE**" (WAIT for RESPONSE from ATC); then
- aircraft type
- first intended landing point
- route and
- level.

Where a departing aircraft will enter adjacent controlled airspace, frequency change instructions will be issued by ATC.

Departure reports must not be passed on tower frequency at GAAP aerodromes.

Do not enter Controlled Airspace without having received an appropriate airways clearance.



TAKE-OFF PROCEDURES

HOLDING POINT

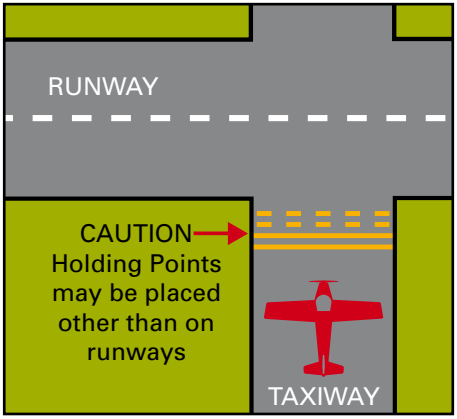
At a holding point you should make the following call.

Pilot: **"Archer Tower, Cessna 172, ZFR, Ready Runway 28 left, for Casino, Dual/ Solo (if training flight) Received (ATIS Code)**

Tower: ZFR clear for take-off runway 28 left.

Pilot: **"Clear for Take-off, runway 28 left, ZFR".**

A rolling start is required once a take-off clearance is given.



RUNWAY DEPARTURES

If departing from a runway, the runway number or ATC instructions determine the direction of turn. Eg Runway right will require a right hand circuit. As each GAAP aerodrome has varying procedures, particular attention must be made to the ERSA and the relevant GAAP Visual Pilot Guide regarding the departure details.

The turn in the direction of the circuit must not be made until 500 feet AGL or otherwise instructed by ATC.

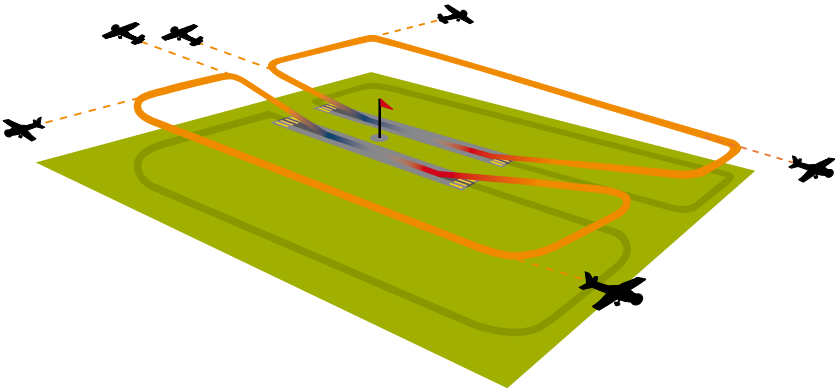
DEPARTURE PROCEDURES

As each GAAP aerodrome has varying procedures, particular attention must be made to the ERSA regarding the departure altitude and tracking details.

Also the relevant Visual Pilot Guide will provide easy to understand procedures.

Tracking outbound via the inbound reporting points is not permitted.

outbound

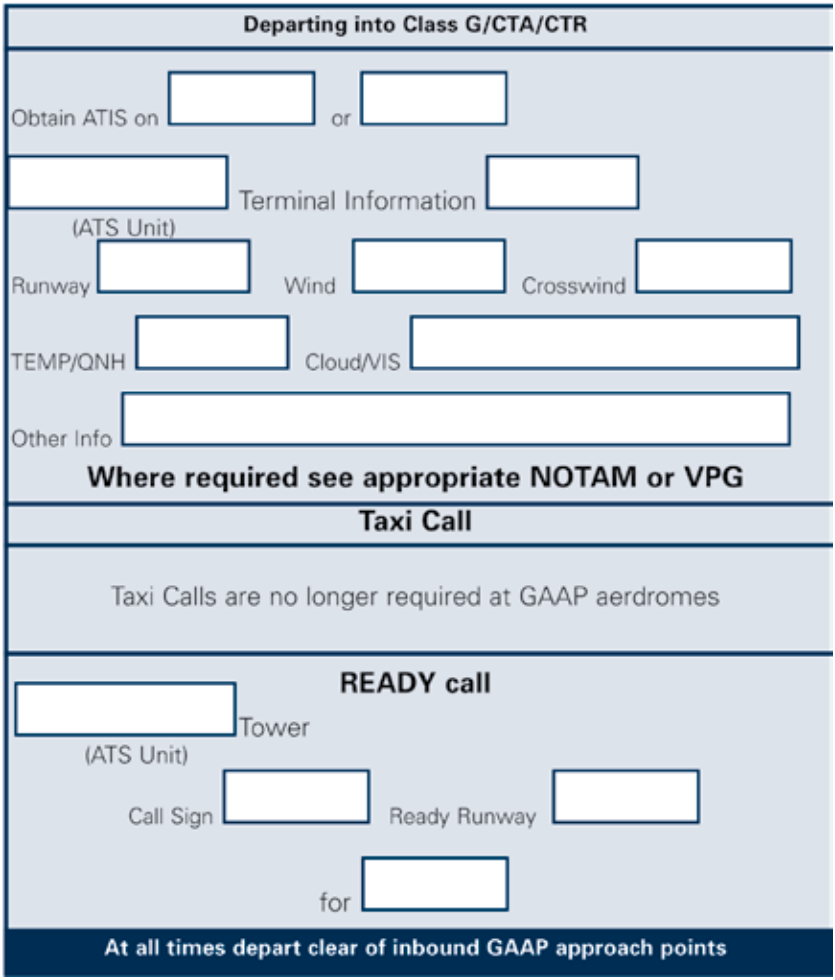


When departing into adjoining non-controlled airspace, a pilot must:

- depart the GAAP CTR by extending the appropriate leg of the circuit;
- obtain specific ATC approval for any turn contrary to the circuit direction; or
- climb to the departure altitude specified in ERSA for the particular GAAP aerodrome;
- avoid the inbound reporting points.

You will need to maintain continuous surveillance for, and separation from, other aircraft and track via departure procedures (if any) for the particular GAAP aerodrome as specified in ERSA. Track well clear of GAAP approach points and associated VFR routes, to reduce the possible conflict with inbound aircraft.

A Departure Report is not required at a GAAP Aerodrome.


Departing into Class G/CTA/CTR
Obtain ATIS on
or
(ATS Unit)
Terminal Information
Runway
Wind
Crosswind
TEMP/QNH
Cloud/VIS
Other Info
Where required see appropriate NOTAM or VPG
Taxi Call
Taxi Calls are no longer required at GAAP aerdromes
READY call
Tower
(ATS Unit)
Call Sign
Ready Runway
for
At all times depart clear of inbound GAAP approach points

inbound

ARRIVAL PROCEDURES

ATIS

The ATIS is available on the appropriate frequency and where practicable must be obtained prior to arriving at an inbound reporting point. The ATIS is normally available on the NDB frequency as well.

When control zones are deactivated the ATIS may be used to broadcast operational information of an unchanging nature. This information may include CTAF frequency, Pilot Activated Lighting (PAL) frequency, preferred runways and noise abatement procedures. It may also include the expected reopening time of the tower. The code letter for these broadcasts outside tower hours is "**ZULU**". Pilots are encouraged to monitor the ATIS outside the normal hours of the tower. There is no need to nominate receipt of "**ZULU**" with broadcasts.

If the nominated runway if not operationally suitable, the pilot in command must advise ATC by using the phrase "**REQUIRE RUNWAY** (number) [LEFT or RIGHT]".

If another runway is preferred, but not operationally required, the pilot in command must advise ATC by using the phrase "**REQUEST RUNWAY** (number) [LEFT OR RIGHT]".

Whenever parallel runways are utilised for simultaneous contra circuits the circuit direction must be determined as follows:

- where runway **RIGHT** is nominated the circuit is right-hand; and
- where runway **LEFT** is nominated the circuit direction is left hand.

When ATIS is not available, terminal information will be provided by ATC. This will include runway, traffic patterns and QNH. Landing information may be requested with the inbound report. ATIS proforma is located on page 235, and may be photocopied for use.

After receiving ATIS, plan taxi route required after landing to anticipate ATC clearance to cross or enter runways.

ALTITUDE

Each GAAP aerodrome has specific procedures relating to the entry altitudes. The information regarding individual aerodromes may be found in ERSA and the appropriate VPG.

It is important to ensure you are entering at the correct level as exiting aircraft may pose a collision hazard.

TRACKING REQUIREMENTS

Visual Terminal Charts (VTC) show the correct track into the GAAP aerodrome. The VTC arrows represent tracks, so wind must be taken into account when flying the inbound and outbound tracks. The Visual Pilot Guide for the specific aerodrome shows graphically how to enter the circuit pattern for landing.

INBOUND REPORTING POINTS

Inbound reporting points are placed at various positions near a GAAP CTR to allow an orderly entry into the CTR without undue delays. It is important to track via an inbound reporting point unless operational conditions will not allow this.

Entry to the CTR must be in accordance with the procedures specified in ERSA for the particular GAAP aerodrome.

INBOUND REPORT

An inbound report must be given to the tower upon passing overhead the inbound reporting point. As a GAAP aerodrome is generally a busy one, patience is needed to effectively negotiate the inbound report.

The pilot in command must report to the tower at a GAAP aerodrome approach point, advising:

- callsign;
- aircraft type;
- position;
- level;
- ATIS code received; and
- Intention.

Pilot: **"Archer Tower, Zulu Foxtrot Romeo, Cessna 172, Target, 1500, Received Delta, inbound"**

Tower: "Zulu Foxtrot Romeo, track to join downwind, runway one zero right."

Pilot: **"Runway one zero right, Zulu Foxtrot Romeo".**

inbound

ENTRY TO THE CIRCUIT

Aircraft must not enter a GAAP CTR until in receipt of a circuit entry or zone transit instruction.

If you have not received your circuit joining instruction before the GAAP CTR boundary, then you are required to turn outbound and **fly clear of the inbound reporting point, before trying again.**

INBOUND RADIO CALLS

GAAP

Prior to reaching the GAAP approach point obtain ATIS.

Terminal Information [ ]

Runway [ ] Wind [ ] Crosswind [ ]

TEMP/QNH [/] Cloud/VIS [/]

Other Info [ ]

Listen out for preceding traffic on Tower Frequency.

Contact Tower on [ ] approaching the GAAP approach point

Keep A Good Lookout

Inbound Radio Call

[ ] *Tower*

Call Sign [ ] Aircraft Type [ ] Position [ ]

Altitude [ ] feet Received [ ] *Inbound*

Note: Readback of circuit entry instructions at a GAAP is not required.

Follow ATC instructions for landing

Remain on Tower Freq until clear of all active runways.

Then call SMC. Ask for *"taxi guidance"* if required.

Cancel SARTIME through CENSAR

1800 814 931

A circuit entry instruction constitutes a clearance to descend, where applicable, to the circuit altitude specified in ERSA, except where:

- ATC issues an "**OVERFLY AT (level)**" or "**JOIN UPWIND AT (level)**" instruction; or
- an alternative procedure is specified in ERSA.

"OVERFLY AT (level)" is an ATC instruction which:

- authorises entry into the CTR at the altitude specified by ATC;
- requires the pilot to overfly the aerodrome maintaining this altitude; and
- is used by ATC to direct aircraft overhead the aerodrome clear of circuit traffic, and where parallel circuits are in use, authorises the aircraft to enter airspace associated with the opposite circuit.

ATC will issue a separate circuit entry or sequencing instruction to authorise descent.

"JOIN UPWIND AT (level)" is an instruction which:

- authorises entry into the CTR at the altitude specified by ATC;
- requires circuit entry tracking upwind over the runway centre-line, clear of the opposite circuit airspace where parallel runways are in use; and
- is used to position aircraft in the circuit overhead the runway from the approach point associated with the inbound call.

ATC will issue a sequence instruction to authorise descent from the upwind leg to join the circuit. An ATC sequencing instruction cancels any altitude restrictions associated with the UPWIND or OVERFLY instructions.

ATC may issue a sequencing instruction with a take-off or touch-and-go clearance. When issued with a sequencing instruction, a pilot must follow the preceding aircraft.

Unless otherwise instructed by ATC, a pilot must report DOWNWIND when starting the downwind leg, and must advise aircraft type, callsign and

intentions (ie, full stop or touch-and-go). If frequency congestion prevents the call being made in this position, the pilot must report MID DOWNWIND or LATE DOWNWIND, as appropriate. When appropriate, ATC will issue a sequencing instruction.

Non-standard circuit operations, eg, glide and flapless circuits, must be advised to ATC, normally with the DOWNWIND report. This advice will also alert other circuit traffic. ATC must also be advised of simulated engine failures and asymmetric training in multi-engined aircraft at the earliest opportunity.

LANDING PROCEDURES

SEQUENCING

As GAAP aerodromes are generally busy, it is very important to keep a vigilant lookout and pay careful attention to the instructions issued by ATC. In sequencing aircraft ATC will indicate the position of the preceding aircraft by reference to a leg of the circuit or a clock bearing, and describe it either as a specific type or in general terms (eg Cessna or Twin).

ATC may issue a sequence number. Sequence numbers specify the landing sequence position of an aircraft with respect to any preceding traffic.

The instruction **FOLLOW** requires the pilot to sight the preceding aircraft, and regulate circuit speed and approach to achieve longitudinal separation.

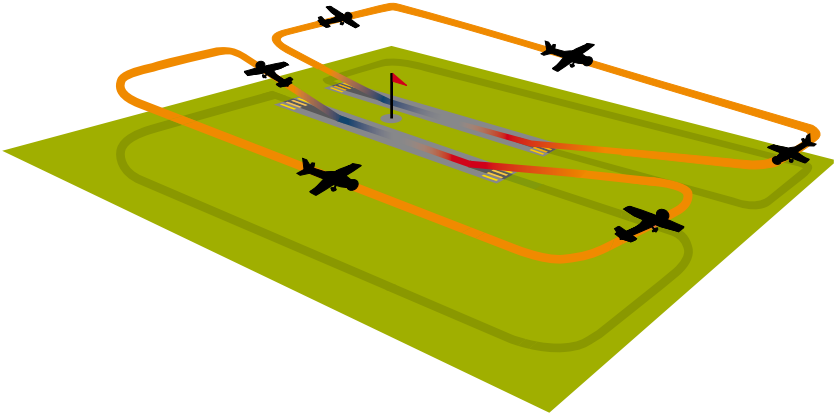
If the preceding aircraft cannot be sighted and identified, the pilot must advise ATC. Do not delay acknowledgment of a sequencing instruction while looking for a proceeding aircraft.

CIRCUIT PROCEDURES

All GAAP Aerodromes are training aerodromes as well as aerodromes that cater for high performance aircraft. Therefore workload of the pilot in command varies a great deal from time to time. Patience and understanding is needed when flying amongst student pilots, as a high workload can easily distract them.

It is of vital importance to keep a positive scan outside the aircraft at all times. If you have been sequenced behind a slower aircraft, it is your responsibility not to overtake the slower aircraft without specific approval from ATC. If you are unable to sight the preceding aircraft, notify ATC immediately.

"TRAFFIC NOT SIGHTED" DO NOT DELAY YOUR ACKNOWLEDGEMENT UNTIL YOU SIGHT THE PRECEDING AIRCRAFT.

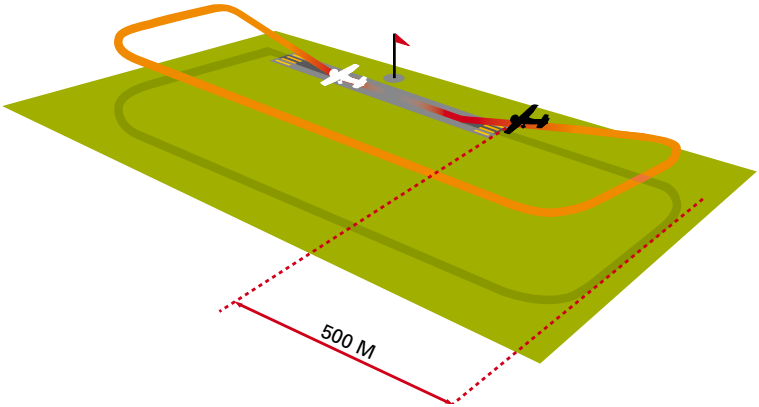


LANDING CLEARANCE

A landing clearance does not absolve the pilot in command from the responsibility for ensuring that sufficient separation from the preceding aircraft will be maintained during the landing.

An aircraft can be cleared to land whilst a preceding aircraft is still on the runway provided ATC is satisfied that no collision risk exists.

The minimum distance from the perimeter of an aerodrome at which the turn onto final must be completed is 500 metres.

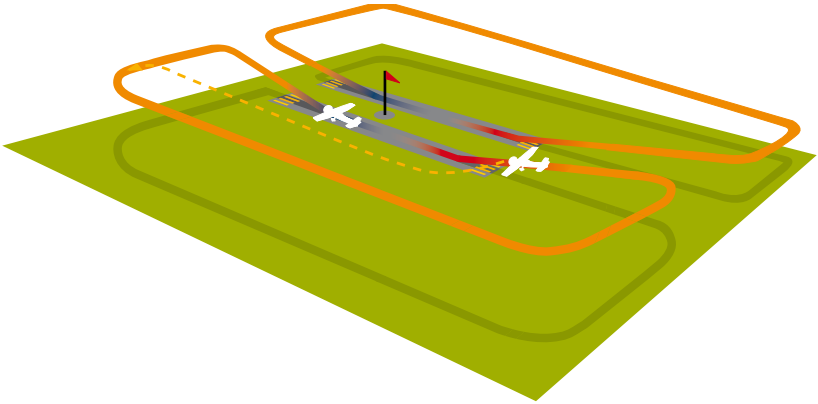


GO AROUND PROCEDURE

Where ATC instructs an aircraft to go around, or missed approach is initiated, the pilot must:

- commence climb to circuit altitude;
- position the aircraft on the active side and parallel to the nominated runway, while maintaining separation from other aircraft; and
- follow ATC instructions or re-enter the circuit from up wind.

ATC will advise when wake turbulence may be a hazard.



TAXIING AFTER LANDING

After landing, the runway must be vacated as soon as possible. After vacating the runway, the pilot must not cross or taxi along a runway unless a clearance to do so has been obtained.

Contact with SMC frequency must be made immediately when clear of the runway used for landing, except when specified in ERSA. SARTIME should be cancelled where applicable.

An instruction to "HOLD SHORT OF RUNWAY (number) [LEFT (or) RIGHT]" requires a pilot to hold at a marked holding point or to hold short of the runway strip.

Before crossing any runway, ensure there is no traffic in both directions of the runway which may cause conflict.

SARTIME CANCELLATION

Sartime can be cancelled once on the ground by phone (1800 814 931) or by radio on the appropriate frequency found in ERSA or the applicable Visual Pilot Guide.

Caution must be taken to remember to cancel Sartime as many man hours are wasted every day confirming aircraft have landed safely and failed to cancel their Sartime.

A sticker on your flight bag, or a reminder on your flight plan may help remind you.

Cancel SARTIME through CENSAR

1800 814 931

TRANSIT OF AND FLIGHT IN PROXIMITY TO A GAAP CTR

Due to the density of aircraft operations in proximity to the GAAP approach point, transits of non-controlled airspace in close proximity to GAAP CTRs should be avoided where possible.

TRANSIT

A pilot of a flight intending to transit a GAAP CTR must comply with the procedures for entry to a GAAP CTR, then proceed as directed by ATC.

Generally you will be required to maintain the entry altitude and track overhead the runway before tracking outbound clear of the inbound reporting points. Other tracking requirements may be approved subject to ATC approval.

FLIGHT IN PROXIMITY

When a radio equipped aircraft will track within 5NM (or as specified in ERSA) of a GAAP CTR boundary, without entering the GAAP CTR, the pilot must:

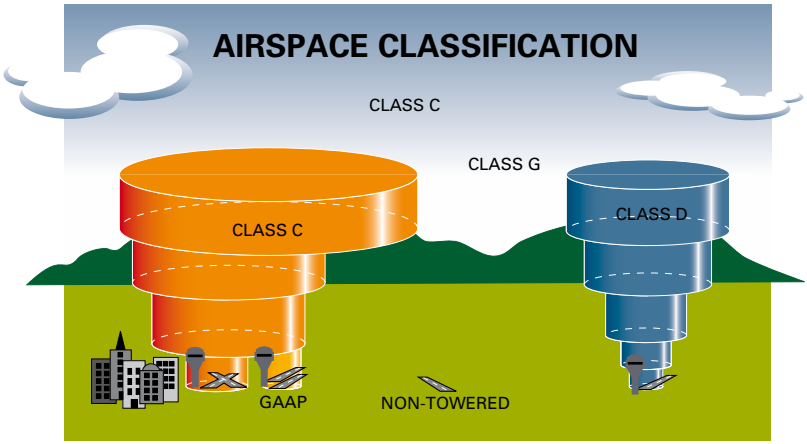
- prior to entering this airspace, obtain the ATIS and broadcast position, altitude, and intention on the appropriate tower frequency; and
- while operating in this airspace, maintain a continuous listening watch on the appropriate tower frequency.

While operating in this airspace, all aircraft must maintain a continuous visual surveillance for other aircraft.

general

This section sets out the pilot action and related Air Traffic Services (ATS) activity in civil and military controlled airspace.

For flight in close proximity to the boundary of controlled airspace, separation is not provided with traffic operating outside controlled airspace.



The types of operations and services available for a particular airspace are categorised in the following table:

Class of Airspace	Operations and Services
Class C	Controlled airspace at and below FL285 excluding airspace designated as Class D or Class E and these control zones in which GAAP are used.
Class D	IFR and VFR flights are permitted, and all flights are subject to ATC clearance. IFR flights are separated from other IFR flights. IFR flights receive a separation service in respect of VFR flights. VFR flights receive traffic information in respect of other VFR flights. A separation service is a controlled condition whereby a separation standard need not be applied between IFR and VFR aircraft.
Class E	IFR and VFR flights are permitted. IFR flights are subject to ATC clearance. IFR flights are separated from other IFR flights. IFR flights receive traffic information on known VFR flights as far as practicable.
Class G	IFR and VFR flights are permitted, and receive flight information service if requested. Not controlled airspace.
GAAP Control Zones	IFR and VFR flights are permitted. Operations are conducted in accordance with published general aviation aerodrome procedures.

AIR TRAFFIC CLEARANCES AND INSTRUCTIONS

Except in an emergency, a clearance is required for all flights in Classes C, D and GAAP airspace, Restricted areas and for IFR flights in Class E airspace.

A clearance is not required for VFR flights in Class E airspace.

Special requirements apply to Parachute jumping Operations in Class E Airspace - refer to AIP ENR 5.5-2.

Where the airspace classification and flight rules require, an aircraft must not enter controlled airspace without a clearance (see page 290 for holding procedures). The pilot is responsible for obtaining a clearance and, once obtained, must not amend a planned route, deviate from the cleared track, or change level without obtaining ATC approval. When determining where the clearance request will be made, the pilot should consider aircraft performance, the possibility of frequency congestion if the airspace is known to be busy, the possibility of changes to route and/or level, and the possible delays that might be incurred when clearances have to be coordinated with adjacent ATC sectors.

Pilots of VFR flights operating in Class E or G airspace requesting a clearance to operate in Class C or D airspace must advise position, level and tracking details when making first contact with ATC.

Within VHF radio coverage, pilots must maintain continuous communications with ATC when operating in classes C and D airspace. Further, when in Class E airspace, pilots of VFR flights should monitor the ATS frequency appropriate to their area of operation.

When communication facilities permit, clearances will be passed direct to pilots by ATC.

The clearance authorises flight in the specified manner to the first point at which the flight leaves controlled airspace, or if completely in controlled airspace, to the first landing point.

An air traffic clearance proposed by ATC does not relieve the pilot from complying with statutory requirements nor from the responsibility for the ultimate safety of the aircraft.

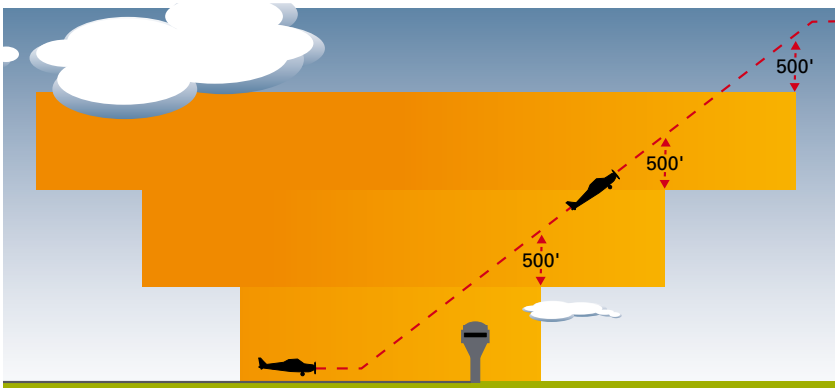
If considered necessary, a pilot should request a different clearance from that issued. In an emergency, a pilot may act without a clearance and immediately advise ATC.

clearances

A pilot must advise ATC immediately if issued a clearance which requires the use of navigation aids not available to the aircraft, or the pilot is not qualified to use.

Air traffic clearances are aimed at keeping an aircraft in controlled airspace, both laterally and vertically, if the pilot has so planned. If a pilot is in doubt that the clearance will keep the aircraft in controlled airspace, ATC should be advised and an alternative clearance may be requested.

A pilot, desiring to retain control area protection during climb in Class C or Class D airspace, should maintain at least 500FT above the lower limit of the CTA steps.



CONTROL AREA PROTECTION

A control instruction issued after a clearance is obtained amends the appropriate item in the clearance. When there is any change in the clearance limit and/or route specified in the initial clearance, a completely new clearance will be issued.

Whenever a restriction or requirement has been imposed, and, subsequently, a further restriction/requirement is imposed, the subsequent instruction will cancel all previous restrictions/requirements unless:

- all restrictions/requirements are restated; or
- the subsequent instructions is prefixed "FURTHER REQUIREMENT".

At a controlled aerodrome, clearance for operation in an adjoining control area is given before departure.

If proposing to fly into a control area from an aerodrome located so close to the entry point that making a full position report before entry is not practicable, a clearance should be requested:

- at a convenient time before entering the runway for take-off at an aerodrome where communication can readily be established before take-off; or
- after take-off, if not available or obtainable before take-off, provided that the aircraft does not enter the control area until cleared.

If landing at an aerodrome with the intention of departing for a control area shortly after landing, any revision of notified details relevant to the clearance, including Estimated Time of Departure (ETD), should be advised to ATC, and a clearance requested before landing.

Pre-departure clearances provided to pilots may include a '**CLEARANCE VOID TIME**".

Where a void time is specified, the clearance is valid only if the flight enters controlled airspace in accordance with the clearance at or before that time.

Pilots should submit details required for flight in controlled airspace at least 30 minutes before the expected time of entry. Flight details submitted with less than 30 minutes notification will be processed on a "controller workload permitting" basis, and may be subject to delay.

AIRWAYS CLEARANCE

A pilot in command must request an airways clearance:

- **before entering controlled airspace**,
- on the clearance delivery frequency, preferably immediately before starting engines, otherwise as soon as possible thereafter; or
- where a clearance delivery frequency is not available, before entering the departure runway.

Airways clearances normally contain the following items:

- aircraft identification
- destination, area of operation, position or clearance limit
- route of the flight
- assigned level
- SSR code
- any additional instructions.

clearances

If an aircraft is cleared only to an intermediate point, and flight beyond that point will be in controlled airspace, a pilot in command must obtain a further clearance before proceeding beyond the intermediate clearance point.

When an aircraft leaves controlled airspace, a further clearance must be obtained for any subsequent flight in controlled airspace.

SEPARATION IN CONTROLLED AIRSPACE (EXCLUDING GAAP CTRS)

In Class C airspace, ATC shall provide separation as follows:

- between IFR flights;
- between IFR and VFR flights;
- between IFR and special VFR flights; and
- between special VFR flights when the visibility is less than VMC.

Additionally, in Class C and Class D airspace:

- at controlled aerodromes appropriate runway separation is applied to all aircraft; and
- ATC provides VFR flights with traffic information on other VFR flights.

Furthermore, when requested, and as far as is practicable, ATC will provide VFR flights in Class C airspace with a suggested course of action to avoid other VFR flights.

It is the responsibility of the pilot in command to see and avoid other aircraft. (CAR 163A).

SPECIAL PROVISIONS

Notwithstanding the general provisions of the previous paragraphs:

- the separation of aircraft taxiing on the manoeuvring area (which does not include apron and parking areas) is a joint pilot and controller responsibility. The pilot must maintain separation while complying with clearances and instructions;
- in the traffic circuit, pilots are required to position their aircraft in such a manner that, while complying with clearances and instructions from ATC, they maintain the necessary separation from other traffic;
- separation is not normally provided within a training area in controlled airspace;
- under certain conditions, the pilot of one aircraft may be given the responsibility for separation with other aircraft. In this circumstance:
  - the pilot is also responsible for the provision of wake turbulence separation, except that ATC is responsible for wake turbulence separation between landing aircraft;
  - the pilot must advice ATC when he/she is unable to maintain, or has lost, sight of the other aircraft;

  - where an aircraft has been instructed to maintain separation from, but not follow, an IFR aircraft, ATC will issue traffic information to the pilot of the IFR aircraft, including advice that responsibility for separation has been assigned to the other aircraft.

- aircraft flying in formation or as part of an in-company flight will not be provided with separation with respect to other aircraft of the same formation or in-company flight. Formation and in-company flights may be conducted subject to pre-arrangement between the pilots concerned and, where applicable, notification of the formation or in-company flight to air traffic control.

SERVICES

CLEARANCE DELIVERY: used by the Airways Clearance Delivery (ACD) service when established on a discrete frequency.

GROUND: used by Surface Movement Control and Apron service (if provided by ATC) when established on a discrete frequency. At some locations this service also provides the Airways Clearance Delivery service on the same frequency.

TOWER: The following services use this identification: Aerodrome Control; Aerodrome/Approach Control when combined.

APPROACH: used by Approach Control (APP) service when established on a discrete frequency or by Departure Control (DEP) when on the same frequency.

DEPARTURES: used by Departure Control (DEP) service when established on a discrete frequency.

CENTRE: used for Area Control (ACC) service.

TRAFFIC INFORMATION IN CONTROLLED AIRSPACE

In controlled airspace (excluding GAAP CTRs) when a separation standard does not exist, ATC will provide traffic information to the aircraft concerned when, in the opinion of the Air Traffic Controller, the information is warranted by the proximity of the aircraft.

The traffic information provided will contain as much information as is known and is necessary to assist the pilot in identifying the other aircraft, eg:

- type
- altitude
- position, either by clock reference, bearing and distance, relation to a geographical point or reported position and estimate
- intentions or direction of flight.

ATC will provide relevant traffic information to aerodrome traffic to enable pilots, while complying with ATC instructions, to maintain separation from other aircraft.

AIRCRAFT OFF-TRACK IN CONTROLLED AIRSPACE - ADVICE TO ATC

In controlled airspace, separation standards are based on the pilot maintaining track as closely as possible at all times.

Corrective action must be taken to regain track as soon as any deviation is observed.

Additionally, the pilot must immediately notify ATC if the aircraft is found to be off-track by any of the deviations described below:

- where track guidance is provided by a localizer or VOR - half scale deflection or more of the Course Deviation Indicator (CDI)
- where track guidance is provided by NDB or Locator - ±50 or more from the specified bearing;
- where the track guidance is provided by DME - ± 2NM or more from the required arc;
- where the track guidance is provided by an RNAV system - an indicated crosstrack deviation of ±2NM or more;
- and when navigating by visual reference to the ground or water - more than 1NM from the cleared track.

The values given above must not be interpreted as defining a sector within which the pilot is permitted to navigate.

DIVERSION FROM TRACK

In controlled airspace, any diversion from track requires prior clearance from ATC, except in an emergency. The values given in previous paragraphs must not be interpreted as tolerances within which diversions from track without clearance are permitted.

DIVERSIONS DUE TO WEATHER

In controlled airspace, any diversion from track due to weather requires prior clearance from ATC. If out of radio contact and unable to obtain a clearance, and the pilot in command considers that the diversion is necessary, a PAN call specifying the details of the diversion must be broadcast on the appropriate frequencies.

PAN PAN, PAN PAN, PAN PAN, ZULU FOXTROT ROMEO, 15NM SOUTH OF NORMANTON, 8500, IS DESCENDING IMMEDIATELY TO 500FT TO AVOID CLOUD

CHANGE OF LEVELS

CONTROLLED AIRSPACE

In controlled airspace, the pilot in command must commence a change of level as soon as possible, but no later than one (1) minute after receiving that instruction from ATC, unless that instruction specifies a later time or place. ATC may require that an assigned level must be reached by a specific time, distance or place. If a pilot in command doubts that the requirement can be met, ATC must be advised immediately.

A requirement to report at a time or place given in the same clearance as a descent/climb instruction does not require the new level to be reached by the specified time or place.

The pilot in command of an aircraft operating in controlled airspace must report:

- when the aircraft has left a level at which level flight has been conducted in the course of a climb, cruise or descent; and
- when the aircraft leaves a level for which ATC has requested a report.

ATC may provide vertical separation between two climbing aircraft, not otherwise separated, by means of a step-climb. Pilots in command, who are subjected to a step-climb, must adopt the following procedure:

- The pilot in command of the lower aircraft must report approaching each assigned level in the sequence.
- The pilot in command of the higher aircraft, on hearing the lower aircraft report approaching each assigned level, must report the last vacated level.

Step-descents are the reverse of the above paragraphs. ATC may specify a rate of climb or descent. Other considerations are as follows:

- The phrase "STANDARD RATE" when included in a clearance, specifies a rate of climb or descent of not less than 500FT per minute, except that the last 1,000FT to an assigned level must be made at 500FT per minute.
- In the case of a step-climb or descent, the specified rate will be applicable to all level clearances issued in the course of the step climb or descent. If unable to comply with the prescribed rate, the pilot in command must advise ATC.

Cruise climb requirements will be accommodated provided that other aircraft are not denied the use of that airspace contained between the reporting points for which the climb is expected to take place.

Summary of reports and broadcasts - all aircraft in classes C & D airspace and GAAP CTRs		
Situation to Use	**Frequency**	**Remarks**
Ready to Taxi (except GAAP)	ATC	Report
Depart to CTRs (except GAAP)	ATC	Report
Position report at prescribed points	ATC	Report (if cancelling SARWATCH)

BLOCK LEVELS

On request from the pilot, a flight may be cleared to operate within controlled airspace within a Block Level provided that other aircraft are not denied the use of that airspace contained within that Block. A glider or balloon cleared to operate in controlled airspace will be assigned block levels.

The pilot shall have complete freedom to change levels within the block, provided that the upper and lower levels are not exceeded. However, a clearance to operate within a Block Level shall be cancelled or amended if another aircraft requests the use of a level within the block.

When cancelling or amending a Block Level clearance, the aircraft operating in a Block Level shall be instructed to climb or descend to an appropriate level or block level in order to provide vertical separation from the other aircraft requesting one of the levels. Aircraft at standard flight levels will be afforded priority over aircraft using nonstandard flight levels.

ENGINE START, PUSH-BACK AND TAXI

ENGINE START

The pilot in command of an aircraft must request approval to start engines when the requirement is notified by ATIS, NOTAM, AIP Supplement, ATC or listed in ERSA.

PUSH BACK

The pilot in command must obtain an approval to push back where this manoeuvre is necessary prior to taxiing. Information about other aircraft moving on the same apron will be provided by the apron service.

TAXI CLEARANCE

When operating from a controlled aerodrome where ATIS is in operation a pilot in command must obtain the ATIS prior to taxi, and advise ATC of the ATIS code when requesting taxi clearance.

The pilot in command must obtain a taxi clearance either prior to moving on the manoeuvring area, or in the case of the above paragraph, at the completion of the push-back manoeuvre.

The taxi clearance regulates entrance to, and movement on, the taxiways. Avoidance of collision on apron areas is a joint responsibility of the pilot in command and any assisting company ground personnel. Information about other aircraft moving on the same apron area will be provided by the ATC (where it exists as a discrete service).

Subject to the following paragraphs, a pilot in command for whom a runway has been nominated for take-off must regard the taxi clearance limit to be:

- for piston-engined aircraft - the holding bay, if provided, otherwise the holding point for the runway; and
- for turbine-engine aircraft or aircraft which have reported "READY" before reaching the holding bay - the holding point for the runway.

A taxi instruction which contains taxi limit beyond a runway must include a "CROSS RUNWAY (number)" instruction to cross that runway. When an aircraft is required to hold short of a runway intersecting the taxi route, ATC will issue a taxi instruction limit of the holding point associated with the intersecting runway.

taxi

An aircraft which has been issued with a taxi instruction limit of the holding point of a runway intersecting the taxi route, or which has been issued with an instruction to "HOLD SHORT" of that runway must subsequently be issued with an instruction to "CROSS RUNWAY (number)".

Aircraft required to hold short of a runway must hold at the appropriate holding point for that runway, or the runway strip edge at the intersection of a crossing runway. A pilot wishing to use less than the full length of the runway available should nominate the intention when requesting the taxi clearance.

ATC may offer an intersection departure and will advise the remaining runway length, if required.

A pilot in command unfamiliar with the aerodrome should "REQUEST DETAILED TAXI INSTRUCTIONS".

VFR aircraft wishing to depart without submitting flight notification must provide the following information on first contact with ATC:

- aircraft callsign and "DETAILS" (wait for a response from ATC)
- destination and first tracking point
- preferred level
- identification of ATIS code received.

PROVISION OF OPERATIONAL INFORMATION

ATC will supply the following information for take-off:

- runway or direction
- wind direction and speed, QNH and, if required, temperature and/or dew point;
- a time check to the nearest half-minute - upon commencing to taxi from the apron prior to take-off;
- the crosswind component on the runway to be used, if this equals or exceeds 8KT for single-engined aircraft or 12KT for multi-engined aircraft
- the downwind component, if the operation is downwind
- aerodrome surface conditions significant to the operation
- known weather information
- birds that may be a hazard to the operation

NOMINATION OF RUNWAYS

ATC will nominate the runway, preferred runway or take-off direction. Where noise abatement procedures are in force, the provisions of DAP NAP must be applied. ATC shall not nominate a particular runway for use if an alternative runway is available, when:

- for runways that are completely dry:
  A. the crosswind component, including gusts, exceeds 20KT
  B. the downwind component, including gusts, exceeds 5KT
- for runways that are not completely dry:
  A. the crosswind component, including gusts, exceeds 20KT
  B. there is a downwind component

take-off

SELECTION OF TAKE-OFF DIRECTION

The pilot in command must ensure that the runway is suitable for the operation. If not suitable for an operational reason, ATC must be advised before taxiing or when requesting an airways clearance by using the phrase "REQUIRE RUNWAY (number)".

Such a request will not result in a loss of priority, provided it is made on first contact with clearance delivery or before taxiing. The decision to take-off rests solely with the pilot in command.

SELECTION OF CIRCUIT DIRECTION

Circuit directions and turns will be specified or authorised by ATC but will not be specified in the take-off clearance when a Standard Instrument Departure (SID) has been authorised.

A pilot in command must notify ATC if a particular turn or circuit is essential to the safe operation of the aircraft by use of the word "REQUIRE".

DEPARTURE INSTRUCTIONS

Departure Instructions may contain the following as required:

- aircraft identification
- radar heading instructions*
- altitude restrictions
- direction of turn
- tracking points
- any other instructions.

***A pilot assigned a radar heading (including runway heading) will not compensate for wind effect.**

When a heading is assigned as a departure instruction, the pilot in command must ensure that the heading and the direction of the turn are read back. This requirement also applies to the initial heading assigned by ATC as part of the radar SID.

TAKE-OFF PROCEDURES

CHANGE TO TOWER FREQUENCY

International aircraft will be instructed by the ATC when to change to the tower frequency prior to take-off. Domestic aircraft should change to tower frequency;

- in the holding bay, or
- close to, or at, the holding point of the nominated runway when ready for take-off.

RUNWAY ENTRY

A pilot in command must not enter an active runway unless a specific clearance to:

- take-off
- line up
- backtrack

has been received, or a clearance to enter for other purposes has been received from ATC.

HOLDING ON THE RUNWAY

THE PILOT IN COMMAND MUST NOT HOLD ON THE RUNWAY IN USE UNLESS PERMISSION TO DO SO HAS BEEN OBTAINED FROM ATC.

CLEARANCE REQUIRED

A pilot in command must not take off unless the specific clearance 'CLEARED FOR TAKE-OFF" has been received.

SEPARATION MINIMA FOR TAKE-OFF

An aircraft will not be permitted to commence take-off until:

- a preceding departing aircraft using the same runway has:
  - crossed the upwind end of the runway
  - commenced a turn
  - if the runway if longer than 1,800M, become airborne and is at least 1,800M ahead of the proposed point of lift off
  - if the preceding aircraft has a MTOW of 7,000KG or less and the following aircraft has a MTOW below 2,000KG and is slower, the preceding aircraft is airborne and is at least 600M ahead of the proposed point of lift off; or
  - if both aircraft have a MTOW below 2,000KG, the preceding aircraft is airborne and is at least 600M ahead of the proposed point of lift off;
- a preceding landing aircraft using the same runway has vacated it and is taxiing away from the runway; and
- a preceding aircraft, using another runway, has crossed or stopped short of the take-off aircraft's runway.

Where reasonable to do so, ATC may issue a take-off clearance in anticipation that the prescribed separation will exist at the time that the take-off roll is commenced.

Other than as specified for Land And Hold Short (LAHSO) Operations, exceptions to these application of separation standards are:

- aircraft taking off in formation with respect to each other;
- aircraft operating in different areas or lanes on aerodromes with runways or facilities suitable for simultaneous take-offs (CAR168); and
- the avoidance of wake turbulence.

AFTER TAKE-OFF

AIRBORNE REPORT – RADAR

Where departures control is established, or when instructed to call radar when airborne, a pilot must, on first contact, report:

- the direction of turn;
- the initial radar heading;
- the altitude passing, to nearest 100FT; and
- the last assigned level.

DEPARTURE REPORT – NON-RADAR

Except when an airborne report has been made, a departure report containing the following information must be passed to the tower:

- departure time (if applicable);
- tracking information;
- the last assigned altitude; and
- the estimate for the first en route reporting point.

The departure time must be calculated as follows:

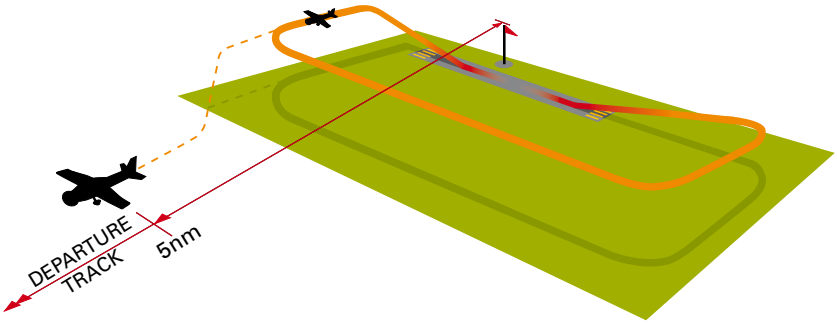
- current time minus an adjustment for the distance from the aerodrome; or
- when over or abeam the aerodrome.

Tracking information must confirm the track established with reference to the appropriate navigation aid, or visual reference.

after take-off

ESTABLISHMENT ON TRACK

Unless otherwise instructed by ATC, a pilot in command must remain within 5 NM of the departure aerodrome to establish flight on the departure track as soon as practicable after take-off.



FREQUENCY CHANGE

When frequency change instructions are issued immediately preceding the take-off clearance, pilots must change frequency automatically from Tower as soon as practicable after take-off, preferably within one mile of becoming airborne.

In all other situations, pilots of departing aircraft are required to remain on Tower frequency until specific frequency change instructions are issued. Pilots can generally expect an instruction to contact Departures Control prior to reaching 2,000FT and should, when advised, effect the change as soon as possible.

When contacting Area Control, advise only whether climbing to, descending to, or maintaining the last assigned level.

EN ROUTE

In non-radar CTA, pilots must report maintaining an assigned level. After any en-route frequency change, the pilot must advise the last assigned level and whether the aircraft is on climb, cruise or descent.

VFR FLIGHTS ENTERING CLASS C OR D AIRSPACE

Before reaching the boundary of class C or D airspace, the pilot must establish twoway communications with ATC on the frequency notified on the chart, in ERSA, or AIP Supplement or NOTAM, and obtain a clearance.

When advance notification has not been provided, the pilot must advise the following to ATC before the point of intended entry:

- aircraft callsign "INBOUND/TRANSIT DETAILS" (wait for the ATC response "GO AHEAD") then advise:
  - flight rules and aircraft type
  - position
  - route and next estimate, and
  - preferred level

The area VHF frequency may be used to obtain a clearance when out of range of the ATC frequency, or to obtain advice as the appropriate ATC frequency on which a clearance can be obtained. If the flight will transit a Radar Information Service (RIS) area before entering controlled airspace, clearance request should be made on the RIS frequency.

If entry to the CTR will be from an adjacent GAAP CTR, a clearance should be requested before engine start. ATC will advise the extent of the delay, if any.

If landing at an aerodrome where ATIS is provided, the pilot should obtain the ATIS before the first contact on the approach/tower frequency. On first contact advise ATIS received.

The clearance to enter will specify the altitude, track and any holding instructions. Some of these items may be combined with the clearance "CLEARED FOR VISUAL APPROACH".

FLIGHTS ENTERING CONTROLLED AIRSPACE FROM NONTOWERED AERODROME

When the controlled airspace and a non-controlled airport in the vicinity, a clearance should be obtained direct on the ATC frequency. When this is not possible, clearances should be requested through the ATS unit providing services in Class G airspace.

VISUAL APPROACH

ATC AUTHORISATION

Criteria under which visual approaches may be authorised by ATC are as follows:

- for a VFR flight by day and night, the aircraft is within 30NM of the aerodrome.

TRACKING REQUIREMENTS

Tracking requirements for a visual approach include the following:

- a pilot in command must maintain track/heading on the route progressively authorised by ATC until: by day, within 5NM of the aerodrome; or by night,
  - for a VFR flight, within 3NM of the aerodrome; and
  - the aerodrome is in sight.
- from this position the circuit must be joined as directed by ATC for an approach to the nominated runway.

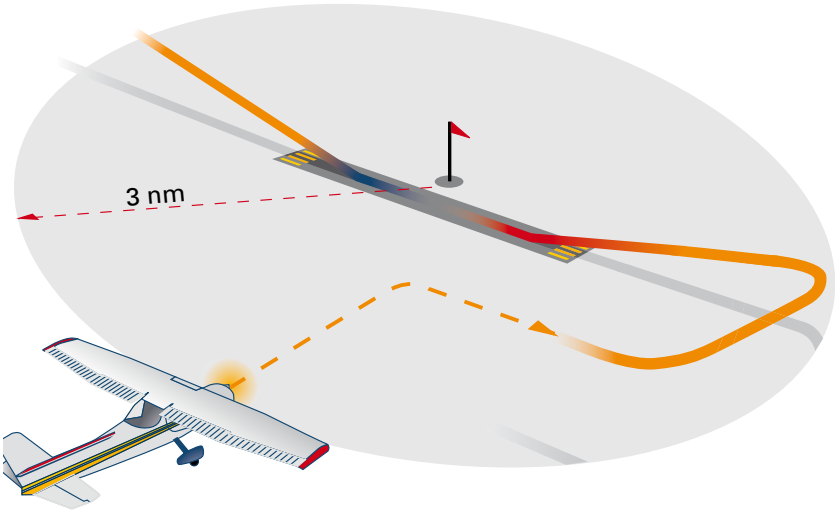
MINIMUM ALTITUDE REQUIREMENTS

For VFR flights during the conduct of a visual approach, a pilot must descend as necessary to:

- by day
  operate not below the lowest altitude permissible for VFR flight (CAR157).
- by night
  maintain not less than the lowest altitude permissible for VFR flight (CAR 174B) until the aircraft is within 3NM of the aerodrome and the aerodrome is in sight. (AIP GEN 3.3)

When conducting a visual approach, a pilot in command must not climb above an altitude reported to ATC as having been reached or left, unless authorised to do so.

A pilot may be assigned the responsibility to follow another arriving aircraft which he/she has reported sighting. When assigned this responsibility, the pilot must maintain separation from and not overtake that aircraft. In this circumstance, the pilot is also responsible for providing his/her own wake turbulence separation. If sighting is subsequently lost, the pilot must advise the ATC immediately.



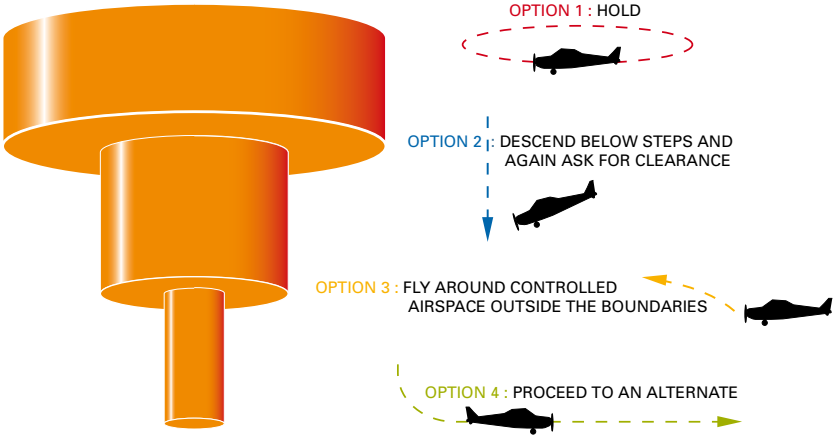
holding

A pilot in command cleared to a point for which there is an approved holding pattern, must hold in that pattern until further cleared. Where a delay of more than five minutes is expected, ATC will advise:

- in a radar environment, an expected landing time; and
- in a procedural environment, an expected approach time.

A pilot in command required to hold in an approach sequence must advise ATC of the latest divert time, when operationally necessary.

When an aircraft is holding because airspace is closed or weather conditions are worse that the prescribed landing minima, ATC will nominate scheduled reporting times. These times will normally be at 15 minute intervals.



LANDING - PROVISION OF OPERATIONAL INFORMATION

ATC will supply the following information for landing operations:

- runway and direction
- wind direction and speed, QNH and, if required, temperature and/or dew point
- known significant weather information, including low cloud and visibility or runway visual range
- a time check (to the nearest half minute) whenever a time to commence final is specified by ATC
- the crosswind component on the runway to be used, if this equals or exceeds 8KT for single-engined aircraft or 12 KT for multi-engined aircraft
- the downwind component if a pilot operates downwind
- aerodrome surface conditions significant to the operation
- birds and other hazards to aircraft
- cautionary advice of wake turbulence.

SELECTION OF LANDING DIRECTION

The pilot in command must ensure that the nominated runway or direction is operationally suitable. If the nominated runway or direction is not suitable, ATC must be advised using the phrase "REQUIRE RUNWAY(number)". Such a request will not result in of loss of priority provided that it is made:

- before reaching 80NM (120NM for jets) from a capital city aerodrome (including Essendon) or 30NM from other controlled aerodromes, for arriving aircraft wholly within controlled airspace; or
- on first contact with ATC for arriving aircraft entering controlled airspace within the distance specified above or a control area step or a control zone.

The decision to land rests solely with the pilot in command.

SELECTION OF CIRCUIT DIRECTION

A pilot in command must notify ATC if a particular turn or circuit is essential to the safe operation of the aircraft. The word REQUIRE must be used to enable ATC to identify the safety requirement.

LANDING CLEARANCES

Pilot in command must not land unless the specific clearance "CLEARED TO LAND" has been received.

When operations at an aerodrome are not restricted to runways, the clearance authorises the proposed operation. The pilot in command should watch for other traffic and ensure that there is no collision risk.

SEPARATION MINIMA FOR LANDING

The appropriate wake turbulence separation standard will always be applied by the ATC between landing aircraft.

A landing aircraft will not be permitted to cross the threshold of the runway on its final approach until;

- a preceding departing aircraft using the same runway
  - is airborne, and
    - has commenced a turn; or
    - is beyond the point on the runway at which the landing aircraft could be expected to complete its landing roll and there is sufficient distance to manoeuvre safely in the event of missed approach; or
  - is at least 1,000M from the runway threshold, and
    - has commenced the take-off run; and
    - in the opinion of the controller, no collision risk exists, and
    - the aircraft taking off has a MTOW of 7,000KG or less; and
    - the landing aircraft is performance Category A and has a MTOW below 3,000KG.
- a preceding landing aircraft using the same runway:
  - has vacated it and is taxiing away from the runway; or
  - will vacate the runway without backtracking, and
    - in the opinion of the tower controller, no collision risk exists; and
    - the preceding landing aircraft has a MTOW of 7,000KG or less; and
    - the following landing aircraft is performance Category A and has a MTOW below 3,000KG; or

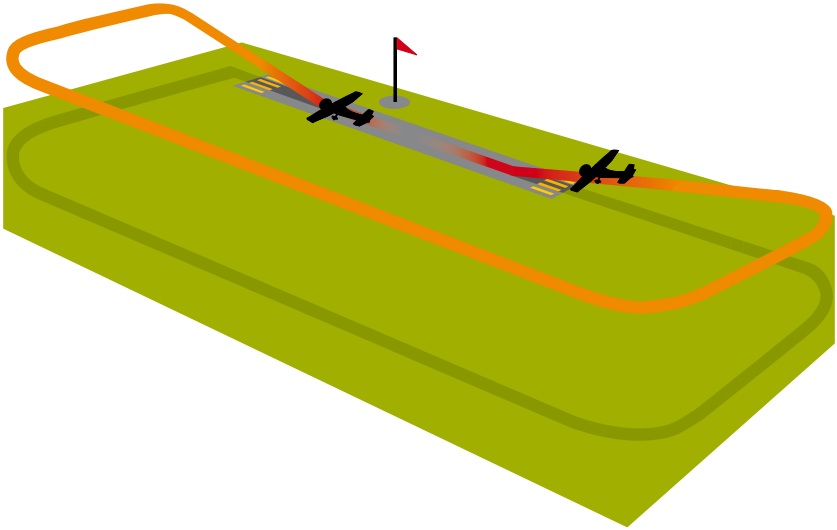
  - in the case where the following landing aircraft is a helicopter, the preceding landing aircraft is at least 300M down the runway from the threshold and ATC is satisfied that no collision risk exists. This standard is not applicable at GAAP aerodromes;

- a preceding aircraft, using a different runway, has crossed or stopped short of the landing aircraft's runway.

In the above situations, a landing clearance may be issued if ATC expects that the required runway separation standard will exist.

Exceptions to separation minima are:

- aircraft landing in formation with respect to each other;
- aircraft operating in different areas or lanes on aerodromes with runways or facilities suitable for simultaneous landings.



Note: Land and Hold Short Operations (LAHSO) are not covered in this guide but are included in AIP ENR 1.1.

GO AROUND PROCEDURES - VISUAL APPROACH IN VMC

In the event that an aircraft is required to go around from a visual approach in VMC, the aircraft must initially climb on the runway track, remain visual and await instructions from ATC. If the aircraft can not clear obstacles on runway track, the aircraft may turn.

The exception to the above procedure is that, at Sydney, visual go-arounds must be carried out as directed by ATC.

TAXIING AFTER LANDING

A pilot in command must not hold on the runway in use unless ATC has so authorised.

After landing, unless specified otherwise by ATC, an aircraft must com.ply with the following:

- promptly vacate the runway without backtracking;
- change from the aerodrome frequency to the SMC frequency (where established) when vacating the runway strip and obtain an ATC taxi instruction;
- not cross any runway that intersects the taxi route unless in receipt of a taxi instruction and a "**CROSS RUNWAY (number)**" instruction from ATC; and
- taxi to the destination via the most direct taxiway(s) available;
- where an apron service is provides on a discrete frequency (see ERSA), change to that frequency on entering the apron.

A taxi instruction which contains a taxi limit beyond a runway must include a "**CROSS RUNWAY (number)**" instruction to cross that runway. When an aircraft is required to hold short of a runway intersecting the taxi route, ATC will issue a taxi instruction limit of the holding point associated with the intersecting runway. An aircraft which has been issued with a taxi instruction limit of the holding point of a runway intersecting the taxi route, or which has been issued with an instruction to "**HOLD SHORT**" of that runway, must subsequently be issued with an instruction to "**CROSS RUNWAY (number)**".

Aircraft required to hold short of a runway must hold at the appropriate holding point for that runway, or the runway strip edge at the intersection of a crossing runway.

When separate frequencies for aerodrome control and surface movement control are in use, the pilot in command, on landing, must change from the aerodrome control frequency to the SMC frequency on vacating the runway strip, and then transmit the aircraft callsign and, if applicable, parking bay number. A pilot in command may "**REQUEST DETAILED TAXI INSTRUCTIONS TO (location)**".

Aircraft taxiing on the manoeuvring area will be regulated by ATC to avoid possible conflict, and will be provided with a traffic information and alerting service. The pilot must maintain separation while complying with the clearances and instructions. A taxi clearance will govern entry to and movement on the taxiways but will not relate to movement on the apron areas. However, available essential information referring to other aircraft entering or leaving the same apron area will be provided. Radio watch must be maintained on the SMC (or tower frequency where no SMC frequency is provided) until parked.

OPERATIONS IN CLASS E AIRSPACE

ATC TRAFFIC SERVICES

In Class E airspace, the following traffic services are provided by ATC:

- separation between IFR flights,
- traffic information to IFR flights about known VFR flights as far as practicable, and
- traffic information to radar-identified VFR flights which are in receipt of a radar information service about other observed traffic.

Traffic information services provided by ATC do not relieve pilots of their responsibilities for continued vigilance to see-and-avoid other aircraft.

In Class E airspace, the following also apply:

- Hazard Alerts will be directed to pilots of IFR flights, and to pilots of known VFR flights.

VFR FLIGHTS IN CLASS E AIRSPACE

VFR flights entering Class E airspace do not require a clearance. VFR flights entering and operating in Class E airspace should:

- avoid published IFR routes, where possible,
- unless receiving a RIS, monitor the Class G area frequency, and
- take appropriate action to avoid potential conflict.

ADDITIONAL ATC SERVICES - CLASS E AIRSPACE

Radar Services. Unless impracticable to do so, ATC will provide some additional radar services in Class E airspace

Note: Many factors, such as the limitations of radar, volume of traffic, controller workload and communications frequency congestion could prevent ATC from providing a radar service. The controller's reason against providing or continuing to provide the service in a particular case is not subject to question, nor need it be communicated to the pilot.

Within radar coverage, a radar-derived traffic information, navigation or position information service may be provided to VFR flights. Pilots wishing to use radar services must be in direct VHF communications with ATC and be equipped with a serviceable transponder. Flights using the service will not be

allocated a specific transponder code except when the ATC intends to provide an ongoing service.

Pilots of VFR flights receiving a Radar Information Service (RIS) in Class E airspace will be provided with information about radar observed traffic. However, due to the nature and type of radar coverage, not all aircraft will be observed on radar. Consequently, traffic information provided by ATC may be incomplete.

Pilots must comply with the see-and-avoid requirements of CAR163A.

On initial contact, pilots must advise position, level and intentions and advise the radar service required. ATC will respond by identifying the aircraft, and notifying the pilot that the aircraft has been "IDENTIFIED" prior to the commencement of traffic information, position information, or navigational assistance. ATC may also assign a specific transponder code prior to, or during the provision of, radar services. ATC must be advised of any attention to change track or level.

When ATC is unable to provide radar services, the pilot will be advised "RADAR SERVICE NOT AVAILABLE". Requests for emergency assistance should be prefixed by "MAYDAY" (three times) or "PAN PAN" (three times), and will receive priority.

Radar services may be terminated at any time by the controller or by pilot request. When services are terminated, ATC will advise "RADAR SERVICES TERMINATED" (see Note 2 below). If a specific transponder code has not been allocated, ATC will advise "SQUAWK CODE 1200".

Note 1: Navigational guidance is advisory in nature and the responsibility for the safe operation of the aircraft remains with the pilot. Terrain clearance, aircraft-to-aircraft separation, and obtaining clearances into controlled airspace remain pilot responsibilities.

Note 2: When radar services to VFR flights are terminated, pilots should monitor an ATS frequency appropriate to their area of operation.

ATC SERVICE TO VFR FLIGHTS IN CLASS E AIRSPACEAND RAS AREAS IN CLASS G AIRSPACE

In designated RAS areas, Flight information and SAR Alerting Services are provided by ATC.

Additionally, a limited on-request service is available to VFR flights, subject to higher priority duties and other factors, including equipment limitations, volume if traffic, frequency congestion and workload. The service available to VFR flights are:

- traffic Information Service. Pilots requesting this service should use the phrase "REQUEST TRAFFIC ADVISORY". Information is based on observed traffic at the time of the request. On-going traffic information will not be provided, unless so advised by the controller.
- position Information Service. Pilots requesting this service should use the phrase "REQUEST POSITION ADVISORY".
- navigation Assistance Service. Pilots requesting this service should use the phrase "REQUEST NAVIGATION ADVISORY". Responsibility for aircraft and terrain avoidance remains with the pilot in command.

On completion of these services, the controller will advise

"RADAR SERVICE TERMINATED".

AIRSPACE RESERVATION

A designated airspace or portion thereof under the control of another authority may be reserved to allow the following:

- flights of special military significance requiring the use of controlled airspace, which would be subject to unacceptable restrictions if normal operations applied;
- civil flights requiring passage through military airspace when weather conditions or other factors make flight on the normal air route inadvisable, or impossible, and when other routes are unavailable, or the use of such routes would impose severe economic penalties on the operation of the aircraft.

There are two types of airspace reservations; fixed defined areas and "mobile" (Eg, aerial refuelling, en route formation flights, etc). Such reservations are normally only applied during limited periods. A designated airspace or portion thereof under the control of a military ATC authority may also be reserved to confine particular activities.

In such airspace, RAAF ATC shall be responsible for the provision of separation for transiting civil or military aircraft from the areas reserved or restricted for current air defence operation.

CLASSIFICATION

Airspace in which a potential hazard to aircraft operations may exist, and all areas over which the operation of civil aircraft may be restricted are promulgated as follows:

- **Prohibited Area**
  Airspace within which the flight of aircraft is prohibited.
- **Restricted Area**
  Airspace within which the flight of aircraft is restricted in accordance with specified conditions.
- **Danger Area**
  Airspace within which activities dangerous to the flight of aircraft may exist at specified times.

These areas are promulgated in the DAH and are shown on MAP charts by boundaries outlined in red and containing the identification of the area as a letter and a number.

The letters allocated are:

P = Prohibited Area

R = Restricted Area

D = Danger area

The number identifies the area.

When used internationally, the identification of these areas are preceded by a FIR identifier as follows;

Brisbane = YB

Melbourne = YM

Details are shown in ERSA or NOTAM

Unless otherwise specified, vertical limits are promulgated as AMSL when at or below the transition altitude, or as a flight level when above the transition altitude. The abbreviation "SFC" means the surface of the ground or water. "NOTAM" indicates that the vertical limits or hours of activation will be notified by NOTAM.

The promulgated vertical limits of prohibited and restricted areas include all the buffers necessary for the protection of aircraft operating outside these areas. Therefore, the promulgated levels may be used by aircraft avoiding the areas, except where the vertical limit abuts controlled airspace, in which case, a clearance is required.

FLIGHT WITHIN PROHIBITED (PRD) AREAS

Flight within a prohibited area is not permitted in any circumstances.

FLIGHT WITHIN RESTRICTED AREAS

Approval for an aircraft to fly within an active restricted area or airspace depends on the location of the airspace and the type of activity being conducted in that area or airspace, at the time. Pilots desiring access to a restricted area or airspace should request clearance from ATC in the same manner that clearance to enter controlled airspace is requested. Clearances are generally only withheld when activities hazardous to the aircraft are taking place, or when military activities require absolute priority. When clearance is granted, the flight must be conducted in accordance with the conditions and instructions specified by the ATC unit.

Civil aircraft operating in military Restricted areas or airspace in which an ATC service is provided will receive a service equivalent to that of Class C airspace unless specified otherwise by ERSA FAC.

When compliance with an air traffic clearance requires flight:

- from controlled airspace into an adjoining active restricted area or airspace; or
- through an active restricted area or airspace into adjoining controlled airspace; or
- through an active restricted area or airspace within controlled airspace; the pilot in command may assume that ATC has obtained approval for the flight. The flight path must comply with prescribed controlled airspace procedures.

When flight within an active restricted area or airspace is required in circumstances other than those specified in this section, operators must submit a request to ATS for specific approval to enter.

FLIGHT WITHIN DANGER AREAS

Approval for flight within a danger area outside controlled airspace is not required.

LANES OF ENTRY

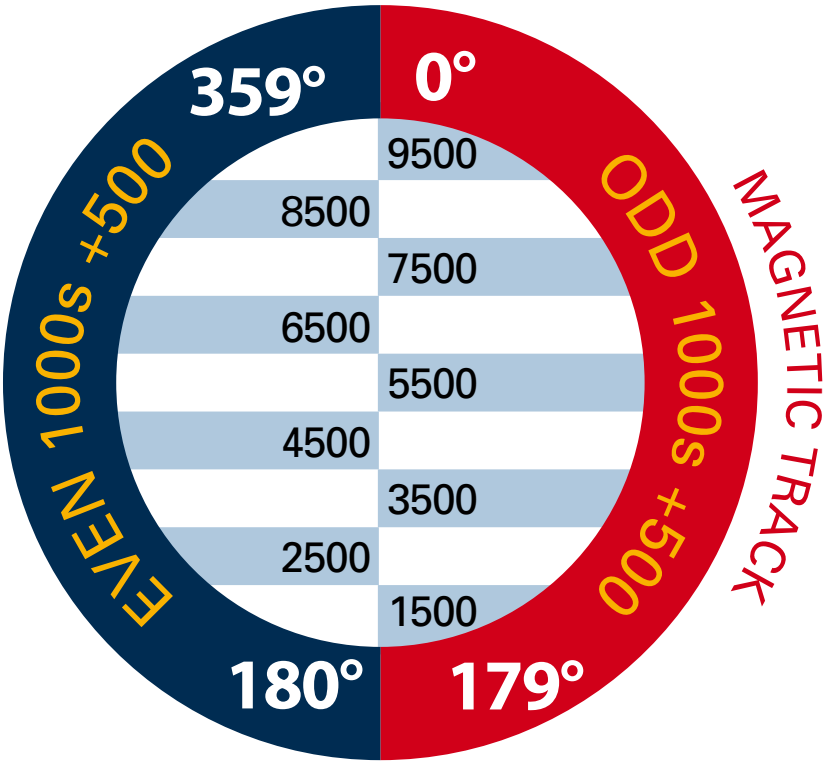
Lanes of entry are established to permit passage to and from a GAAP CTR without entering an adjacent civil or military CTR. The vertical limits provide separation from overlying control or restricted areas.

When using these lanes, pilots must:

- operate under VFR
- conform with the general flight rules regarding terrain clearance, flight over populous areas, and low level restricted areas;
- operate not higher than the altitude specified as the upper limit in the section being flown; and
- keep to the right.

selection of levels

CRUISING LEVELS



CRUISING LEVEL TO BE APPROPRIATE TO MAGNETIC TRACK (CAR173)

- When a V.F.R. flight is conducted at a height of 5,000 feet or more above mean sea level, the pilot in command must, subject to any contrary air traffic control instructions, ensure that the cruising level of the aircraft is appropriate to its magnetic track.
- When a V.F.R. flight is conducted at a height less than 5,000 feet above mean sea level, the pilot in command must, subject to any contrary air traffic control instructions, ensure that the cruising level of the aircraft is, whenever practicable, appropriate to its magnetic track in accordance with the following division.
- Unless CASA otherwise approves, a V.F.R. flight shall not be conducted at a height above flight level 200.

VFR BELOW 5000FT OCTA

Aircraft may maintain a listening watch on other than the area VHF for operations below 5,000FT OCTA such as parachuting, gliding, agricultural operations and flights in the vicinity of non-controlled aerodromes.

Gliders are encouraged, but not required, to monitor the Area VHF when operating above 5,000FT OCTA.

LIMITED RADIO AND NO RADIO PROCEDURES

Authorisation may be given to Australian registered aircraft to vary the requirements for the carriage of radio equipment as specified in Radio Communication and Navigation Requirements. Authorisations are given by the relevant District Office of the CASA.

NON-RADIO AT OR ABOVE 5000 FT

A no-radio aircraft operating OCTA may, due to stress of weather, operate above 5,000FT to the minimum extent necessary for the safe conduct of the flight, provided;

- the aircraft cruises at a VFR level;
- the cruise is conducted in VMC; and
- as soon as is practicable, the aircraft descends in VMC to below 5,000 FT to continue flight in VMC. A pilot not able to comply with these requirements must proceed to the nearest suitable aerodrome and land.

A no-radio aircraft other than a glider may operate above 5,000FT within the confines of a published Danger Area. Gliders may be authorised to operate above FL200 and monitor an approved frequency other than the area VHF frequency. The area of operation will be advised by NOTAM.

If total or partial failure of mandatory radio communications equipment occurs before flight commences and repair facilities are available, repairs must be made before the flight proceeds. Where repair facilities are not available, and flight to the nearest appropriate repair facility entails flight in controlled airspace or an aerodrome designated CTAF (R), the flight may proceed provided that for flight in controlled airspace ATS is advised of the radio failure and a clearance for the flight is obtained from ATC.

navigation position fixing

The following apply to flight under the VFR:

- the pilot in command must navigate the aircraft by visual reference to the ground or water, or by using any of the methods specified in AIP ENR 1.1 as "ALTERNATE MEANS" , except that when operating at or below 2,000FT above the ground or water, the pilot in command must be able to navigate by visual reference to the ground or water.
- when navigating by visual reference to the ground or water, the pilot in command must positively fix the aircraft's position by visual reference to features shown on topographical charts at intervals not exceeding 30 minutes. When flying over the sea, visual reference features may include rocks and reefs and fixed man-made objects which are marked on suitable charts and are readily identifiable from the air.

Note: Flight above more than SCT cloud, or over featureless land areas, or over the sea, may preclude visual position fixing at the required intervals and may therefore make visual navigation impracticable.

- when navigating by visual reference in controlled airspace the pilot must notify ATC if the aircraft's track diverges by more than one (1) nautical mile from the track approved by ATC, or, if navigating by reference to radio navigation aids, by more than the tolerances given on AIP ENR 1.1-19.4.7.
- VFR flight on top of more than SCT cloud is available provided that:
  - VMC can be maintained during the entire flight, including climb, cruise and descent.
  - for VFR flight on top, the visual position fixing requirements of AIP ENR 1.1-19.1 or the IFR navigational requirements must be met.
  - prior to conducting a VFR flight on top of more than SCT cloud, the pilot in command must ensure that current forecasts and observations (including those available in flight observations) indicate that conditions in the area of, and during the period of, the planned descent below the cloud layer will permit the descent to be conducted in VMC.
  - the position at which descent below cloud is planned to occur must be such as to enable continuation of the flight to the destination and, if required, an alternate aerodrome in VMC (see Notes 1 and 3).

- when navigating by reference to radio navigation systems, the pilot in command must obtain positive radio fixes at the intervals and by the methods prescribed on AIP ENR 1.1-19.1 and AIP ENR 1.1-19.4.6.
- the pilot in command of a VFR flight wishing to navigate by means of radio navigation systems or any other means must indicate in the flight notification only those radio navigation aids with which the aircraft is equipped and the pilot is qualified to use (see Note 2).
- VFR aeroplanes operating above F200 must be equipped with an altimeter calibrated to IFR standards.

Note 1: A pilot must not undertake a VFR flight on top of more than SCT cloud unless the aircraft is equipped with serviceable flight and navigation instruments as specified in CAO 20.18 Appendix IV.

Note 2: "Qualified" means the holder of an instrument rating or NVFR rating which is endorsed for the particular navigation aid or any private or higher category pilot who has received in-flight instruction from a qualified instructor in the use of the radio navigation aid as the sole means of navigation, and who is competent to navigate by use of the aid.

Note 3: Pilots are warned against initiating VFR-on-top when weather conditions are marginal. Before committing their flight to operating VFR-on-top they should be confident that meteorological information used is reliable and current, and clearly indicates that the entire flight will be able to be conducted in VMC.

ALTERNATE MEANS OF NAVIGATION

An aircraft operating under the VFR can also be navigated by:

- a full time licensed flight navigator; or
- an approved self-contained navigation system, or approved long range radio navigation system; or
- use of a radio navigation system or systems on routes where, after making allowance for possible tracking errors of ± 9° from the last positive fix, the aircraft will come within the rated coverage of a radio aid which can be used to fix the position of the aircraft. The maximum time interval between positive fixes must not exceed two (2) hours. (AIP ENR 1.1-19.2.1(a)

Note: self-contained or long range navigation systems may only be used as the sole means of navigation if the system installed in the aircraft has been approved by the CASA and the pilot in command operates the system in accordance with the terms of this approval.

TRACK KEEPING

Tolerances are applied to tracks to assess containment area for the purposes of ensuring navigational integrity, separation from other aircraft, terrain and obstacle clearance and avoidance of specified airspace. Although allowing for the errors inherent in the navigational systems used, these tolerances are based on the assumption that the pilot will maintain track as closely as possible.

The pilot in command must, at all times, take positive action to regain track as soon as a deviation from the correct track is recognised.

BY USE OF NAVAIDS

When using radio navigational aids as the primary means of navigation:

- the aircraft must be navigated by reference to the aid which provides the most precise track guidance with which the aircraft is equipped and the pilot is qualified to use; and
- only those aids which specifically define the relevant track must be used for track keeping.

The order of precision is Localizer, VOR, then NDB/ Locator. When track guidance is provided by radio navigation aids, but navigation is by an approved self-contained navigation system or long range navigation system, the pilot must maintain track as defined by the most accurate radio navigation aid available.

POSITION FIXING WITH NAVAIDS

A positive radio fix is one that is determined by the passage of the aircraft over:

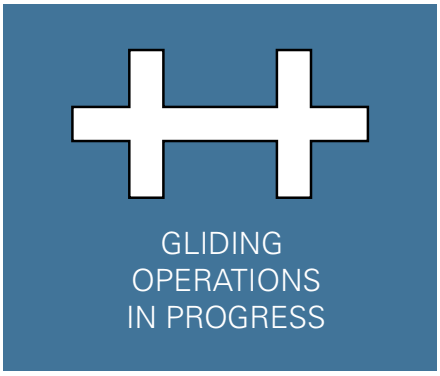
- a NDB; or
- a VOR station; or
- a DME; or
- is one determined by the intersection of two or more position lines which intersect with angles of not less than 45° and which are obtained from NDBs, VORs, Localizers or DMEs in any combination.

For the purpose of this section, a position line must be within the rated coverage of the aid with the exception that if a fix is determined entirely by position lines from NDBs, the position lines must be within a range of 30NM from each of the NDBs.

gliding

GENERAL

Pilots should take extra care when operating at an aerodrome where gliding operations are in progress, Gliding operations are indicated by the "gliding operations in progress" ground signal displayed next to the primary winch direction indicator. Pilots should also establish whether the gliders are being launched by winch or aerotow, or both.



Where aerotowing is in progress, pilots should remain well clear of gliders under tow. If wire launching is used, pilots should establish the locations of either the winch or tow car and the cable, and remain well clear. Over- flying the active runway below 2,000FT AGL is not advised, nor is landing without first ascertaining that the cable if on the ground and not across the landing path. Aerotow and winch launching are possible up to 4,000FT AGL, but launches to 1,500FT or 2,000FT AGL are normal.

Except for operations in controlled airspace, gliding operations may be conducted noradio, or may be on frequencies 122.5MHZ, 122.7MHZ or 122.9MHZ, which have been allocated for use by gliders. Unless otherwise authorised, gliding operations in controlled airspace must be conducted using the appropriate air traffic control frequency. Radio equipped gliders at non-controlled aerodromes will use the appropriate gliding frequency or CTAF. Whenever possible, when operating above 5,000FT AMSL outside a CTAF area, glider pilots are expected to listen out on the area VHF and announce if in potential conflict.

GLIDING OPERATIONS AT LICENSED AERODROMES

Gliding operations may be conducted from:

- a glider runway strip within the runway strip (single runway), using a common circuit direction;
- a glider runway strip adjacent to the existing runway strip (dual runways), using a common circuit direction; or
- a separate glider runway strip parallel to and spaced away from the existing runway strip (parallel runways), using contra-circuit procedures.

Details of the gliding operation are published in the ERSA entry for the aerodrome. When procedures are changed for intensive short-term activity, a NOTAM will be issued.

Where dual or parallel runways are established, the glider runway strip will conform to normal movement area standards, but will be marked by conspicuous markers of a colour other than white. Glider runway strips must not be used except by gliders, tug aircraft and other authorised aircraft.

Where a single runway is established and gliders operate within the runway strip, the runway strip markers may be moved outwards to incorporate the glider runway strip. Glider movement and parking areas are established outside of the runway strips. When the glider runway strip is occupied by a tug aircraft or glider, the runway is deemed to be occupied. Aircraft using the runway may, however, commence their take-off run from a position ahead of a stationary glider or tug aircraft.

Except for gliders approaching to land, powered aircraft have priority in the use of runways, taxiways and aprons where a single runway or dual runway operation is established.

At the locations where parallel runways exist and contra-circuit procedures apply, operations on the two parallel runways by aircraft below 5,700KG MTOW may be conducted independently in VMC by day. Aircraft must not operate within the opposing circuit area below 1,500FT AGL, but should join their circuit upwind over the runway at 1,500FT or downwind at 1000FT. Aircraft should ascertain the runway direction in use as early as possible and conform to that pattern.

A crossing runway should only be used when operationally necessary, and traffic using the crossing runway should avoid conflicting with the established circuit; eg, by remaining below it, or using a long final, or not turning after take-off until well clear.

gliding

At aerodromes other than for which contra-circuits are prescribed, gliders are generally required to conform to the established circuit direction. However, unforeseen circumstances may occasionally compel a glider to execute a nonstandard pattern, including use of the opposite circuit direction in extreme cases.

At licensed aerodromes a VHF listening watch on the CTAF is maintained during aerotow launching by the tug pilot, and during wire launching by the winch or towvehicle driver. The tug pilot or winch/car driver may be able to advise glider traffic information to inbound or taxiing aircraft.

Where wire launching is used launching will cease and the wire will be retracted or moved off the strip when another aircraft joins the circuit or taxis, or a radio call is received indicating this. A white strobe light is displayed by a winch, or a yellow rotating beacon by a tow-car associated vehicle, whenever the cable is deployed.

Gliders are not permitted to perform aerobatics, including spin training, within 2NM of a licensed aerodrome below 2,000FT AGL. Gliders are not permitted to perform continuous 360 degree turns nor to use thermal lift on the live side of a common circuit area (including the circuit area being used by known traffic on a crossing runway) unless they monitor the CTAF and give way to maintain adequate separation from other traffic in the circuit area.

GENERAL

Parachutists must not be dropped if descent will result in their entry into cloud.

A broadcast advising the intention to drop parachutists must be made from the drop aircraft not less than two (2) minutes prior to parachutists exiting the aircraft. This requirement applies to both relevant frequencies when the landing area is located in a CTAF, or when parachutists descend from controlled airspace into underlying Class G airspace.

Pilots of aircraft engaged in parachute operations must make an all stations broadcast advising their intentions, on the appropriate area VHF, and CTAF two (2) minutes prior to parachutists exiting the aircraft. In addition, when operations are conducted in controlled airspace:

- a clearance to drop is required.
- notification of clearance request must be made at least five (5) minutes before the proposed exit.
- two serviceable VHF comms must be carried on ar which is to monitor the CTAF (AIP ENR 5.5)

PARACHUTING OPERATIONS IN CLASSES C AND D AIRSPACE

Parachutists must not be permitted to exit the aircraft until the pilot has received a clearance from ATC authorising the descent. This will be phrased as "**[callsign] CLEAR TO DROP**".

Where parachutists will leave classes C or D airspace on descent, the pilot of the aircraft must broadcast the intention to drop, at least two (2) minutes prior to exit, on the relevant CTAF, or Area VHF frequency. Notwithstanding that a drop clearance may have been issued, the drop must not proceed if replies to this broadcast (or visual observation) indicate that there is conflicting traffic beneath the CTA. The drop must not proceed until the conflicting traffic is clear.

Two VHF comms, one monitoring the underlying CTAF are required (AIP ENR 5.5)

PARACHUTING OPERATIONS IN CLASS E AIRSPACE

Pilots of PJE aircraft operating in Class E airspace are required to establish contact with ATC notifying the intent to commence operations before the drop commences.

ATC will broadcast on the appropriate frequency before the drop as an alert to pilots of IFR flights operating in the airspace. Pilots of PJE aircraft must broadcast in accordance with the above paragraphs to alert pilots of VFR flights in Class E airspace, and IFR and VFR flights in underlying Class G airspace.

Pilots of PJE aircraft are responsible for notifying ATC when the jump has been completed.

PARACHUTE OPERATIONS IN CTAF(R) AREAS

Aircraft supporting parachute descents within the vicinity of an airport designated CTAF(R) must be equipped with two VHF radio transceivers in order to monitor traffic in the surrounding airspace (AIP ENR 5.5). Further, in addition to the two (2) minutes prior broadcast on the CTAF frequency, the pilot must advise the intention to drop parachutists, on both the CTAF frequency and all surrounding frequencies, not less than four (4) minutes prior to the planned exit.

Parachutists must not be dropped within 15 minutes prior to the estimated time of arrival of an RPT aircraft, unless the two aircraft are in direct communication and the exit can be completed such that all parachutists have landed prior to the arrival of the RPT aircraft in the circling area. Once the RPT aircraft has landed and taxied clear of the runway, the exit of parachutists may proceed provided there is no other conflicting traffic.

When a departing RPT aircraft has broadcast taxiing for departure, parachutists must not be permitted to commence a descent until the RPT aircraft is clear of the circling area.

PARACHUTE DESCENTS AT LICENSED AERODROMES

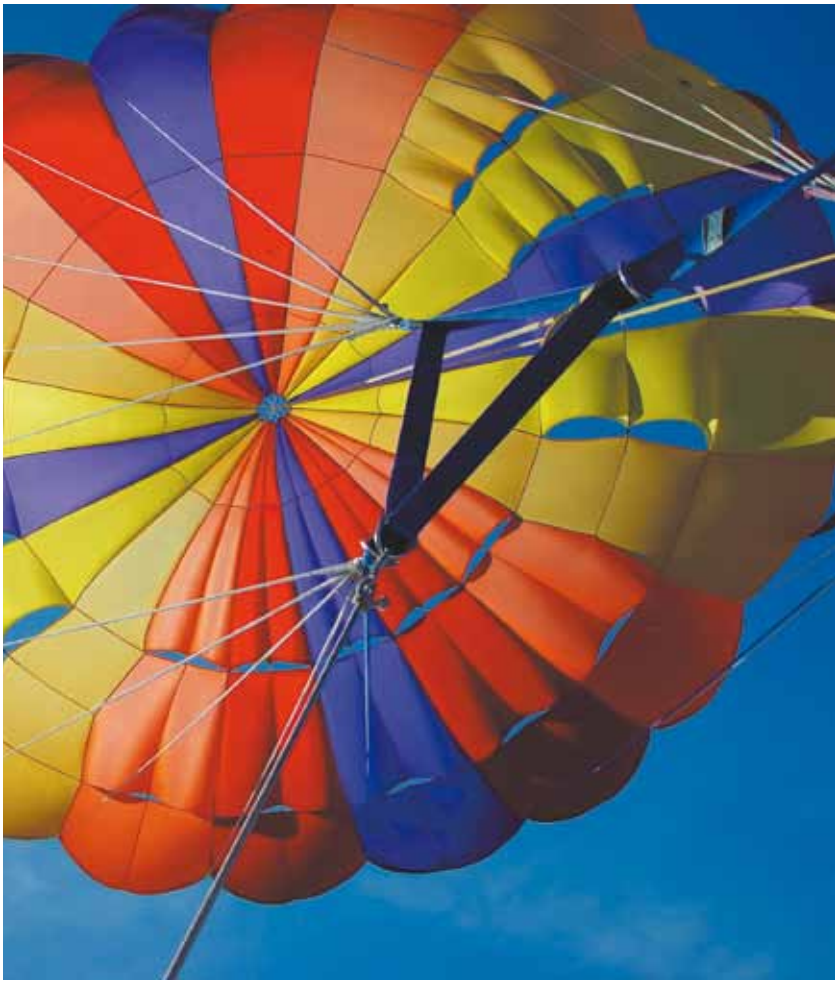
Parachutists must not be dropped onto a licensed aerodrome without the approval of the relevant Area Office of CASA unless:

- the aerodrome operator has approved parachute descents onto the aerodrome, and other regular or locally-based users of the aerodrome airspace have been advised of the intended parachuting operations; and
- the target for parachutists is located clear of movement areas by the distance prescribed as the minimum drop zone radius for the qualifications of the parachutists using it.

Parachutists must not be dropped so as to conflict with any traffic:

- in the live side of any circuit known to be in use, or reasonably expected to be used by known traffic in the prevailing conditions; or
- using any runway, taxiway or apron.

Parachutists must not be dropped if another aircraft is conducting an instrument approach, or is expected to commence an instrument approach within (5) minutes after the planned drop.



ballooning

TYPES OF OPERATION

Balloons are permitted to operate in private, aerial work and charter operations. Aerial work and charter operations are flown under an Air Operator Certificate (AOC) - the pilot in command holds a commercial pilot (balloon) licence and is responsible to a chief pilot in accordance with CAO 82.7. Private operations are conducted by pilots who hold a pilot licence issued by the Australian Ballooning Federation Inc.

Unless authorised by CASA, pilots of balloons engaged in private operations must not operate:

- in controlled airspace; or
- below 2,000FT above aerodrome level within 3NM of a licensed aerodrome, or
- below 1,000FT above ground level over a populous area.

Permission to fly in these areas, either for a specified event or for suitably qualified pilots, may be sought from CASA Area Offices. When permissions are issued, they usually contain directions to operate in the same manner as balloons in aerial work or charter operations.

Pilots of balloons engaged in aerial work or charter operations may:

- operate within controlled airspace subject to an ATC clearance;
- operate from licensed aerodromes; and
- take off from, and land at, adequate open spaces within populous areas. When doing this, they must ensure that the balloon reaches the minimum overflight of 1,000FT AGL within a reasonable time following take-off, and minimise the time spent flying at low level whilst approaching to land in or within 300 metres of a populous area.

Except where overflying a populous area, balloon pilots are not required to observe a minimum height. However, this does not absolve pilots from any responsibility with respect to landholders, stock or property. The Australian Ballooning Federation Inc maintains a register of sensitive areas where landholders have requested that pilots either do not land, or alternatively, observe a minimum overflight height. (AIP ENR 5.5)

CARRIAGE AND USE OF RADIO

Pilots of balloons engaged in aerial work or charter operations are required to carry and use VHF radio for communication, as necessary, with other aircraft and with ATS.

However, the operators are authorised to maintain their own SARWATCH, and no flight notification is required for flights outside controlled airspace.

Pilots of balloons who have been permitted to operated in the airspace a and b above are required to carry and use radio as described in the above paragraph. Where a number of balloons are permitted to operate together in the vicinity of an uncontrolled licensed aerodrome, one balloon in each group may maintain radio communication for the group.

Pilots of balloons engaged in private operations are required to carry radio and use it in accordance with the procedures described in ENR Section 19. Whilst they are operating:

- in the vicinity of a non-controlled aerodrome;
- at or above 5,000FT above mean sea level;
- within 10NM of an aerodrome with a published instrument approach procedure; or
- at night.

The holder of a private pilot certificate issued by the Australian Ballooning Federation Inc may have that certificate endorsed to permit radio communication of VHF frequencies only, without being the holder of a flight radiotelephone operator licence.

OPERATIONS IN THE VICINITY OF AERODROMES

Within 3 NM of an aerodrome, the pilot-in-command of a balloon is required to give way to other traffic operating in the traffic pattern of the aerodrome which is applicable to the runway in use at the time.

The pilot-in-command of a balloon who intends to overfly an aerodrome within 3NM should do so at a height greater than 1,500FT above the aerodrome. In the case of a private balloon flight which is not specifically authorised by CASA, overflight must be conducted more than 2,000FT above the aerodrome.

The pilot of a balloon which is taking off within 3NM of an aerodrome must give way to aircraft which are landing or on final approach to land, by delaying their take-off or, if airborne, by climbing or descending to remain clear of the other aircraft's flight path.

METEOROLOGICAL CONDITIONS FOR BALLOONS.

PG 194 prescribes VMC for balloons. Operations in other than prescribed VMC are not permitted.

NIGHT BALLOON OPERATIONS

Aerial work and charter operations by pilots who hold a NVFR (balloon) rating, and private operations with specific permission from CASA, may be conducted at night. In the case of aerial work and charter operations, these are restricted to the period of (1) hour prior to first light.

OPERATIONS IN CONTROLLED AIRSPACE

Prior to a proposed flight in controlled airspace, a balloon operator or pilot-in-command must liaise with ATS as follows:

- contact ATC by telephone or radio prior to inflating the balloon to advise the planned launch site and likely direction or area of flight, and ascertain the availability of an ATC clearance; and
- call to obtain a clearance before becoming airborne.

The pilot must maintain a continuous listening watch on the appropriate frequency during flight within controlled airspace, and report flight progress as required by ATC. The pilot must report changes in the direction of drift, which will cause the balloon to diverge from its nominated track or area of operations, as soon as possible, and, in any case, before the track error exceeds one (1) nautical mile.

For operations in an area controlled airspace within radar coverage, a serviceable transponder must be carried unless ATC has advised that a transponder is not required for that flight.

In the event of a radio failure or other emergency, the relevant procedures as listed in Section 4 must be followed. Particular attention should be given to notifying the termination of a flight where radio contact is not able to confirm this.

PROCEDURES FOR AIRCRAFT OPERATING IN AN AIR DEFENCE IDENTIFICATION ZONE

GENERAL

The following general rules and procedures apply to enable identification of air traffic entering any designated Air Defence Identification Zone (ADIZ) under the control of Australia.

An ADIZ is airspace of defined dimensions within which identification of all aircraft is required.

When a flight is intended to operate within an ADIZ, the pilot, unless exempted in accordance with para 4, must;

- lodge a flight notification covering flight within the ADIZ with the appropriate ATS unit at least 60 minutes before entry into the ADIZ;
- report position to ATS when passing each position reporting point within the ADIZ;
- report position to ATS at ADIZ boundary with a geographical reference (eg 15NM east of...) or, if the departure point is within 100NM of the ADIZ boundary, report departure;
- report departure if departing from a point in the ADIZ;
- maintain a continuous listening watch on the communications frequency of the appropriate ATS unit or on another frequency as directed until the flight is through the ADIZ;
- not deliberately deviate from tracks and altitudes filed in the flight plan unless prior ATC clearance is obtained, or, outside controlled airspace, notification is given to the appropriate ATS unit; and
- activate the aircraft transponder when within 100NM of the ADIZ and when operating within the ADIZ.

The following flights over Australia and its territorial waters are exempted from compliance with the requirements of para 3;

- a flight originating within an ADIZ which maintains a steady outbound track;
- a flight which remains within 10NM of the point of departure;
- aircraft performing published approach, holding or recovery procedures; and
- a flight conducted in accordance with special procedures arranged with the Area Air Defence Commander.

procedures for defence zone

Flight plans lodged in accordance with para 3 must include details of:

- tracks and altitudes to be flown while operating in the ADIZ;
- estimated elapsed times for each route segment in the ADIZ, including the segment in which the ADIZ boundary is crossed;
- position reporting points, departure and landing points; and
- estimated time at the commencing point of the first route segment for which details are required in accordance with para 3.

Reporting points published in aeronautical charts must be used plus those required by the Area Air Defence Commander.

Pilots must immediately notify ATS of any deviation from flight plan beyond the following tolerances:

- estimated time of commencing the ADIZ route segments - ± 5 minutes;
- over land area - ±10NM from track;
- over oceanic areas - ± 20NM from track.

Note: The 5 minutes expressed in deviation above will be used in considering interception action (see below), but pilots must report predicted deviations of greater than two minutes.

In the event of failure of two-way radio communication, the pilot must proceed in accordance with the normal radio failure procedures.

SPECIAL REQUIREMENTS

Special Requirements may be published relative to a particular ADIZ. Flights exempted in accordance with para 4 will not be exempted from the special requirements unless so specified.

NON-COMPLIANCE

Significant deviations from the requirements for flight in an ADIZ must be reported immediately to ATS and details and reasons for the deviation must be reported at the first point of landing, for transmission to the Area Air Defence Commander.

INTERCEPTION

Aircraft not exempted in accordance with para 4, and which cannot be satisfactorily identified, may be intercepted by fighter aircraft.

If any doubt arises as to the friendly intention of an aircraft, closer identification may be necessary, in which case the identifying aircraft will maintain visual observation of the intercepted aircraft, and:

- approach at the same level from astern on a parallel course to the left of the aircraft to be identified, with a minimum lateral displacement of 1,000M;
- if strictly necessary for identification, move closer while maintaining a generally parallel course, but never closer than 200M;
- if identified as friendly, make the appropriate signal to proceed from a position slightly ahead, by a climbing turn of 90 degrees to port away from the intercepted aircraft, if permissible, considering other air traffic.

Aircraft identified by intercept as;

- **Friendly** should then proceed according to flight plan and/or ATC instructions;
- **Unknown** should be prepared to be shadowed, diverted or instructed to land at a suitable airfield;
- **Hostile** aircraft positively identified as "Hostile" may be engaged and destroyed.

ACTION BY INTERCEPTED AIRCRAFT

An aircraft which is intercepted by another aircraft must immediately:

- follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the table over page.

Visual Signals for Use in the Event of Interception;

- notify, if possible, the appropriate ATS unit;
- attempt to establish radio communication with the intercepting aircraft, or with the appropriate intercept control unit, by making a general call on the emergency VHF frequency 121.5MHZ and repeating this call on the emergency UHF frequency 243.0MHZ, if practicable, giving the identity and position of the aircraft and nature of the flight;

- if equipped with SSR transponder, select code 7700, unless otherwise instructed by the appropriate ATS unit.

If any instructions by radio from any sources conflict with those given by the intercepting aircraft by visual or radio signals, the intercepted aircraft must request immediate clarification while continuing to comply with instructions given by the intercepting aircraft.

DIVERSION OF AIRCRAFT FOR DEFENCE OPERATIONS

The Area Air Defence Commander may, through ATS, direct the flight of aircraft in the interests of national security. Messages initiating such requirements will be prefaced by MILITARY OPERATIONS REQUIRE…

VISUAL SIGNALS FOR USE IN THE EVENT OF INTERCEPTION - INITIATED BY INTERCEPTING AIRCRAFT

SERIAL	INTERCEPTING AIRCRAFT SIGNALS	MEANING	INTERCEPTED AIRCRAFT RESPONSE	MEANING
1.	DAY - Rocking wings from a position slightly above and ahead of, and normally to the left of intercepted aircraft and, after acknowledgement, a slow level turn, normally to the left, on to the desired heading. NIGHT - Same as above and, in addition, flashing navigational lights at irregular intervals. Notes: 1. Meteorological conditions or terrain may require the intercepting aircraft to take up a position slightly above and ahead of, and to the right of the intercepted aircraft, and to make the subsequent turn to the right. 2. If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock its wings each time it passes the intercepted aircraft.	You have been intercepted. Follow me.	AEROPLANES: DAY - Rocking wings and following. NIGHT - Same and, in addition, flashing navigational lights at irregular intervals and following. Helicopters: DAY or NIGHT - Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2.	DAY or NIGHT - An abrupt break-away manoeuvre from the intercepted aircraft consisting of a climbing turn of 90° or more without crossing the line of flight of the intercepted aircraft.	You may proceed	AEROPLANES: DAY or NIGHT - Rocking Wings. HELICOPTERS: DAY or NIGHT - Rocking aircraft.	Understood, will comply.
3.	DAY - Circling aerodrome, lowering landing gear and overflying runway in direction of landing or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. NIGHT - Same as above and, in addition, showing steady landing lights.	Land at this aerodrome	AEROPLANES: DAY - Lowering landing gear, following the intercepting aircraft and, if after overflying the runway, a landing is considered safe, proceeding to land. NIGHT - Same as above and, in addition, showing steady landing lights (if carried). HELICOPTERS: DAY or NIGHT - Following the intercepting aircraft and proceeding to land, showing a steady landing light (if carried).	Understood, will comply.
4.	AEROPLANES: DAY - Raising landing gear while passing over landing runway at a height exceeding 300M (1,000FT) but not exceeding 600M (2,000FT) above the aerodrome level, and continuing to circle the aerodrome. AEROPLANES: NIGHT - Flashing landing lights while passing over landing runway at a height exceeding 300M (1,000FT) but not exceeding 600M (2,000FT) above the aerodrome level, and continuing to circle the aerodrome. If unable to flash landing lights flash any other lights available.	Aerodrome you have designated is inadequate	DAY or NIGHT - If requirement is that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear and uses the Serial 1 signals prescribed for intercepting aircraft. If decision is to release the intercepted aircraft, the intercepting aircraft uses the Serial 2 signals prescribed for intercepting aircraft.	Understood, follow me Understood, you may proceed.
5.	AEROPLANES: DAY or NIGHT - Regular switching on and off of all available lights, but in such a manner as to be distinct from flashing lights.	Cannot comply	DAY or NIGHT - Use Serial 2 signals prescribed for intercepting aircraft.	Understood.
6.	AEROPLANES: DAY or NIGHT - Irregular flashing of all available lights.	In distress	DAY or NIGHT - Use Serial 2 signals prescribed for intercepting aircraft.	Understood.
	HELICOPTERS: DAY or NIGHT - Irregular flashing of all available lights.	In distress		

NOTES:
1. These signals are applicable both within or outside an ADIZ.
2. If radio communication is established during interception, but communication in a common language is not possible, attempts must be made to convey instructions, acknowledge instructions and essential information by using the following phrases and transmitting each phrase twice.

visual signals

RADIO COMMUNICATIONS DURING INTERCEPTION			
1 PHRASE	2 MEANING	3 PHRASE	4 MEANING
CALLSIGN	What is your callsign?	CALL SIGN (call sign) (Note 3)	My call sign is (call sign)
FOLLOW	Follow me	WILCO	Understood. Will comply
DESCEND	Descend for landing	CAN NOT	Unable to comply
YOU LAND	Land at this aerodrome	REPEAT	Repeat your instruction
PROCEED	You may proceed	AM LOST	Position unknown
		MAY DAY	I am in distress
		HIJACK	I have been hijacked
		LAND	I request to land
		DESCEND	I require descent

NOTES:
1. Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".
2. The callsign required to be given is that used in radiotelephony communications with ATS units and corresponding to the aircraft identification in the flight notification.
3. The callsign required is that used with ATS and corresponding to the aircraft identification in the flight notification.

checklist

1. 1 Flight of at least 1Hr at night in 12 months — NO → Or do 1hr dual PAGE 327
   YES
2. 1 take-off & landing in 6 months — NO → Or do 1T/O & L dual PAGE 327
   YES
3. Carrying passengers — NO → Go to 5 PAGE 329
   YES
4. 3 take-offs & landings at night in preceeding 90 days — NO → Or do 3T/O & L at night Solo or Dual PAGE 329
   YES
5. LSALT: determined by TAC / ERC / WAC — NO PAGE 331
   - ± 10NM EITHER SIDE OF TRACK → YES
   - AIP GEN 3.3 - 13 → ± 15° NOAID, ± 10.3° NAVAID, ± 5NM BUFFER → YES
6. Weather Forecast with NOTAMS — AIP ENR 1.10 - 1 — NO → Get One! PAGE 89
   YES
7. Cloud: More than 4/8ths below the LSALT plus 1000ft on the ARFOR — YES → Not advisable due to inability to remain in VMC PAGE 327
   NO
   - FEW = 1 to 2 OKTAS
     SCT = 3 to 4 OKTAS
     BKN = 5 to 7 OKTAS
     OVC = 8 OKTAS

     FEW + FEW = SCT
     FEW + SCT = BKN
     SCT + SCT = BKN
8. TAF's AIP ENR 1.1 - 76
   CLOUD: More than4/8ths below 1500FT or;
   VIZ: Less than 8KM or;
   X/Wind: Greater than maximum for the Aircraft
   or a percentage probability of any of above
   - YES → Plan for an alternate
     - INTER: 30 mins holding
       TEMPO: 60 mins holding
   - NO
9. NAVAIDS AIP ENR 1.1 - 79
   Aerodrome served by a NAVAID + Aircraft equipped with the NAVAID PAGE 343
   - YES → Go to 10
   - NO → Plan for an alternate within 1HR and have NAVAID

10 LIGHTING AIP ENR 1.1 - 80

PAGE 343

PAL with STBY No Resp Person	YES	Plan for an Alternate *
PAL with STBY + Resp Person	YES	Go to 11
PAL with NO STBY + No Resp Person	YES	Plan for an Alternate *
PAL with NO STBY + Resp Person	YES	Plan for an Alternate *
Portable with Resp Person	YES	Go to 11
Portable with No Resp Person	YES	Plan for an Alternate *
Permanent + Resp Person	YES	Go to 11

* Alternates with PAL do not need a responsible person if dual VHF Equipped or 1X VHF + HF + 30mins holding

11 Aircraft Instruments CAO 20.18 Appendix IV

PAGE 340

Does your aircraft have:
Airspeed indicator, Altimeter, Compass, Clock, Turn & Slip, OAT, Artificial Horizon, Suction Gauge, D.G, and anything required by the Flight Manual?

YES
Go to 12

NO 

12 Aircraft Lighting CAO 20.18 Appendix V

PAGE 338

Does your aircraft have:
Instrument lights with variable illumination, Pilot compartment lights, Passenger compartment lights, 1X landing light, Navigation lights, 1 shock proof electric torch for each crew member.

YES
Go to 13

NO 

13 Aircraft Radio Equipment AIP GEN 1.5 - 1 - 1.5 - 5

PAGE 329

Is your aricraft equipped with:
1X VHF radio
1X Navaid NDB or VOR
SSR Transponder if operating in CTA/RADAR

YES
Go to 14

NO 

14 SARTIME AIP ENR 1.10 - 7

PAGE 329

If travelling over 120NM at night submit a SARTIME or FLIGHT NOTE (Left with a responsible person)?

YES
ENJOY YOUR FLIGHT

NO SUBMIT ONE

QUALIFICATIONS FOR NIGHT FLYING UNDER VFR (CAR 174C)

- Subject to this regulation, a person other than:
  - in the case of agricultural operations—the holder of a licence on which a night V.F.R. agricultural rating has been endorsed; or
  - in the case of any other flight—the holder of a licence on which a night V.F.R. rating has been endorsed; or
  - a student pilot, or holder of a private pilot licence, a commercial pilot licence or an air transport pilot licence, permitted under Part 5 to fly an aircraft in a traffic pattern at night under the V.F.R.; shall not fly an aircraft at night under the V.F.R.
- A pilot who holds a licence on which an instrument rating for a category of aircraft has been endorsed may fly an aircraft of the same category at night under the V.F.R.:
  - using the types of navigation aids endorsed in the pilot's log book for use with that rating; and
  - subject to compliance with any conditions that CASA issues in Civil Aviation Orders in relation to aeronautical experience and recent experience.

In this regulation, a reference to flying an aircraft includes a reference to conducting a flight as pilot in command.

VFR FLIGHTS AT NIGHT (CAR 174B)

- Except with the permission of CASA, an aircraft shall not, except when necessary for take-off or landing, be flown at night under the VFR at a height less than 1,000 feet above the highest obstacle located within 10 miles of the aircraft in flight.
- A single engine aircraft must not be flown at night under the VFR except in the following operations:
  - private operations;
  - aerial work operations;
  - charter operations that do not involve the carrying of passengers for hire or reward;
  - charter operations that involve the carrying of passengers for hire or reward, if:

- the operator is approved in writing by CASA to conduct the operations; and
- the operations are conducted in a turbine powered aeroplane approved in writing by CASA for those operations.

CHTR, AWK and PVT operations under the VFR at night must not be conducted unless the forecast indicates that the flight can be conducted in VMC at not less than 1000FT above the highest obstacle within 10NM either side of the track.

CIRCUIT TRAINING OPERATIONS AT NIGHT

Aircraft engaged in training operations at night in the circuit area must not,

when below 1,500FT AGL, carry out any manoeuvres which involve:

- the simulation of failure of an engine; or
- flight in a simulated one-engine inoperative condition; or
- the intentional shutdown of a serviceable engine.

PRIVATE (AEROPLANE) PILOT: RECENT EXPERIENCE REQUIREMENTS (CAO 40.2.2)

A night V.F.R. rating does not authorise the holder of the rating to fly as pilot in command of an aircraft by night unless:

- within the period of 1 year immediately before the day of the proposed flight, he or she has undertaken:
  - in the case of a balloon grade of night V.F.R. rating — at least 1 flight of at least 30 minutes duration while flying a balloon at night as pilot in command, as pilot acting in command under supervision or in dual flying; and
  - in any other case — at least 1 flight of at least 1 hour duration while flying an aircraft at night as pilot in command, as pilot acting in command under supervision or in dual flying; and
- in the case of an aeroplane grade of night V.F.R. rating — within the period of 6 months immediately before the day of the proposed flight, he or she has:
  - carried out at least 1 take-off and 1 landing at night while flying an aeroplane as pilot in command, as pilot acting in command under supervision, or in dual flying; or
  - satisfactorily completed an aeroplane flight review or an aeroplane

proficiency check that was conducted at least in part at night; or

– passed a flight test that was conducted at night for the purpose of the issue, or renewal, of an aeroplane pilot rating; and

- in the case of a helicopter grade of night V.F.R. rating — within the period of 6 months immediately before the day of the proposed flight, he or she has:

  – carried out at least 1 take-off, 1 circuit and 1 landing at night while flying a helicopter as pilot in command, as pilot acting in command under supervision, or in dual flying; or

Note: A person carries out a circuit while flying a helicopter if the person:

- takes off in the helicopter from an aerodrome; and
- flies the helicopter around the aerodrome in accordance with the traffic pattern for the aerodrome; and
- lands the helicopter at the aerodrome.

  – satisfactorily completed a helicopter proficiency check that was conducted at night; or

  – passed a flight test that was conducted at night for the purpose of the issue of a helicopter pilot licence, or the issue, or renewal, of a helicopter pilot rating; and

- in the case of a balloon grade of night V.F.R. rating — within the period of 1 year immediately before the day of the proposed flight, he or she has:

  – carried out at least 1 flight at night as pilot in command, as pilot acting in command under supervision or in dual flying while flying a balloon; or

  – satisfactorily completed a balloon proficiency check that was conducted at night; or

  – passed a flight test that was conducted at night for the purpose of the issue of a balloon pilot licence, or the issue, or renewal, of a balloon pilot rating.

CARRYING PASSENGERS

A private (aeroplane) pilot must not fly an aeroplane as pilot in command if the aeroplane is carrying any other person unless:

- if the flight is undertaken in daylight—the pilot has, within the period of 90 days immediately before the day of the proposed flight, carried out at least 3 takeoffs and 3 landings while flying an aeroplane as pilot in command or as pilot acting in command under supervision, or in dual flying; and
- if the flight is undertaken at night—the pilot has, within the period of 90 days immediately before the day of the proposed flight, carried out at least 3 takeoffs and 3 landings at night while flying an aeroplane as pilot in command or as pilot acting in command under supervision, or in dual flying.

RADIO COMMUNICATION SYSTEMS

CLASS	AIRSPACE	COM RQMTS	REMARKS
NVFR	CTA & VHF OCTA		Capable of communication on all VHF Frequencies.

FLIGHT NOTIFICATION

Flight Category	Class Of Operation	Type of Operation	Summary of Flight Notification Options
IFR	All Classes	All Operations	FULL FLIGHT DETAILS
VFR	RPT and CHTR	All Operations	SARTIME or FLIGHTNOTE
VFR	AWK and PVT	Over-water flights	SARTIME or FLIGHTNOTE
		In designated Remote Areas	SARTIME or FLIGHTNOTE
		At night proceeding beyond 120NM from the aerodrome of departure	SARTIME or FLIGHTNOTE
VFR	AWK and PVT	All Other Operations	SARTIME. FLIGHT NOTE or NO NOIFICATION

Submission of flight details at least 30 minutes before ETD is recommended.

OPERATION	AIDS		REMARKS
	NO	TYPE	
CHTR/AWK 5700KG or less MTOW, and PVT	2	ADF, VOR DME, GPS	Applicable to operations in 5700KG or less
NGT VFR	1	ADF or VOR	

RATED COVERAGE

The following ranges are quoted for planning purposes. Actual ranges obtained may sometimes be less than these due to facility and site variations (see ERSA). The localizer ranges are for those installations that have been nominated for position fixing at ranges beyond 25NM:

- NDB (published in ERSA);
- VOR and DME:

Aircraft Altitude (FT)	Range (NM)
Below 5,000	60
5,000 to below 10,000	90
10,000 to below 15,000	120
15,000 to below 20,000	150
20,000 and above	180

- Localizer:

Aircraft Altitude (FT)	Range (NM)
Above 2,000 AGL	within
±10° of course line	25
Below 5,000	30
5,000 and above	50

The LSALT specified for a route segment is that for IFR procedures. Where an NDB or VOR mark the segment, the tolerances applicable to the NDB are used. Unreported obstacles up to 360FT may exist in navigation tolerance areas. Therefore, LSALT is calculated by adding:

- 1,000FT to the highest obstacle, where the highest obstacle is more than 360FT above the height determined for terrain, or
- 1,360FT to the height determined for terrain where the highest charted obstacle is less than 360FT above the height determined for terrain.

The minimum LSALT published is 1,500FT due to lack of data concerning terrain near sea level.

LSALT details for RNAV routes are shown in each grid square formed by the parallels and meridians. On the ERCs-H, the grid is at 4° intervals, and at 1° intervals on the ERC-L and TACs (See also AIP GEN 3.3 para 3.2).

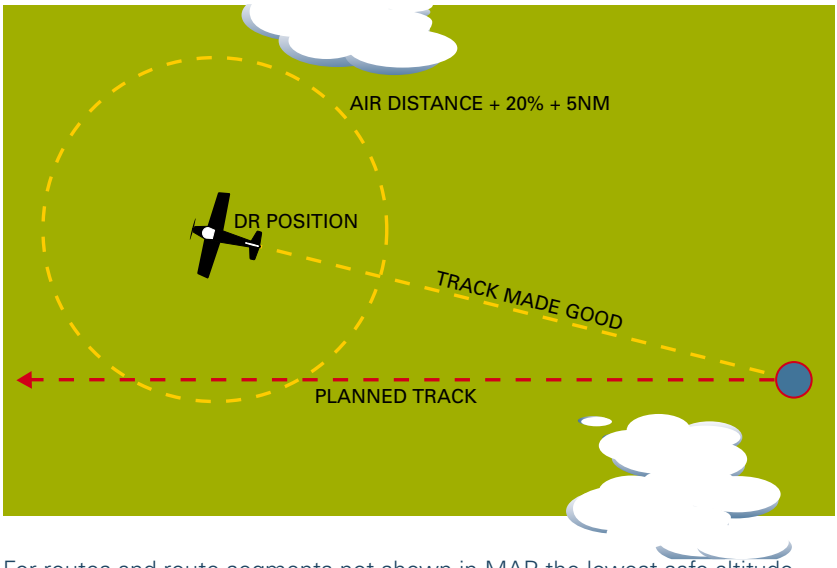
Lowest safe altitudes for IFR flights are published in MAP, NOTAM or AIP Supplement.

Grid LSALTs have been determined for ERC and TAC. On each ERC-H the grid for each LSALT is a square with the dimensions of four degrees of latitude by four degrees of longitude. On ERC-L and TAC, the grid squares comprise one degree of latitude by one degree of longitude. The Grid LSALT is normally displayed in the centre of the grid square.

A pilot using Grid LSALT for obstacle clearance is responsible for determining the allowance for navigation error that should be applied, considering the limitations of the navigation aids or method of navigation being used for position fixing. This navigation error allowance must be applied to the proposed track. The highest Grid LSALT falling within the area covered by the determined navigation error must be used.

If the navigation of the aircraft is inaccurate, or the aircraft is deliberately flown off track, or whenever there is failure of any radio navigation aid normally available, the pilot in command must ensure that the aircraft is flown not lower than 1,000 FT above the highest terrain or obstacle within a circle, centred on the DR position, with a radius of 5NM plus 20% of the air distance flown from the last positive fix.

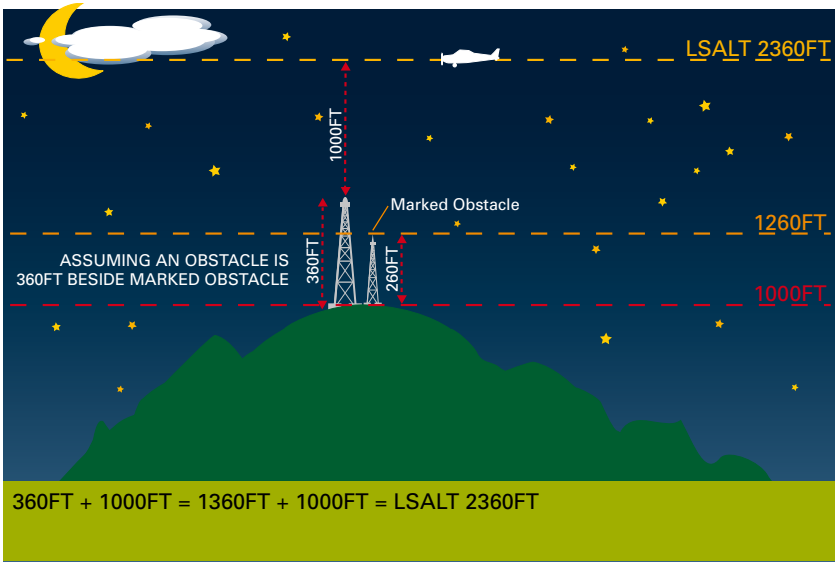
lowest safe altitude

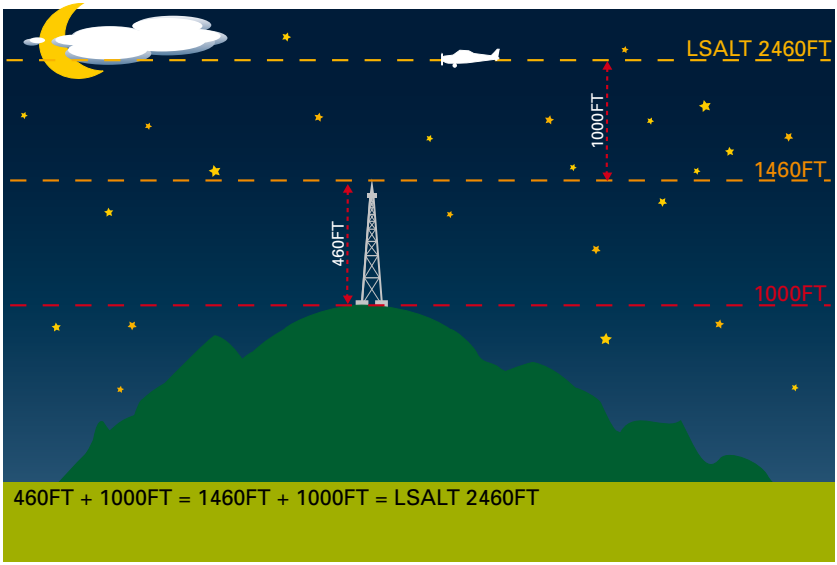


For routes and route segments not shown in MAP, the lowest safe altitude shall be not less than 1,000FT above the highest terrain or obstacle within an area of 5NM surrounding and including the area described on the following paragraphs 3 and 4, except that where the highest terrain or obstacle in the tolerance area is not above 500FT, the lowest safe altitude shall be not less than 1,500FT. To ensure compliance with the foregoing requirement, LSALT must be calculated using the following methodology (which takes into account the obstacle reporting requirements of CAR 89Y).

After assessing obstacles and terrain in the relevant area, either:

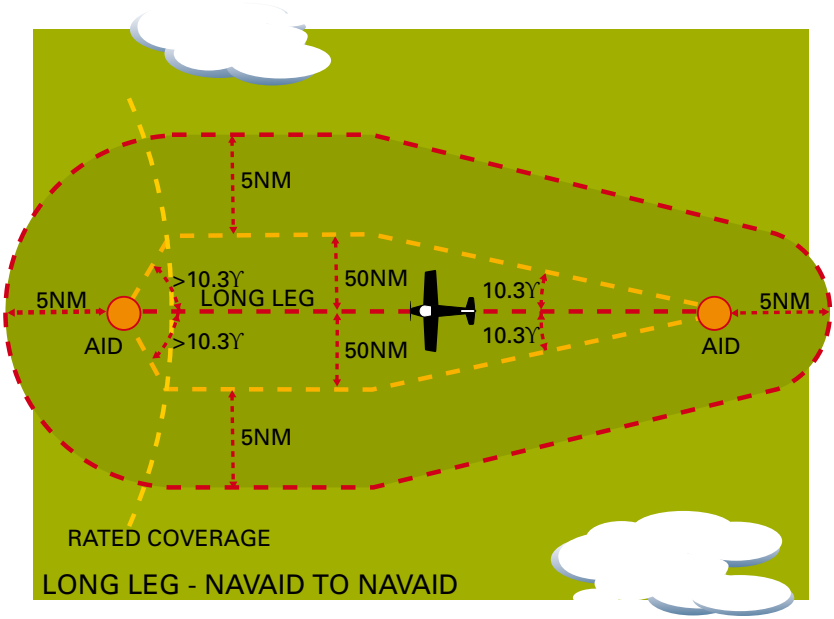
- where the highest obstacle is more than 360FT above the height determined for terrain, add 1,000FT to the highest obstacle: or
- where the highest charted obstacle is less than 360FT above the height determined for terrain, or there is no charted obstacle, add 1,360FT to the height determined for terrain.

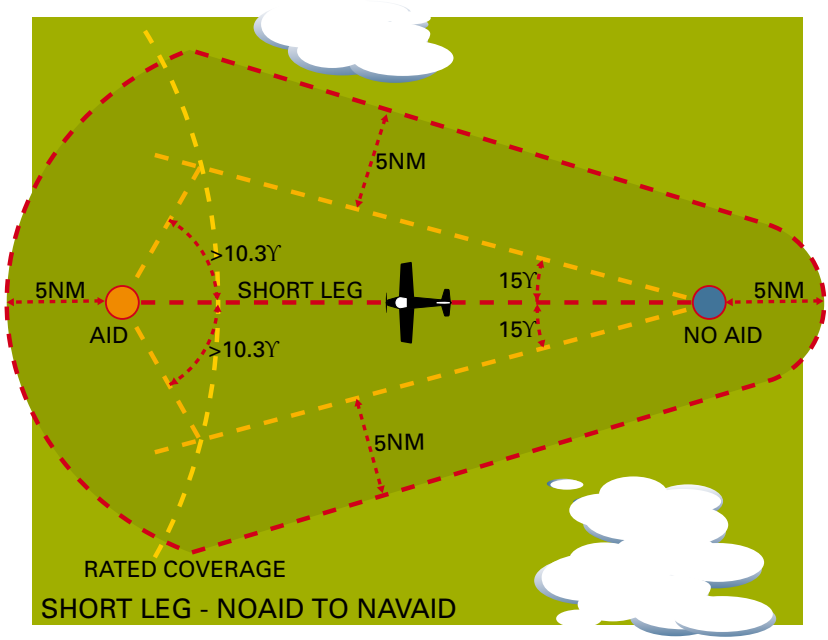

LSALT 2360FT
1000FT
Marked Obstacle
1260FT
ASSUMING AN OBSTACLE IS
360FT BESIDE MARKED OBSTACLE
360FT
260FT
1000FT
360FT + 1000FT = 1360FT + 1000FT = LSALT 2360FT

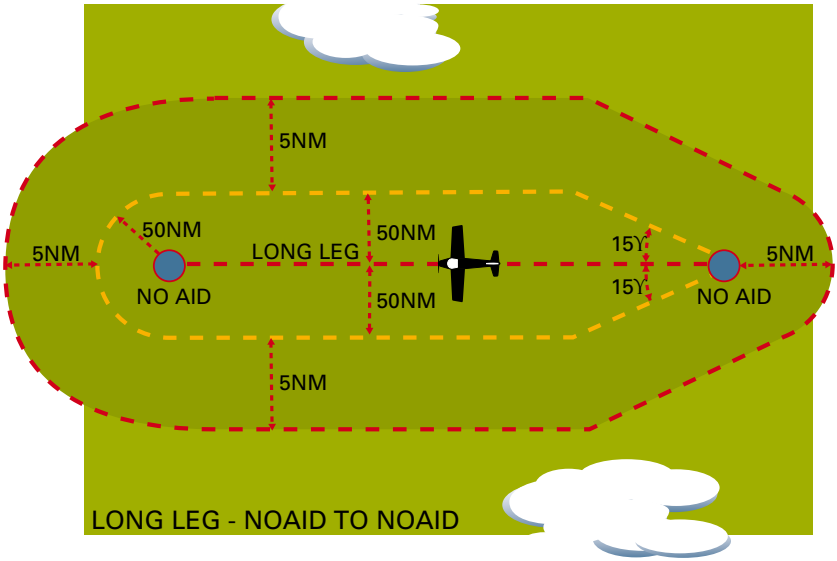

LSALT 2460FT
1000FT
1460FT
460FT
1000FT
460FT + 1000FT = 1460FT + 1000FT = LSALT 2460FT

lowest safe altitude

For routes defined by radio navigation aids or to be navigated by DR: Lines drawn from the departure point or en route radio aid, 10.3° each side of the nominated track (where the track guidance is provided by a radio navigation aid), or 15° each side of the nominal track (where no track guidance is provided) to a limit of 50NM each side of the track, thence parallelling track to abeam the destination and then converging by a semicircle of 50NM radius centred on the destination. On shorter routes, where these lines are displaced by less than 50NM abeam the destination, they shall converge by a radius based on the lesser distance. Where the lines thus drawn come at any time within the coverage of an en route or destination radio aid the aircraft is equipped to use, they will converge by straight lines to that aid. The minimum angle of convergence which must be used in this case is 10.3° each side of track.




5NM
>10.3Y
5NM
SHORT LEG
15Y
5NM
AID
15Y
NO AID
>10.3Y
5NM
RATED COVERAGE
SHORT LEG - NOAID TO NAVAID


5NM
50NM
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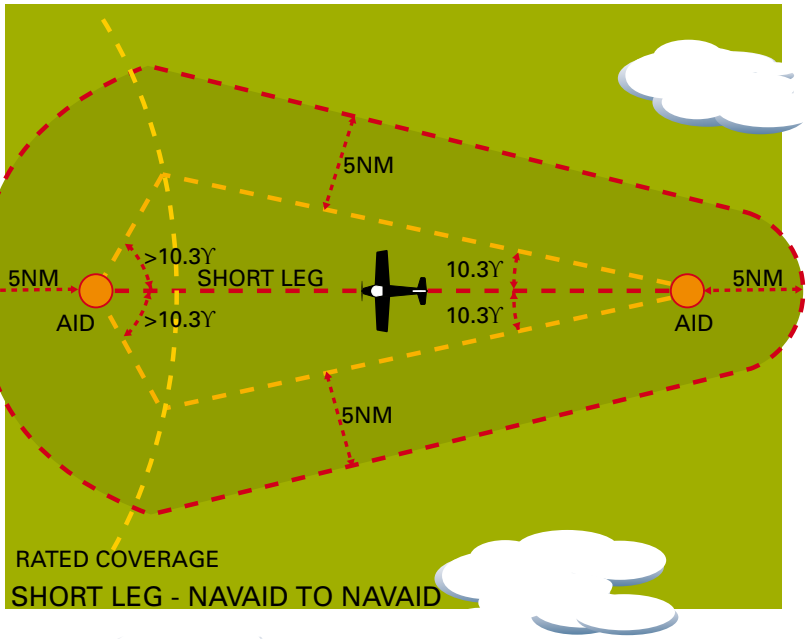
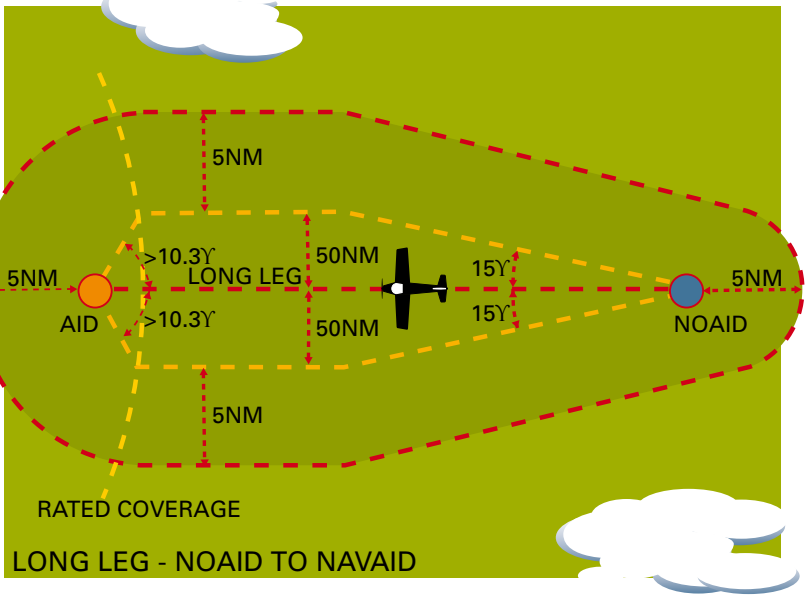
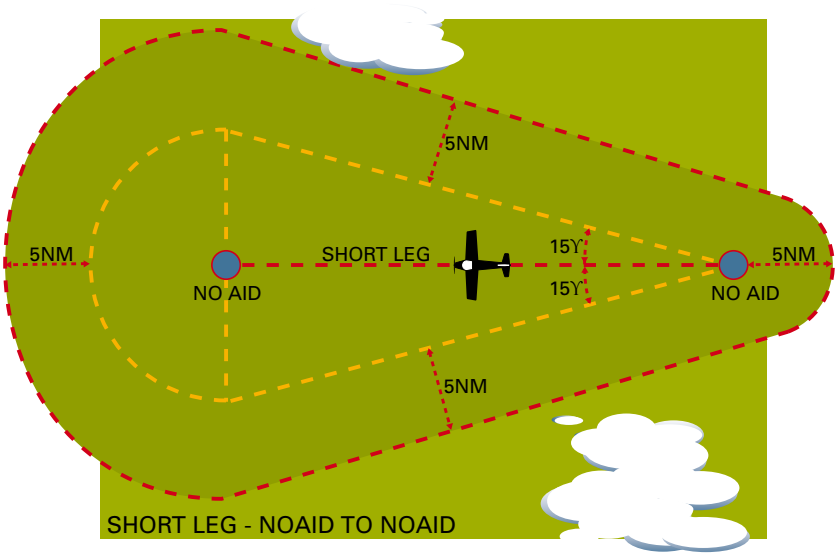
LONG LEG - NOAID TO NOAID

lowest safe altitude







FOR AIRCRAFT FLOWN AT NIGHT UNDER THE VFR

The area to be considered must be:

- the area specified on page 334 for aircraft being navigated by means of a radio navigation system; or
- within radius of 10NM from any point along the aircraft's nominal track.

However, an aircraft which has positively determined by visual fix that a critica obstruction has been passed may nevertheless descend immediately to a lower altitude, provided that the required obstacle clearance above significant obstructions ahead of the aircraft is maintained.

An aircraft must not be flown at night under the VFR, lower than the published lowest safe altitude or the lowest safe altitude calculated in accordance with this section except:

- during take-off and climb in the vicinity of the departure aerodrome;
- when the destination aerodrome is in sight and descent can be made within the prescribed circling area of 3NM radius of the destination (AIP GEN 3.3);
- or when being radar vectored.

AIRCRAFT EQUIPMENT FOR NIGHT VFR FLIGHT

LIGHTING

The following lighting equipment is required for night VFR flight (CAO 20.18 Appendix V & CAR 174A):

- illumination for all instruments and equipment, used by the flight crew, that are essential for the safe operation of the aircraft. The illumination shall be such that:
  - all illuminated items are easily readable or discernible, as applicable;
  - its direct or reflected rays are shielded from the pilot's eyes;
  - its power supply is so arranged that in the event of the failure of the normal source of power, an alternative source is immediately available; and
  - it emanates from fixed installations.
- iIntensity control
  - means of controlling the intensity of the illumination of instrument lights, unless it can be demonstrated that non-dimmed instrument lights are satisfactory under all conditions of flight likely to be encountered.
- landing lights
  - Two landing lights are required for night VFR charter operations carrying passengers. For private and aerial work operations and charter operations not carrying passengers for hire and reward one landing light is required (CAR 329A).

Note: A single lamp having two separately energised filaments may be approved as meeting the requirement for two landing lights.

- passenger compartment lights
  - Lights in all passenger compartments.
- pilots' compartment lights
  - means of lighting the pilots' compartment to provide illumination adequate for the study of maps and the reading of flight documents.

- emergency lighting
  - Emergency exit lighting as specified in Air Navigation Orders Part 105 AD/General/4B and
  - a shock-proof electric torch for each crew member at the crew member station.
- position and anti-collision lights
  - The navigation and anti-collision lights described below (CAR 196)

Note: position and anti-collision lights shall be displayed at night and in conditions of poor visibility (CAR 196).

NAVIGATION LIGHTS (CAR 196)

Unless CASA otherwise directs, an aeroplane in flight or operating on the manoeuvring area of a land aerodrome shall display the following navigation lights:

- an unobstructed red light projected above and below the horizontal plane through an angle from dead ahead to 110° port;
- an unobstructed green light projected above and below the horizontal plane through an angle from dead ahead to 110° starboard; and
- an unobstructed white light projecting above and below the horizontal plane rearward through an angle of 140°, equally distributed on the port and starboard sides.

Unless CASA otherwise directs, navigation lights shall be steady lights.

Unless CASA otherwise directs, an aeroplane in flight or operating on the manoeuvring area of a land aerodrome shall display, in addition to the navigation lights, an anti-collision light consisting of a flashing red light visible in all directions within 30 degrees above and 30 degrees below the horizontal plane of the aeroplane.

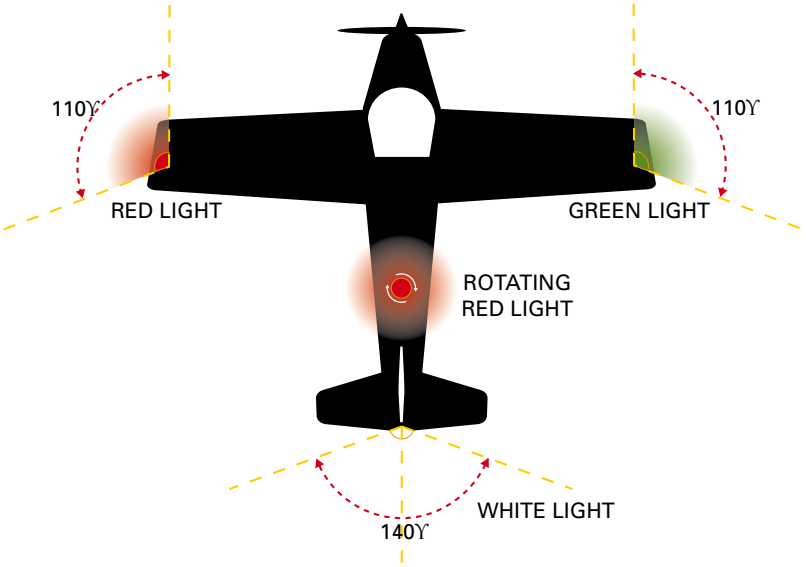
Where the lights are flashing lights, the aircraft:

- shall display an additional flashing white light visible in all directions; and
- may display an additional flashing red rear light;

Unless CASA otherwise directs, wing-tip clearance lights comprising steady lights of the appropriate colours must be displayed if the distance of the navigation lights from the wing-tip is more than 2 metres.

At an aerodrome used or available for use in night flying operations, an aircraft

parked on or adjacent to the movement area shall be clearly illuminated or lighted, unless the area that it occupies is marked by obstruction lights.



EXEMPTIONS

Where an aircraft is not equipped in accordance with the above, CASA may give permission, subject to such conditions (if any), for the aircraft to be flown under VFR.

INSTRUMENTS

The flight and navigational instruments required for night VFR operations are (CAO 20.18 Appendix IV):

- an airspeed indicating system;
- a sensitive altimeter;
- a direct reading magnetic compass; or a remote indicating compass and a standby direct reading magnetic compass;
- an accurate timepiece indicating the time in hours, minutes and seconds, except that this may be omitted if it is carried on the person of the pilot or navigator;

- an outside air temperature indicator;
- an attitude indicator (artificial horizon);
- a heading indicator (directional gyroscope);
- a turn and slip indicator except that only a slip indicator is required when a second attitude indicator usable through flight attitudes of 360 degrees of pitch and roll is installed;
- means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily; and Note that for night VMC flights a rate of climb and descent indicator (vertical speed indicator) and pitot heat are not required.

ALTERNATE STATIC SOURCE

The altimeter and airspeed indicator shall be capable of being connected to either a normal or an alternate static source but not both sources simultaneously.

Alternatively, they may be connected to a balanced pair of flush static ports.

DUPLICATED GYRO POWER SOURCE

For night VMC charter the attitude indicator, turn and slip indicator shall have duplicated sources of power supply unless the turn and slip indicator or the second attitude indicator specified above has a source of power independent of the power operating other gyroscopic instruments. Note that these duplicated sources of power are not required for aeroplanes engaged in private and aerial work night VMC operations.

A gyro-magnetic type of remote indicating compass may be considered also to meet the requirement for a heading indicator specified above provided that such installation complies with the duplicated sources of power supply requirements of the previous paragraph.

EXEMPTIONS

Where an aircraft is not equipped in accordance with the above, CASA may give permission, subject to such conditions (if any), for the aircraft to be flown under VFR.

aircraft equipment for night VFR

SERVICEABILITY OF INSTRUMENTS AND EQUIPMENT

All instruments and equipment fitted to an aircraft shall be serviceable prior to takeoff unless:

- flight with unserviceable instruments or equipment has been approved by CASA or
- the unserviceability is permitted under the provisions of a permissible unserviceability schedule; or
- the unserviceable instruments or equipment are not required under the regulations.

Where flight is conducted with unserviceable instruments or equipment, the unserviceable instruments or equipment shall be prominently placarded 'UNSERVICEABLE' or removed from the aircraft.

Note: Where an instrument or item of equipment performs more than one function, it is permissible to placard as unserviceable only the function(s) which are unserviceable.

A charter, aerial work or private operator may elect to have a permissible unserviceability schedule. In the case of charter or aerial work operators, the permissible unserviceability schedule shall be incorporated in the operator's operations manual.

For night VFR flights you must make provision for flight to an alternate aerodrome in accordance with the following paragraphs.

When a flight is required to provide for an alternate aerodrome, any aerodrome may be so nominated for that flight provided that:

- it is suitable as a destination for that flight; and
- it is not an aerodrome for which an alternate would also be required.

ALTERNATES BASED ON RADIO NAVIGATION AIDS

A night VFR flight must provide for an alternate aerodrome within one (1) hour's flight time of the destination unless the destination is served by a radio navigation aid (NDB/VOR) and the aircraft is fitted with the appropriate radio navigation system capable of using the aid.

The alternate aerodrome must be served by a radio navigation aid (NDB/VOR) which the aircraft is equipped to use.

ALTERNATES BASED ON RUNWAY LIGHTING

Portable Lighting

When a flight is planned to land at night at an aerodrome where the runway lighting is portable, an alternate is required unless arrangements are made for a responsible person to be in attendance during the arrival and departure times as specified in paragraph 5, to ensure that the runway lights are available.

Standby Power

When a flight is planned to land at night at an aerodrome with electric runway lighting, whether pilot activated or otherwise, but without standby power, an alternate is required unless portable runway lights are available and arrangements have been made for a responsible person to be in attendance during the arrival and departure times specified in paragraph 5, to display the portable lights in the event of a failure of the primary lighting.

This alternate need not have standby power or standby portable runway lighting.

Pilot Actuated Lighting (PAL)

When a flight is planned to land at night at an aerodrome with PAL and standby power, an alternate is required unless a responsible person is in attendance to manually switch on the aerodrome lighting.

This alternate need not have standby power or standby portable runway lighting.

Alternate Aerodromes - PAL

An aerodrome may be nominated as an alternate provided that, if the aircraft is fitted with single VHF communication, the alternate aerodrome must be one which is:

- served by a lighting system which is not pilot activated; or
- served by PAL and there is a responsible person in attendance to manually switch on the aerodrome lighting.

For private airwork and charter night VFR operations, where the alternate aerodrome is served by PAL, there is no requirement for a responsible person on the ground to be in attendance, but the aircraft must be equipped with;

- dual VHF; or
- single VHF and HF communications and carries 30 minutes holding fuel to allow for the alerting of ground staff in the event of a failure of the aircraft's VHF communication.

Aerodrome Lighting – Times of Activation

When aerodrome lighting is required and PAL is not being used, the pilot in command or operator must ensure that arrangements have been made for the lighting to be operating during the following periods:

- Departure: from at least 10 minutes before ETD to at least 30 minutes after take-off
- Arrival: from at least 30 minutes before ETA to the time landing and taxiing has been completed.

The above shall apply to runway, obstacle and taxiway lighting.

RESPONSIBLE PERSON

A responsible person referred to above in relation to portable lights, is one who has been instructed in, and is competent to display, the standard runway lighting with portable lights.

FUEL TO FIRST LIGHT

The alternate requirements of paragraphs 1, 2 and 3 above need not be applied if the aircraft carries holding fuel for first light plus 10 minutes at the destination.

TOWERED AERODROMES - LIGHTING

Aerodrome lighting at an aerodrome where a control tower is operating will be activated by ATC as necessary. Pilots requiring aerodrome lighting outside the control tower's published hours should use PAL, if available, or make appropriate arrangements with ATC. If ATC has already ceased duty, requests should be directed to the local aerodrome operator. Confirmation should be obtained that requests for lighting will be satisfied.

A pilot having made arrangements with ATC for night lighting must notify any change in requirements.

NON-CONTROLLED AERODROMES

Aerodrome lighting at non-controlled aerodromes should be arranged direct with the aerodrome operator, or by using PAL facilities, if available.

ERSA identifies locations where selected runway lighting is routinely left switched on during the hours of darkness.

CAAP 5.13 night visual flight rules

CAAP 5.13 - NIGHT VISUAL FLIGHT RULES

A comprehensive Civil Aviation Advisory Publication (CAAP) on the subject of NVFR is currently under preparation. A draft may be viewed at: www.casa.gov.au/rules/caap.htm#operational

section 3 – helicopter operations

FLIGHT REVIEWS PRIVATE (HELICOPTER) PILOT (CAR 5.91)

Private (helicopter) pilot require the same biennial flight reviews as for Private (aeroplane) pilots (CAR 5.91).

As private (helicopter) pilot you must not fly a helicopter as pilot in command unless, within the period of 2 years immediately before the day of the proposed flight, you have satisfactorily completed a helicopter flight review conducted only by an appropriate person (as defined in CAR 5.91 sub regulation 8) and an this person has made the appropriate endorsement in your log book.

You are taken to have completed a helicopter flight review if within the period of 2 years immediately before the day of the proposed flight you have:

- passed a flight test conducted for the purpose of the issue of a helicopter pilot licence or the issue, or renewal, of a helicopter pilot rating; or
- satisfactorily completed a helicopter proficiency check; or
- satisfactorily completed helicopter conversion training given by the holder of a grade of flight instructor (helicopter) rating that authorises him or her to conduct helicopter flight reviews;

CASA may approve a synthetic flight trainer for the above purposes.

Note: Operational standards for synthetic flight trainers are set out in the documents titled "FSD1—Operational Standards and Requirements—Approved Flight Simulators" and FSD2—Operational Standards and Requirements—Approved Synthetic Trainers" that are published by CASA.

A private (helicopter) pilot must not fly a helicopter as pilot in command if the helicopter is carrying any other person unless:

- if the flight is undertaken in daylight—the pilot has, within the period of 90 days immediately before the day of the proposed flight, carried out at least 3 circuits while flying a helicopter as pilot in command or as pilot acting in command under supervision or in dual flying; and
- if the flight is undertaken at night—the pilot has, within the period of 90 days immediately before the day of the proposed flight, carried out at least 3 circuits at night while flying a helicopter as pilot in command or as pilot acting in command under supervision or in dual flying.

Note: Under regulation 5.40, a person must not fly as pilot acting in command under supervision unless he or she holds a commercial pilot licence or an air transport pilot licence.

For the purposes of this regulation, a person carries out a circuit while flying a helicopter if the person:

- takes-off in the helicopter from an aerodrome; and
- flies the helicopter around the aerodrome in accordance with the traffic pattern for the aerodrome; and
- lands the helicopter at the aerodrome.

In this regulation: aerodrome means a place that aircraft may land at, or take off from, in accordance with regulation 92.

hot fuelling

In this section, 'hot refuelling' means the refuelling of a helicopter with its engine or engines running.

Hot refuelling of a helicopter may take place with its rotor or rotors rotating. Hot refuelling of a helicopter must not be carried out unless authorised by its operator.

The operator of a helicopter who authorises hot refuelling of that helicopter must include in the operations manual:

- the operational circumstances in which hot refuelling may take place; and
- the procedures to be followed during hot refuelling; and
- the requirements and instructions, if any, set out in the helicopter's flight manual that relate to hot refuelling; and
- if applicable, the instructions to ensure fuel quality as required for the purposes of CAO 20.10 sub-paragraph 7.2 (b).

As hot refuelling requires the compliance with an operations manual, this is generally a commercial operation and therefore will not be covered in this document.

instruments required

INSTRUMENTS REQUIRED FOR PRIVATE VFR OPERATIONS (CAO 20.18)

The flight and navigation instruments required for private VFR operations are:

- an airspeed indicating system;
- a pressure altimeter with a readily adjustable pressure datum setting scale graduated in millibars;
  - a direct reading magnetic compass; or
  - a remote indicating magnetic compass and a standby direct reading magnetic compass; and
- an accurate timepiece indicating hours, minutes and seconds. This may be carried on the person of the pilot or navigator.

Note that helicopters engaged in VFR regular public transport, charter or aerial work operations must also be equipped with:

- a slip indicator; and
- an outside air temperature indicator when operating from or to a location at which ambient air temperature is not available from ground-based instruments.

special VFR

By day, when VMC does not exist, the ATC unit responsible for a CTR may authorise, at pilot request, a Special VFR flight in the CTR, or in a CTA next to the CTR for the purpose of entering or leaving the CTR, provided that:

- the Special VFR flight will not unduly delay an IFR flight; and
- the flight can be conducted clear of cloud; and
- the visibility is not less than 800M (for helicopters); and
- A helicopter will be operated at such a speed that the pilot has adequate opportunity to observe any obstructions or other traffic in sufficient time to avoid collisions; and
- the flight can be conducted in accordance with the requirements of CAR 157 with regard to low flying.

alternate requirements

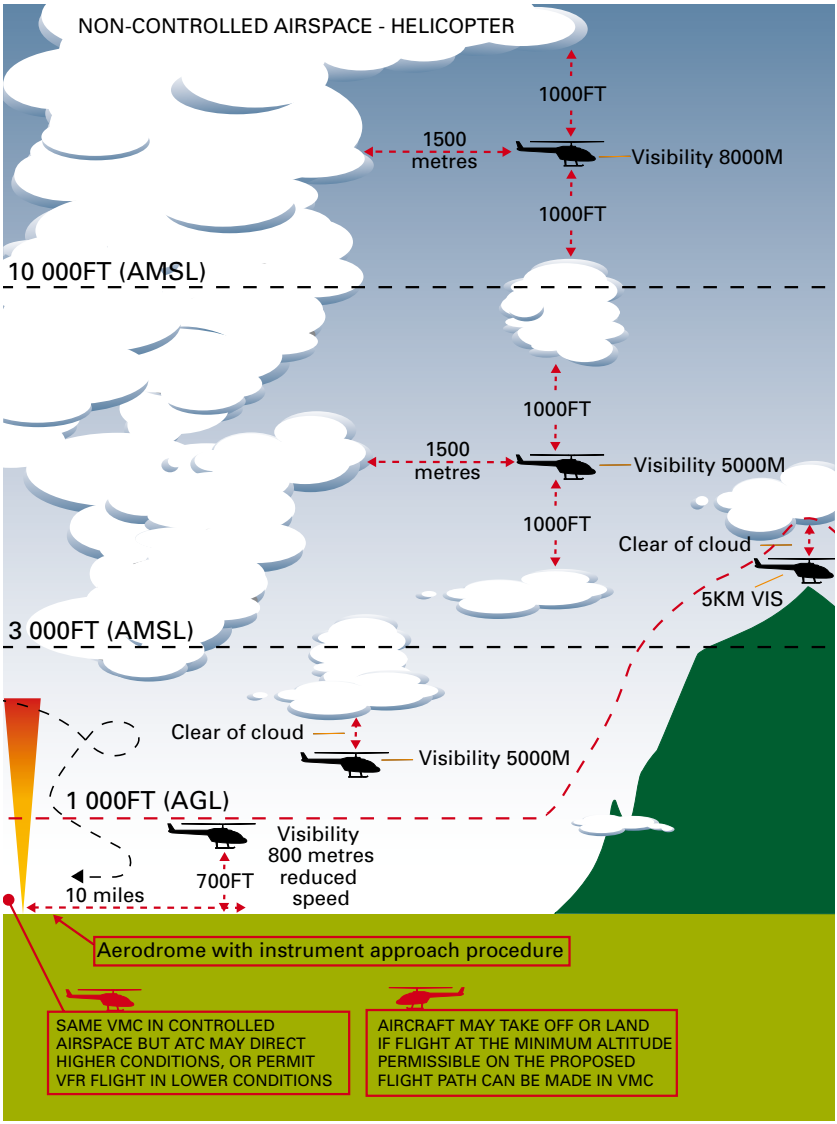
When operating a helicopter under the VFR, and the use of the helicopter VMC is permissible at the destination, the pilot in command must provide for a suitable alternate aerodrome when either of the following conditions is forecast at the destination:

- cloud - more than 4/8ths of below 1,000FT; or
- visibility - less than 3,000M

For helicopters operating under the VFR at night, the alternate minima are a ceiling of 1,500 FT and a visibility of 8KM.

For VFR helicopter operations by day, the alternate minima are the same as for night unless the additional conditions specified in the above paragraphs are met. When these additional conditions are met, the alternate requirements are as shown in the above paragraphs.

VMC: outside controlled airspace



USE OF AERODROMES

An aircraft shall not land at, or take-off from, any place unless:

- it is an aerodrome established under the Air Navigation Regulations; or
- . the use of the place as an aerodrome is authorised by a licence granted under CASR Part 139 (Licensed Aerodrome); or
- the place is a Defence Force aerodrome for which CASA has authorised civil operations in accordance with section 20 of the Act; or
- the place is suitable for use as an aerodrome and the aircraft can land at, or take-off from, the place in safety, having regard to all the circumstances of the proposed landing or take-off (including the prevailing weather conditions),

CIRCUIT HEIGHT

By convention, helicopters are flown at a circuit height of 800FT AGL. The following circuit heights apply to other aircraft:

- jets, 1500AFT AGL
- piston/turbo prop, 1000FT AGL;

Circuit heights for aerodromes which have specific requirements are published in ERSA.

GENERAL

The procedure in this section apply to all helicopters operating in the vicinity of aerodromes and in helicopter access corridors and lanes, in accordance with the provisions of CAR's 92,157,163 and 166.

TAXIING

For all helicopters, maximum use of the "air transit" procedure should be made to expedite traffic movement and flow about an aerodrome.

All helicopters may use "air taxiing" procedures as required. However, wheeled helicopters, where practicable, are encouraged to "ground taxi" on prepared surfaced to minimise rotor wash and its effects.

At night a helicopter should not taxi via routes which do not meet the physical dimensions and lighting requirements specified in CAAP 92-2(0).

TAKE-OFF/ DEPARTURE

At controlled aerodromes, helicopters may be granted a take-off clearance or instructed to report airborne, as appropriate, from any area nominated by ATC or the pilot, and assessed by the pilot as being suitable as a HLS.

Helicopters taking off/ departing must proceed in accordance with ATC instructions. Subject to clearance, a turn after take-off maybe commenced when the pilot considers that the helicopter is at a safe height to do so.

Unless requested by the pilot take-off clearance will not be issued for a helicopter if the tailwind component exceeds 5KT.

Prescribed exit "gates" and associated standard routes and/or altitudes may be provided to facilitate the flow of helicopter traffic. Procedures for their use will be promulgated in ERSA. Use of these "gates" is not mandatory. Helicopters may, subject to an ATC clearance, revert to the standard traffic procedure applicable to aeroplanes.

This option may be more appropriate when operating larger helicopters.

At night a helicopter should not take-off other than from a site which conforms with the requirements specified in CAAP 92-2(0). Any illuminated runway or illuminated taxiway of dimensions commensurate with the size of the helicopter landing site applicable to the helicopter, in accordance with CAAP 92-2(0), is considered to meet the requirements of CAAP 92-2(0).

At a controlled aerodrome a pilot may take-off from any area which is assessed as being suitable as a HLS.

When the pilot elects to conduct the take-off from outside the flight strip of the runway in use by aeroplanes, the helicopter take-off path must be outside that flight strip.

Before take-off, the helicopter is to be positioned to the appropriate side of the runway in use so that the turn after take-off does not cross the extended centre line of that runway. The pre take-off position of the helicopter will be by air transit or by taxiing as appropriate.

The turn after take-off onto the desired departure track may be commenced when the pilot considers that the helicopter is at a safe height to do so. If the resultant departure track conflicts with the aeroplane traffic pattern, the helicopter should remain at 500FT above the surface until clear of that circuit pattern. Where this procedure is not practicable on environmental grounds, the helicopter is to adopt the standard departure procedure applicable to aeroplanes.

Pilots of radio equipped helicopters must broadcast intentions on the appropriate frequency before take-off.

HELICOPTER ACCESS CORRIDORS AND LANES

The following procedures for operations within promulgated helicopter access corridors and lanes apply:

- maximum IAS of 120KT;
- helicopters must operate under VFR, usually not below 500FT above the surface by day subject to flight over populous areas. Restrictions are the limitations published in ERSA for authorised corridors by night;
- "see and avoid" procedures must be used;
- formation flights are restricted to line astern with the lead aircraft responsible for maintaining separation from other traffic in accordance with sub paragraph c;

- a traffic advisory service is available in access corridors;
- a radar advisory service may be given at designated aerodromes;
- a continuous listening watch on the appropriate ATS frequency in access corridors or broadcast frequency in lanes is mandatory;
- two-way operations are conducted with all traffic keeping to the right of the central geographical/topographical feature(s) as detailed in ERSA;
- the pilot-in-command has the responsibility to ensure that operations are confirmed within the boundaries of the corridor or lane;
- the limits of corridors and lanes must be adhered to, with any transitional altitude requirements maintained within an accuracy of ± 100FT;
- a helicopter not confirming its operations to an access corridor will require

ATC clearance and while outside the corridor, will be subject to separation standards as applied by ATC.

Note: Subject to environmental noise considerations, the imposition of limitations on those types of helicopters which exceed the noise limits specified in ICAO Annex 16 Vol 1 may be necessary.

ARRIVALS

At a controlled aerodrome, prescribed entry "gates" and associated standard routed and/or altitudes may be provided to facilitate the flow of helicopter traffic. Procedures for their use will be promulgated in ERSA. Use of these "gates" is not mandatory. Subject to the receipt of an ATC clearance, helicopters ,may, if required, conform to the standard traffic procedures applicable to aeroplanes.

This option may be more appropriate when operating larger helicopters.

Unless requested by the pilot, a landing clearance will not be issued for a helicopter if the tailwind component exceeds 5KT.

At night a helicopter should not land at a site other than one which conforms with the requirements specified in the latest issue of CAAP 92.2. Any illuminated runway or illuminated taxiway of dimensions commensurate with the size of the helicopter landing site applicable to the helicopter, in accordance with CAAP 92.2, is considered to meet the requirements of CAAP 9.2.

CIRCUIT PROCEDURES

At controlled aerodromes and specific operating procedures applicable to the helicopter traffic pattern will be detailed in ERSA. The following generally applies:

- where possible, helicopter circuit traffic will be separated from the aeroplane traffic pattern by the use of contra- direction circuits, outside of and parallel to the flight strip of the runway in use, and at a lower altitude than other traffic, but not below 500FT above the aerodrome elevation; or
- when separated circuit patterns are not practicable, helicopters may utilise the same traffic pattern direction as other traffic, and will normally operate inside and at a lower altitude than the traffic, but not below 500FT above the aerodrome elevation.

At non-controlled aerodromes the following circuit operating procedures apply;

- helicopters may be operated on contra-direction circuits and parallel to the aeroplane traffic pattern at a lower altitude than that traffic; but not below 500FT above the aerodrome elevation. The landing site associated with the helicopter circuit is to be positioned outside the flight strip of the runway in use so the helicopter circuit traffic does not cross the extended centre line of that runway;
- if the procedure outlined in sub paragraph A, is not practicable the helicopter circuit patterns should be flown inside and parallel to the aeroplane traffic and at lower altitudes, but not below 500FT above aerodrome elevation. The landing site associated with the helicopter circuit must be positioned outside the flight strip of the runway in use so that the helicopter circuit traffic does not cross the extended centre line of that runway; or
- the helicopter must follow the standard aeroplane traffic pattern and, in this case, may use the fight strip area of the runway in use;
- the pilots or radio equipped helicopters must broadcast their intentions and listen out for other traffic on the appropriate frequency.

LOW FLYING (CAR157)

An aircraft must not fly over:

- any city, town or populous area, at a height lower than 1000 feet; or
- any other area at a height lower than 500 feet.

A height specified above is the height above the highest point of the terrain, and any object on it, within a radius of 300 metres; from a point on the terrain vertically below the aircraft.

Paragraph 1 (A) does not apply in respect of a helicopter flying at a designated altitude within an access lane details of which have been published in the AIP or NOTAMS for use by helicopters arriving at or departing from a specified place.

Paragraph 1 does not apply if:

- through stress of weather or any other unavoidable cause it is essential that a lower height be maintained; or
- the aircraft is engaged in private operations or aerial work operations, being operations that require low flying, and the owner or operator of the aircraft has received from CASA either a general permit for all flights or a specific permit for the particular flight to be made at a lower height while engaged in such operations; or
- the pilot of the aircraft is engaged in flying training and flies over a part of a flying training area in respect of which low flying is authorised by CASA under sub regulation 141 (1); or
- the pilot of the aircraft is engaged in a baulked approach procedure, or the practice of such procedure under the supervision of a flight instructor or a check pilot; or
- the aircraft is flying in the course of actually taking-off or landing at an aerodrome; or
- the pilot of the helicopter is engaged in:
  - a search; or
  - a rescue; or
  - dropping supplies in a search and rescue operation; or
  - operation for the purposes of, the Australian Federal Police or the police force of a State or Territory; and

low flying

- engaged in law enforcement operations; or
- the pilot of the helicopter is engaged in an operation which requires the dropping of packages or other articles or substances in accordance with directions issued by CASA.

LIFE JACKETS

Each occupant of a helicopter operating to or from an off-shore landing site located on a fixed platform or vessel shall wear a life jacket during the entire flight over water regardless of the class of operation or the one-engine-inoperative performance capability of the helicopter.

HELICOPTER FLOTATION SYSTEMS (COMMERCIAL OPERATIONS)

- A single engine helicopter engaged in passenger carrying charter operations shall be equipped with an approved flotation system whenever the helicopter is operated beyond autorotative gliding distance from land. However, when following a helicopter access lane prescribed in AIP-ERSA, or when departing from or landing at a helicopter landing site in accordance with a normal navigation procedure for departing from or landing at that site, an approved flotation system is not required.
- A single engine helicopter engaged in regular public transport operations shall be equipped with an approved flotation system whenever the helicopter is operated beyond autorotative gliding distance from land.
- A multi-engine helicopter engaged in passenger carrying charter or regular public transport operations over water and which is not operated in accordance with oneengine- inoperative accountability procedures shall be equipped with an approved flotation system.

over water flights

Aircraft engaged in PVT, AWK or CHTR operations, and which are normally prohibited by CAR 258 from over-the water flights because of their inability to reach land in the event of engine failure, may fly over water subject to compliance with the conditions in this section. These conditions are additional to the requirements for flight over land.

(Different requirement apply to that the case of passenger-carrying CHTR operations. The distance between successive land areas suitable for an emergency landing must not exceed 50NM. In the case of helicopters, a fixed platform or a vessel suitable for an emergency landing and located adjacent to land may be considered acceptable for this requirement.)

There is no limitation for PVT, AWK or freight-only CHTR operations.

Each occupant of the aircraft must wear a life jacket during the flight over the water unless exempted from doing so under the terms of CAO 20.11.

A meteorological forecast must be obtained.

VFR flights are required to submit a SARTIME flight notification to ATS or leave a Flight Note with a responsible person.

SAR ALERTING

VFR flights may choose to operate on reporting schedules for the over-water stages of a flight. Schedules may be arranged before commencing the over-water stage and terminate on completion of the crossing.

VFR aircraft not equipped with radio which will enable continuous communication, or not radio equipped, must carry a survival beacon as prescribed in CAO 20.11, for the over-water stages of the flight.

Helicopters must be fitted with an approved flotation system unless exempted under the terms of CAO 20.11.

Helicopters operating in accordance with the approval given must comply with the VFR, except that in the case of helicopters operating below 700FT above water by day, the flight visibility must not be less than 5,000M and the helicopter must be flown at a distance equal to or greater than 60M horizontally and 500FT vertically from cloud, unless track guidance is provided by an approved operating radio navigation aid and the helicopter is equipped with a complimentary system.

section 4 – emergency procedures

planning

Each year there are a large number of Search and Rescue (SAR) phases declared, with many requiring substantial effort to resolve. Many pilots have discovered that the comforting phrase, "it can't happen to me", is far from correct. If you prepare adequately for all eventualities you will be better able to deal with any emergency situation in which you may find yourself and thus enable AusSAR, which is responsible for aviation and maritime SAR in Australia to offer you better assistance.

To help you in this preparation, the following guide is suggested.

Select the route which gives you short legs between the best visual fixes, and the least rugged terrain. Make sure that your maps cover the entire route. Always wear a watch. Remember, that external navigation aids, such as GPS, should be cross-checked using other navigational methods to ensure its accuracy.

If your planned flight crosses high country or large water expanses, consider the alternative routes that may be used in conditions of adverse weather. Remember the problems of rising ground in deteriorating meteorological conditions.

Make sure you get a forecast. Take special note of the weather, freezing level, significant cloud cover and expected visibility. Relate the forecast to your planned route and the nature of the terrain.

Always tell someone what you are doing - either by lodging a flight plan or leaving a flight note. If the weather is not suitable, consider using an alternate route or postponing the flight. Consider discussing the situation with someone else with aviation experience.

If you are making a VFR Flight, plan to arrive at least 10 minutes before the end of daylight, or earlier, if your flight time is more than 1 hour, or if the terrain or the weather could reduce the light. If you are delayed, make sure that your departure is not too late to meet this requirement.

Break your flight into route segments, measure distances carefully and use a computer to find time intervals. Do not guess or give just one time interval. Either lodge a flight plan or leave a flight note with a responsible person. Plan a realistic SARTIME and don't forget to amend it if you are delayed for any reason. Provide a destination telephone number on your flight plan or flight note. If a pilot or one of the passengers has a mobile phone, provide that number as well.

HELPING SEARCH AND RESCUE

Should you have to make a forced landing, many of the planning hints mentioned previously will help AusSAR find you quickly, for example:

- the search will take account of the forecast and actual weather conditions;
- the search will be based on the information you gave in your flight notification form or flight note, plus, if necessary, the performance figures of your aircraft;
- the area which will be searched first will normally be 10 miles either side of your planned route and;

Other things which you can do to help yourself and the AusSAR organisation in these circumstances are:

- stay with your aircraft (see also "Hints for Survival" pages);
- carry a heliograph or mirror to signal search aircraft by day and an electric torch for use at night; (heliographs are available at most army disposal stores or camping stores)
- carry matches or a cigarette lighter, a pocket compass, knife and first aid kit, and wear warm clothing in winter (a space blanket is a cheap lightweight alternative to a blanket)
- always carry water, and take extra supplies if you are flying over hot arid areas; and
- carry a 'survival food kit' of high calorie food items (eg, sweets, raisins, nuts, Vitamin C tablets, etc) packed in a small waterproof container.

Read the other survival hints in ERSA EMERG Section and in the succeeding pages of this Guide.

REMEMBER - IT CAN HAPPEN TO YOU–BUT IT NEED NOT BE A TRAGEDY

A pilot who does not hold an instrument rating or who is flying an aircraft not equipped for instrument flight has no place in adverse weather. However, there are many occurrences where VFR pilots find themselves in weather which is below the minima specified for Visual Meteorological Conditions (VMC).

Such occurrences are generally the result of poor planning for safety and too frequently end in tragedy.

VFR flight in weather which is below VMC is NOT PERMITTED.

When weather begins to deteriorate, monitor the changes carefully and consider possible alternative action. If you have already planned an alternative route, decide when to divert.

BROADCAST YOUR INTENTIONS

Government and licensed aerodromes and many ALAs are shown on WACs, VTC's and VNC's. Note which aerodromes lie close to your track and which may be suitable for an precautionary landing.

Decide how and/or when you will make a firm decision to continue or turn back.

Plan your immediate flight path so that you remain well clear of cloud and heavy rain AT ALL TIMES. There have been many occasions when pilots have not intended to fly into cloud but, through inadequate planning, their flight path has inadvertently taken them into cloud.

When you become aware that any element of the weather is about to FALL BELOW THE VMC MINIMA - DO NOT HESITATE, TURN BACK IMMEDIATELY. BROADCAST YOUR INTENTIONS. DO NOT leave your decision until the weather has already fallen below VMC Minima.

Distress beacons have been used in aviation for many years and, with some flights now being conducted without the lodgement of flight plans or notices or reporting progress, there is increasing importance on having an effective distress beacon as a means of last resort to alert the SAR system that you are in grave and imminent danger. A distress beacon is a useful alerting and localisation aid should you be required to call for assistance. The following information is provided to give you an understanding of the different types of beacons available and their use.

ALERTING THE SAR SYSTEM WITH DISTRESS BEACONS

Distress beacons are detected by other aircraft who may be monitoring 121.5 MHz or by the Cospas-Sarsat satellite based system which provides distress alerting and location information to search and rescue (SAR) authorities in the aviation, maritime and land environments. The Cospas-Sarsat system, which has been in operation since 1982, was originally designed to service a discrete distress frequency on 406.025 (generically stated as 406) MHz but the requirement was expanded to include a reduced service on the aviation distress frequency of 121.5 MHz. In the case of the latter, the physical characteristics of the radio frequency and the output signal mean that there is coarser resolution with beacons operating on this frequency compared to those operating on the higher frequency.

Australia, through AusSAR, is responsible for operating the regional Cospas-Sarsat ground segment in the South West Pacific region. This is done by monitoring satellite intercepted signals from three ground stations in Albany (WA), Bundaberg (QLD), and Wellington (NZ). With 121.5 MHz signals, the three elements in the process (ie the beacon, the satellite and the ground station) must be in view of each other. This introduces delays in the SAR system responding. With later technology 406 MHz signals, the satellite has the capacity to time tag the digital information and repeat it when it is next interrogated by a ground station or pass the information via satellites in geo-stationery orbit over the equator to provide a near instantaneous alerting function.

BEACON TERMINOLOGY

There have been a number of conventions used in the past to describe the various types of distress beacons that have been available in the market place. The current practice is to use Electronic Locator Transmitter (ELT) to describe those that are fitted to an aircraft, Emergency Position Indicating Radio Beacon (EPIRB) to describe those that are designed to float when immersed in water, and Personal Locator Beacon (PLB) to describe the portable units that are designed for personal use. Many GA operators carry the PLB variant.

COMPATIBILITY OF OLDER TECHNOLOGY BEACONS

The 1960s saw the emergence of aviation distress beacons that operated on 121.5 MHz. These beacons meet the FAA TSO C91 standard and provide an audible tone on the frequency with the likelihood that other aircraft or air traffic services in the area would intercept it and become aware that an aircraft is in distress. A large number of aircraft still operating in Australia are fitted with this standard of ELT. These older beacons are not covered by the Cospas-Sarsat system and continue to rely on the aviation sector for SAR alerting purposes.

When a decision was taken to extend the Cospas-Sarsat system to include 121.5 MHz, the standard pertaining to aviation beacons was revisited and a new standard (FAA TSO C91A) was set making the beacon emission suitable for intercept by satellite. The FAA standard for 406 MHz beacons is TSO C126. These standards are reflected in CAR 252A.

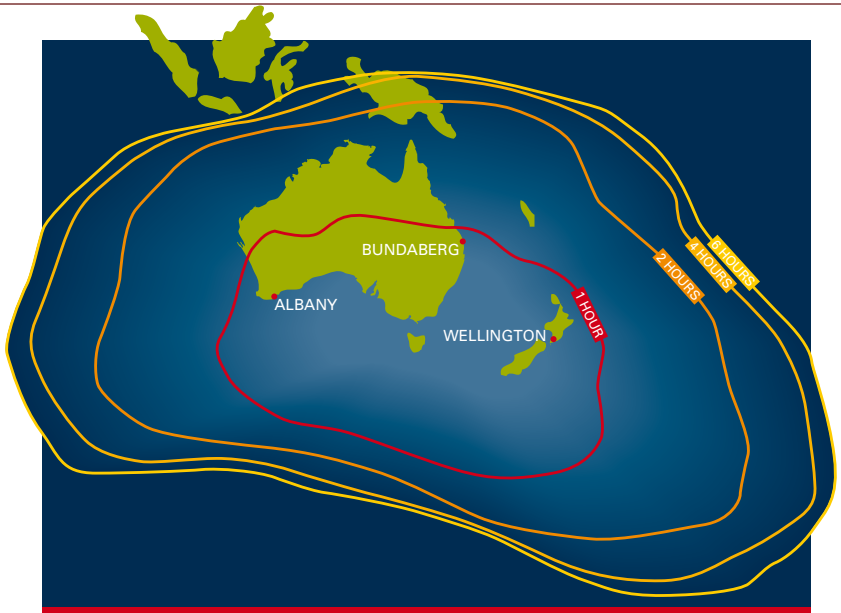
It should be noted that from February 2009 the Cospas-Sarsat system will no longer receive beacons transmitting on 121.5 and 243.0 MHz. At this time only 406 MHZ beacons complying with TSO C126 or the appropriate AS/NZS standard will be acceptable.

COMPARISON OF DISTRESS BEACONS

The 121.5 MHz beacons in current production are relatively lightweight and inexpensive. They provide an affordable alternative to the more expensive 406 MHz beacons (which are now available with an embedded GPS so that they can automatically report the beacon position in digital form via the satellite system when activated). A comparison of the two beacon technologies is shown in Table 1.

As a result of the location of the three ground stations servicing the Australian region, there are approximately fifty satellite passes serviced per day by AusSAR which results in a typical coverage area and average times for detection of a 121.5 MHz beacon.

	121.5 MHz	406 MHz
LOCATION ACCURACY (Design Specification)	15 - 20 km	2 - 3 km
COVERAGE	Local - the beacon, the satellite and the LUT must be in sight of each other.	Global - the satellite has the capacity to store the information and repeat it for subsequent processing.
SIGNAL POWER	0.1 Watt	5 Watts
SIGNAL TYPE	Analog audio signal with no identification feature and subject to high false alert rate due to interference signals.	Digital with encoded identification of beacon registered owner and capacity to overlay externally provided or embedded GPS position.
ALERT TIME	Depends on location and varies from 2 hours to the system being ineffective outside coverage areas with ambiguous fix positions often being provided on the first pass.	Near instantaneous with GEOSAR assisting to provide alerting data if a LEOSAR is not in range. The exception is polar regions where very short delays can be expected.
DOPPLER LOCATION	One satellite pass but an ambiguous fix position until resolved by other means or another satellite pass.	Single satellite pass
GPS LOCATION (if fitted)	Functionality not available	160m accuracy
HOMING	Aircraft and vessels use the 121.5 MHz audio signal for homing.	These types of beacons simultaneously transmit on 121.5 MHz for homing purposes.



THE TYPICAL COSPAS-SARSAT COVERAGE AREA AND AVERAGE TIMES FOR DETECTIONOF A 121.5 MHz DISTRESS BEACONS IN THE AUSTRALIAN AREA

The major implications for general aviation aircraft operating in Australia using 121.5 MHz beacons is that if the beacon is of the older type, then there is a reliance on other aircraft to detect the 121.5 MHz signal and raise the alarm. This may be problematic in many parts of Australia as only the larger commercial aircraft regularly monitor this frequency. If the beacon is Cospas-Sarsat compatible, the system will generally detect the signal but produce an ambiguous fix position either side of the satellite pass. Follow-on passes, collateral information, or the use of aircraft to investigate both possible positions are used to refine the correct distress beacon position.

This evolution takes time and the accuracy of the Cospas-Sarsat derived position is less accurate than with the more technically advanced 406 MHz beacon which usually provides an accurate position on the first pass. These beacons are also encoded with the details of the registered owner and, through the GEOSAR supplementary repeaters, provide near instantaneous advice that an emergency situation exists prior to a Cospas-Sarsat satellite pass. If an embedded GPS is fitted, a position will be passed along with this initial alert advice. The time critical nature of an adequate response is a major consideration when considering the safety of life.

CARE AND STORAGE OF DISTRESS BEACONS

Because an air traffic services unit or AusSAR will declare a Distress Phase immediately it is made aware that a beacon signal has been detected, it is most important that care is taken by pilots and technical staff to ensure that beacons are not activated accidentally.

Owners of Beacons are asked to observe the following:

- READ and ADHERE to the operating and general instructions issued by the manufacturer.
- Ensure that impact operated beacons are switched 'OFF' except when arming is actually required.
- Most PLBs have a self-test function that should be used rather than testing the beacon on the operational frequency.
- If operational testing of ELTs is required, the beacon SHOULD NOT be operated for more than five seconds with the preferred procedure being that the test is conducted within the first five minutes of the hour. Longer tests are required to be conducted in a screened radio test cage. BEFORE operational tests for any period are conducted, operators must contact AusSAR (1800 815 257) to gain approval.
- ALWAYS notify the air traffic service provider or AusSAR if a beacon has been activated inadvertently. Early advice will assist in the continued efficiency of the SAR system.
- While performing maintenance on an aircraft, have a VHF radio tuned to 121.5 MHz to detect any inadvertent activation.
- Monitor 121.5 MHz on start-up and shut-down. A knock while parked or a heavy landing may activate some impact operated beacons.
- Keep PLBs in a handy position and brief passengers on their location and use in the case of emergency.

USING DISTRESS BEACONS

If you are in the WATER, and your beacon is buoyant, the beacon should be activated IN THE WATER and allowed to float to the end of the lanyard. You should ensure that the aerial is substantially vertical. DO NOT attach the lanyard to the aircraft, but rather a person or liferaft.

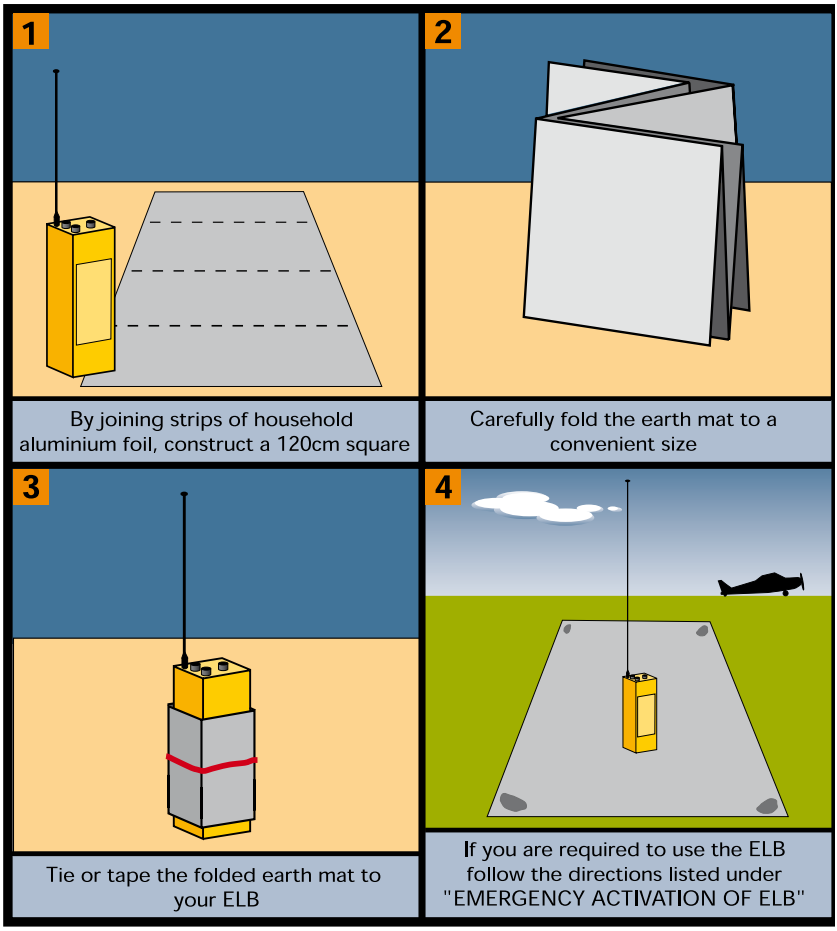
In situations where you are forced to use a non-buoyant distress beacon in a water survival situation, ensure that the beacon is kept dry. The beacon will operate successfully from inside a plastic bag, and should be located just as close to the water as possible. If you raise the beacon high above the water, the beacon's effectiveness will be reduced.

For operations over LAND, you will get the best performance from an ELT by operating it while still installed in the aircraft as long as the fixed aerial remains attached. If there is any doubt about the integrity of the system, then it should be removed from the aircraft and used in the manner described below for PLBs.

PLBs are most effective when placed on a flat surface on the ground in an exposed position. Space blankets or aluminium foil make good earth mats to optimise the signal with the active beacon being placed in the middle. It is suggested that if you carry a beacon you also carry sufficient household aluminium foil to make a 120cm square earth mat for use in emergencies.

You should always activate your distress beacon if you are in grave and imminent danger regardless of whether you can optimise its performance as described above.

Modern distress beacons have been detected by other aircraft and the Cospas Sarsat system in very marginal conditions.


1
By joining strips of household aluminium foil, construct a 120cm square
2
Carefully fold the earth mat to a convenient size
3
Tie or tape the folded earth mat to your ELB
4
If you are required to use the ELB follow the directions listed under "EMERGENCY ACTIVATION OF ELB"

emergency activation

IN THE EVENT OF BEING FORCED DOWN OR SOME INSTANCES DITCHING ACTIVATE THE DISTRESS BEACON IMMEDIATELY

- Where the beacon is permanently installed, activate the beacon in situ, or if there is some concern about the integrity of the installation, remove it and use it as described below.
- Where a non-permanent ELT or a PLB is being used, select a site for the activation of the beacon. If possible, the site should be elevated, clear of trees, boulders, etc and reasonably close to the aircraft.
- Place the beacon on a flat surface and use an earth mat if available. You may consider placing the beacon on the wing of the aircraft or other reflective metal surface if there is no earth mat available or the terrain is inhospitable to any other option.
- If required, secure the beacon with rocks, sticks, tape, etc so that the aerial remains substantially vertical.
- Remain clear of the beacon. Obstacles near it will distort the radiation pattern.
- A beacon which is damaged or under wreckage may still transmit some signal so always activate it.
- To avoid confusing direction finding equipment on search aircraft, avoid activating two or more beacons within 1NM of each other. If two or more beacons are available, their use should be rationalised to extend the alerting period.
- In the event of a search, an aircraft may drop a radio to you. Walk away from the beacon to avoid interference on the radio transmission frequency. DO NOT switch off the beacon UNLESS instructed to do so.

An Emergency Locator Transmitter, or any variant, is a useful search aid should you be forced down and require assistance. However, to obtain maximum benefit from your beacon and to assist the search aircraft, it is necessary to observe a few guidelines for activating your ELT.

If you are in the WATER, and your beacon is buoyant, the beacon should be activated IN THE WATER and allowed to float to the end of the lanyard. DO NOT attach lanyard to aircraft, but rather to person or liferaft. Adjust the bridle so that the aerial is substantially vertical.

In situations where you are forced to use a non-buoyant ELT in a water survival situation, ensure that the beacon is kept dry. The beacon will operate

successfully from inside a plastic bag, and should be located as close to the water as possible. If you raise the beacon high above the water, the beacon's effectiveness will be reduced.

For operations over LAND you will get the best performance from a beacon operating from its permanent installation in the aircraft or from operating it on the ground on an EARTH MAT.

An EARTH MAT can be a SPACE BLANKET or similar material with a reflective surface.

A simple inexpensive earth mat can be made by joining household ALUMINIUM FOIL to make a 120cm square. It is suggested that, if you carry an ELT, you make a foil earth mat, fold it and tape it to you ELT. To use the earth mat, unfold it and place it flat on the ground, holding the edges down with rocks or earth. Switch on your beacon and place in the centre of the earth mat, alternatively place ELT on wing of aircraft.

IN MANY CASES, USING AN EARTH MAT WILL INCREASE THE EFFECTIVE RANGE OF YOUR EMERGENCY LOCATOR TRANSMITTER

TRANSMISSION OF SIGNALS

- The pilot in command of an aircraft shall transmit or display the signals specified in this Division according to the degree of emergency being experienced.
- The signals specified in relation to each successive degree of emergency may be sent either separately or together for any one degree of emergency.

DISTRESS SIGNALS

- The distress signal shall be transmitted only when the aircraft is threatened with grave and immediate danger and requires immediate assistance.
- In radio telegraphy, the distress signal shall take the form of SOS (... – – – ...), sent 3 times, followed by the group DE, sent once, and the call sign of the aircraft, sent 3 times.
- The signal specified in the above may be followed by the automatic alarm signal which consists of a series of 12 dashes, sent in one minute, the duration of each dash being 4 seconds, and the duration of the interval between consecutive dashes being one second.
- In radiotelephony, the distress signal shall take the form of the word "MAYDAY", pronounced 3 times, followed by the words "THIS IS", followed by the call sign of the aircraft 3 times.
- By other means the distress signal shall take one or more of the following forms:
  - the Morse signal ... – – – ... with visual apparatus or with sound apparatus;
  - a succession of pyrotechnical lights, fired at short intervals, each showing a single red light;
  - the two-flag signal corresponding to the letters NC of the International Code of Signals;
  - the distant signal, consisting of a square flag having, either above or below, a ball or anything resembling a ball;
  - a parachute flare showing a red light;
  - a gun or other explosive signal fired at intervals of approximately one minute.

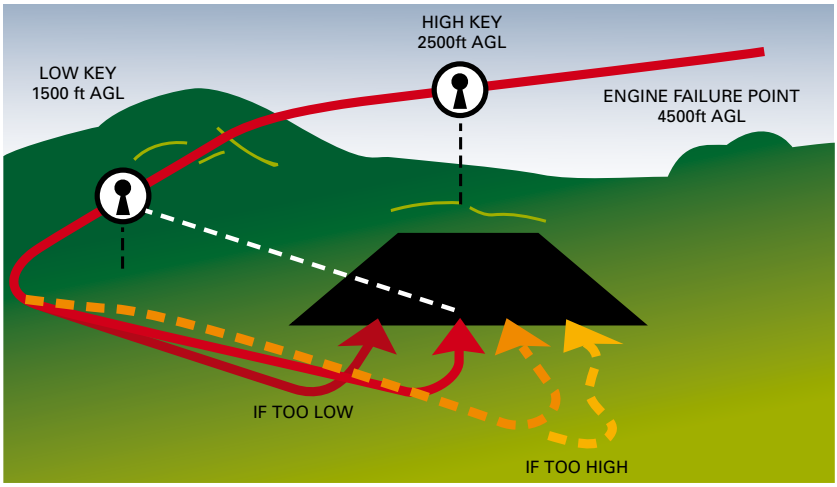
URGENCY SIGNALS

- The following signals, used either together or separately, shall be used by an aircraft for the purpose of giving notice of difficulties which compel it to land without requiring immediate assistance:
  - the repeated switching on and off of the landing lights;
  - the repeated switching on and off of the navigation lights, in such a manner as to be distinctive from the flashing lights described below;
  - a succession of white pyrotechnical lights.
- The following signals, used either together or separately, shall be used by an aircraft for the purpose of giving notice that the aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or vehicle, or of some person on board or within sight:
  - in radiotelegraphy, 3 repetitions of the group XXX (– .. – – .. – – .. –), sent with the letters of each group, and the successive groups clearly separated from each other, and sent before the transmission of the message;
  - in radiotelephony, 3 repetitions of the words PAN, PAN, sent before the transmission of the message;
  - a succession of green pyrotechnical lights;
  - a succession of green flashes with signal apparatus.

SAFETY SIGNALS

- The safety signal shall be transmitted when an aircraft wishes to transmit a message concerning the safety of navigation or to give important meteorological warnings.
- The safety signal shall be sent before the call and:
  - in the case of radiotelegraphy shall consist of 3 repetitions of the group TTT (– – –), sent with the letters of each group and the successive groups clearly separated from each other; and
  - in the case of radiotelephony shall consist of the word "SECURITY", repeated 3 times.

initial action



INITIAL CHECK	
Hold Altitude	Aim for best glide speed
Mixture	Rich
Carburettor heat	Full hot
Fuel On **Pump** On **Change tanks**	
Trim	To best glide speed

FIELD SELECTION	
Wind -	Determine direction
Surroundings -	Power lines, trees
Size & Shape -	In relation to wind
Surface & Slope	
S(c)ivilisation -	Close proximity if possible

FMOST CHECK	
Fuel primer locked	Contents, pump on,
Mixture	Up & down range, leave rich
Oil	Temps & pressures green range
Mags switch	Left then right back to both
Throttle	Up & down range, then close

MAYDAY CALL & SQUAWK 7700

"Mayday Mayday Mayday
Sydney ZFR a Piper
Engine Failure
3nm west of Picton 4500 feet
landing in paddock"

Any other useful information such as number of passengers etc.

BRIEF YOUR PASSENGERS

FINAL ACTIONS	
Fuel	Off
Mixture	Close
Mags	Off
Harness	Tight
Door	As required
Master switch	Off
Caution	If flaps are electrically operated

STAY WITH YOUR AIRCRAFT

It is much easier for air search observers to spot an aircraft than a walking survivor, and this applies whether your aircraft is still in one piece or not.

However, there are two exceptions to this rule:

- If your aircraft is completely hidden from air observation by trees or undergrowth, etc try to find a clearing where you can set up signals for search aircraft.
- If you are absolutely certain that a town, settlement, road or homestead is within reasonable distance, you could walk out – but if you do, leave notes for a land search party telling them what you are doing and leave a trail which they can follow. See signal codes, page 348.

WATER

Salvage your water supply, conserve it as much as possible and augment it if you can, by rain, dew, river water or any other means. For example, dig down in the middle of the sandy bed of a watercourse to locate a soak, or distil salt water by holding a cloth in the steam of boiling water and wringing it into a container.

Water is more important to survival than food – you can comfortably do without food for 48 hours or more, but lack of water causes dehydration and only one-fifth of the body's fluids (about 11 litres) can be lost if an individual is to survive.

Under desert survival conditions, the preferred method, after a forced landing, is to wait until your are extremely thirsty before drinking at all and then to drink at the rate at which sweating is taking place. This method ensures that there is little impairment in efficiency and wastes no water. You can also save water by reducing sweating, eg: by keeping in the shade, not exposing the skin to sun or hot winds and resting during the day. If water supplies have to be restricted, do not take salt or eat salty foods.

DO NOT drink URINE under any circumstances.

hints

Minimum water requirements per person to maintain the correct balance of body fluid, when resting in the shade, are:

Mean temperature (Degrees C)	35	32	30	27 or below
Litres per 24 hours	5	3.5	2.5	1

(Mean temperature is usually about 8oC below daily maximum)

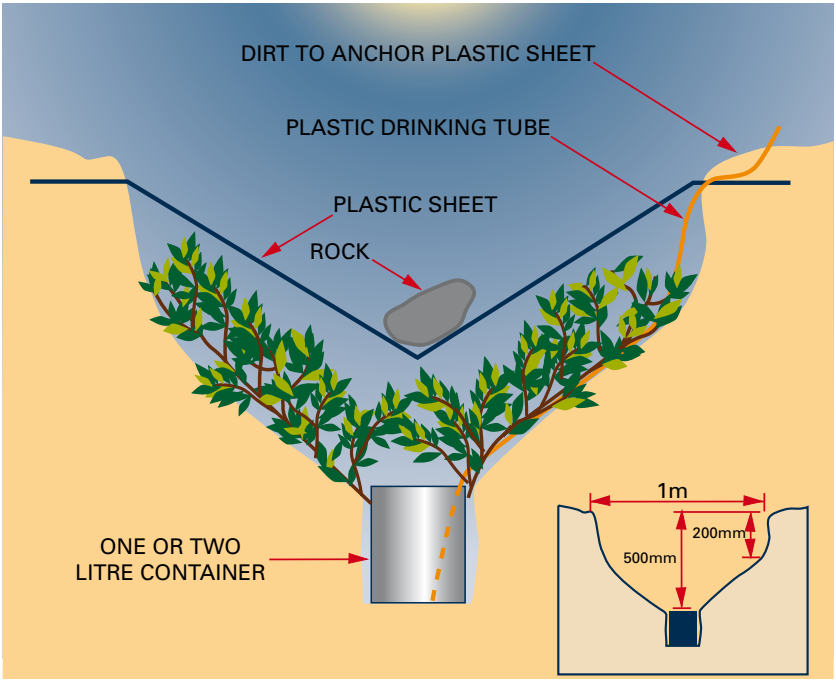
- If you do decide to walk out you will double the body's need for water.
- In desert or semi-desert areas, walk only at night or in the early morning.
- For every 4.5 litres of water carried, you should be able to walk 32 kilometres at night in these types of terrain.

DO NOT DRINK SALT WATER

EMERGENCY WATER STILL

To supplement supplies, an emergency water still, requiring the carriage of some equipment, can extract small amounts of water from soil that looks quite dry, if set up in this manner.

Foliage (if available) should be placed as illustrated around the container under the plastic sheet. Clear polythene which 'wets' easily is best for the purpose but ordinary clear kitchen polythene sheet (or preferably the thicker 100µm variety such as is laid down before concrete floors, etc., are poured) is satisfactory, particularly if its surface is roughened so that the droplets of water will cling to it more easily and will not be wasted by dropping off before they run down to the point of the cone. It is wise to cut the sheets to size and roughen them with sandpaper before they are stored in the aircraft, rather than waiting until one is stranded somewhere in the outback. If a 'nesting' set of containers is obtained and the sheets and tubing rolled inside them, a very compact bundle can be made. But see that it is very well wrapped – it may have to lie around in the luggage compartment for a long time before it is needed.



GROUND - AIR VISUAL SIGNAL CODE FOR USE BY SURVIVORS		
NO	**Message**	**Code Signal**
1	Require Assistance	V
2	Require Medical Assistance	X
3	Proceeding in this Direction	→
4	Yes or Affirmative	Y
5	No or Negative	N
	If in doubt use International Symbol	**SOS**

GROUND - AIR VISUAL SIGNAL CODE FOR USE IN CIVIL EMERGENCIES		
NO	**Message**	**Code Signal**
1	Require Fodder	FF
2	Require Evacuation	III
3	Power Failure	VI

SIGNALLING

If you have a Locator beacon, operate it as described in "EMERGENCY ACTIVATION OF DISTRESS BEACONS (on page 338)".

Collect wood, grass, etc., and build several signalling fires – preferably in the form of a triangle. Use oil from the engine and tyres to make black smoke. Unless there is ample firewood in the area, do not light fires until you hear or see search aircraft, or until desperate. Be careful to have a fire break between the fires and your aircraft. Try to have the fires downwind from the aircraft.

Conserve your batteries if the aircraft radio is undamaged. After one attempt to contact an airways operations unit, do not use your transmitter until you hear or see search aircraft. Maintain a listening watch, as search aircraft may broadcast information or instruction in the hope that you can receive. Make a note of, and call on the overlying controlled airspace frequency. Watch for contrails.

Make signals on the ground using the 'Search and Rescue Ground Signals illustrated' in this section and in the EMERG Section.

Aircraft may fly over your notified route on the first or second night. Light the fires as soon as you hear them, and if possible keep them burning all night.

If you do not have a heliograph or a mirror, try to remove some bright metal fittings from your aircraft for signalling – any flash seen by the aircraft will be investigated.

HYGIENE

To remain in reasonable condition, you should take as much care as possible to avoid accidents or illness. The following hints may help:

- keep your body and clothes as clean as possible;
- always wash your hands before eating;
- dispose properly of body wastes, garbage, etc., in trenches;
- if possible, sterilise or boil water and cook food to avoid gastric troubles;
- avoid activities which may lead to injury;
- keep your clothing dry;
- keep your head covered when in the sun; and
- do not sleep on the ground – make a raised bed with aircraft seats, wood and dry leaves, etc.

SHELTER

Some type of shelter is essential whatever type of terrain you have come down in.

If your aircraft is not badly damaged, it may be used as a shelter, otherwise you should use whatever is available from the aircraft and, by the use of trees, etc., rig up a temporary tent as protection against the weather.

FIRES

You may find that a fire is essential for warmth, cooking, drying clothes, distilling or purifying water, etc. If there is plenty of wood available this should prove no problem, but otherwise you may have to improvise a stove from a can or other container. Fuel for such a stove could be oil or fat, using a wick, or petrol and a 75 mm layer of fuelimpregnated sand.

procedures

In the event of communication failure:

- MAINTAIN TERRAIN CLEARANCE THROUGHOUT ALL PROCEDURES.
- SQUAWK 7600

ACKNOWLEDGMENTS BY AN AIRCRAFT

In Flight:

- During the hours of daylight: by rocking the aircraft wings.

NOTE: This signal should not be expected on the base and final legs of the approach.

- During the hours of darkness: by flashing on and off twice, the aircraft's landing lights or, if not so equipped, by switching on and off twice, its navigation lights.

On the Ground:

- During the hours of daylight: by moving aircraft's ailerons or rudder.
- During the hours of darkness: by flashing on and off twice, the aircraft's landing lights or, if not so equipped, by switching on and off twice, its navigation lights.

IF VFR OCTA

STAY IN VMC

- BROADCAST INTENTIONS (assume transmitter is operating and prefix calls with "TRANSMITTING BLIND")
- REMAIN VFR OCTA AND LAND AT THE NEAREST SUITABLE Non-controlled AERODROME. REPORT ARRIVAL TO ATS IF ON SARTIME OR REPORTING SCHEDULES. SEARCH AND RESCUE TELEPHONE NUMBER 1800 815 257.
- IF IN CONTROLLED/RESTRICTED AIRSPACE SQUAWK 7600 IF TRANSPONDER EQUIPPED. LISTEN OUT ON ATIS AND/OR VOICE MODULATED NAVAIDS. TRANSMIT INTENTIONS AND NORMAL POSITION REPORTS [IFR ONLY] INTENTIONS (assume transmitter is operating and prefix calls with "TRANSMITTING BLIND")

AND

- IF IN VMC AND CERTAIN OF MAINTAINING VMC STAY IN VMC AND LAND AT THE MOST SUITABLE AERODROME. (NOT SPECIAL PROCEDURES IF PROCEEDING TO A GAAP). REPORT ARRIVAL TO ATS.

OR

- IF IN IMC OR UNCERTAIN OF MAINTAINING VMC

NOTES:

- Initial and subsequent actions by the pilot at the time of loss of communications will depend largely on the pilot's knowledge of the destination aids, the air traffic/air space situation and meteorological conditions en-route and at the destination. It is not possible to publish procedures that cover all radio failure circumstances. The following procedures ensure that Air Traffic services and other traffic should be aware of the pilot's most likely actions. Pilots should follow these procedures unless strong reasons dictate otherwise.
- In determining the final level to which a pilot will climb after radio failure, ATC will use the level provided on the Flight Notification, or the last level requested by the pilot and acknowledged by ATC.

INITIAL ACTIONS

IF NO CLEARANCE LIMIT RECEIVED AND ACKNOWLEDGED

Proceed in accordance with the latest ATC route clearance acknowledged and climb to planned level.

IF A CLEARANCE LIMIT INVOLVING AN ALTITUDE OR ROUTE RESTRICTION HAS BEEN RECEIVED AND ACKNOWLEDGED;

- maintain last assigned level, or minimum safe altitude if higher, for three minutes, and/or
- hold at nominated location for three minutes, then
- proceed in accordance with the latest ATC route clearance acknowledged and climb to planned level.

IF BEING RADAR VECTORED

- maintain last assigned vector for two minutes; and
- CLIMB IF NECESSARY TO MINIMUM SAFE ALTITUDE, to maintain terrain clearance, then
- proceed in accordance with the latest ATC route clearance acknowledged.

IF HOLDING

- fly one more complete holding pattern; then
- proceed in accordance with the flight plan or the latest ATC clearance acknowledged, as applicable.

DESTINATION PROCEDURES

Track to the destination in accordance with flight plan (amended by the latest ATC clearance acknowledged, if applicable).

Commence descent in accordance with standard operating procedures or flight plan.

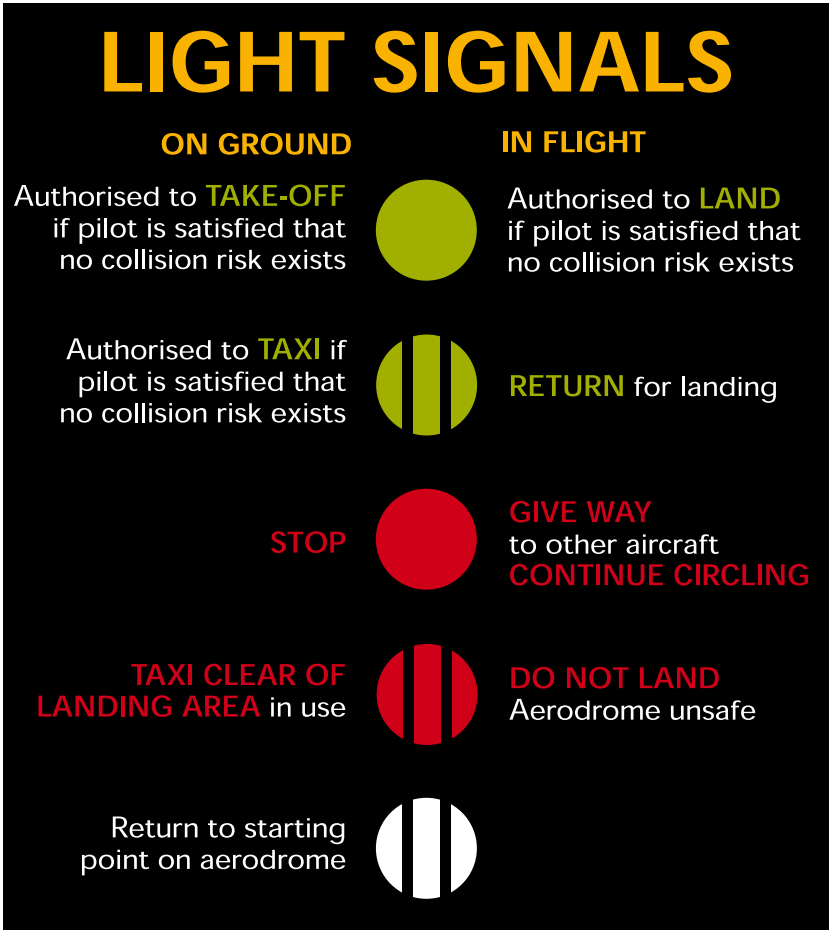
SPECIAL PROCEDURES – GAAP

Carry out general COM Failure procedures. Enter GAAP control zone at 1500FT or as detailed in ERSA. Track via the appropriate General Aviation approach points.

Proceed to overhead the aerodrome at that altitude. Ascertain landing direction, descend to join desired circuit at circuit altitude via the downwind entry point (remain clear of other circuit). Proceed with normal circuit and landing, maintain separation from other aircraft. Watch for light signals from the tower.

If your aircraft is fitted with a Navigational Aid, selecting the appropriate frequency and listening for instructions may be a possibility. Generally speaking this is one of the most effective ways of proceeding safely.

When tower is active follow normal procedure. Watch tower for light signals.



COMMUNICATION AND NAVAID FAILURE

In the event of complete failure of communications and navigation aids, MAINTAIN TERRAIN CLEARANCE THROUGHOUT ALL PROCEDURES and proceed as follows:

IF VFR OCTA

STAY IN VMC. BROADCAST INTENTIONS (assume transmitter is operating and prefix calls with "TRANSMITTING BLIND"). REMAIN VFR OCTA AND LAND AT THE NEAREST SUITABLE Non-controlled AERODROME. REPORT ARRIVAL TO ATS IF ON SARTIME OR REPORTING SCHEDULES.

IF IN CONTROLLED/RESTRICTED AIRSPACE OR IF IFR IN ANY AIRSPACE

SQUAWK 7600 IF TRANSPONDER EQUIPPED. LISTEN OUT ON ATIS AND/OR VOICE MODULATED NAVAIDS. TRANSMIT INTENTIONS AND NORMAL POSITION REPORTS [IFR ONLY] (assume transmitter is operating and prefix calls with "TRANSMITTING BLIND"). IF PRACTICABLE LEAVE/AVOID CONTROLLED/RESTRICTED AIRSPACE AND AREAS OF DENSE TRAFFIC. AS SOON AS POSSIBLE ESTABLISH VISUAL NAVIGATION. LAND AT THE MOST SUITABLE AERODROME. (NOTE SPECIAL PROCEDURES IF PROCEEDING TO A GAAP). REPORT TO ATS ON ARRIVAL.

EMERGENCY CHANGE OF LEVEL IN CONTROLLED AIRSPACE PROCEDURES

WHEN IT IS NECESSARY FOR AN AIRCRAFT IN CONTROLLED AIRSPACE TO MAKE A RAPID CHANGE OF FLIGHT LEVEL OR ALTITUDE BECAUSE OF TECHNICAL TROUBLE, SEVERE WEATHER CONDITIONS, OR OTHER REASONS, THE CHANGE WILL BE MADE AS FOLLOWS USING URGENCY MESSAGE FORMAT, STATING LEVEL CHANGES INVOLVED AND DIVERSIONS IF APPLICABLE.

- SQUAWK SSR CODE 7700
- TRANSMIT: PANPAN, PANPAN, PANPAN
- AGENCY BEING CALLED
- AIRCRAFT IDENTIFICATION
- NATURE OF URGENCY PROBLEM
- INTENTION OF PERSON IN COMMAND
- PRESENT POSITION FLIGHT LEVEL OR ALTITUDE AND HEADING
- ANY OTHER USEFUL INFORMATION

A flight may be declared a mercy flight when:

An urgent medical, flood or fire relief or evacuation flight is proposed in order to relieve a person from grave and imminent danger and failure to do so is likely to result in loss of life or serious or permanent disability and the flight will involve irregular operation, a mercy flight must be declared.

A mercy flight must only be declared by the pilot in command and the factors/risks that the pilot in command must consider in the declaration, commencement and continuation of the flight are detailed in AIP ENR 1.1.

A flight must not be declared a mercy flight when:

- it can comply with the applicable regulations and orders, or
- operational concessions to permit the anticipated irregular operations can be obtained.

In these cases, the flight should be notified as search and rescue (SAR), medical (MED), hospital aircraft (HOSP), flood or fire relief. Special consideration or priority will be granted by ATC if necessary.

A mercy flight must not be undertaken when:

- alternative means of achieving the same relief are available; or
- the crew and other occupants of the aircraft involved will be exposed to undue hazards; or
- relief or rescue can be delayed until a more suitable aircraft or more favourable operating conditions are available.

In assessing the justification of risks involved in a mercy flight, the pilot must consider the following:

- the availability of alternative transport or alternative medical aid;
- the weather conditions en route and at the landing place(s)
- the distance from which it should be possible to see the landing place;
- the air distance and the type of terrain involved;
- the navigation facilities useable and the reliability of those facilities (such as facilities may include landmarks, etc);
- the availability of suitable alternate aerodrome;
- the availability and reliability of communications facilities;
- the asymmetric performance of the aircraft;

- whether the pilot's experience reasonably meets the requirements of the mercy flight;
- the effect on the person requiring assistance if the flight is delayed until improved operating conditions exist;
- whether the flight is to be made to the nearest or most suitable hospital; and
- the competence of the authority requesting the mercy flight

The pilot in command of a mercy flight must:

- give flight notification as required for a charter flight and identify the flight by the term "MERCY FLIGHT". This notification must include the reason for the mercy flight and reference to any rule or regulation which will not be complied with;
- specify reporting points or times when contact will be made;
- specify the special procedures intended or special assistance required of the ground organisation; and
- limit the operating crew and the persons carried in the aircraft to the minimum number required to conduct the flight.

If the mercy flight applies only to a portion of the flight this must be stated in the flight notification. If a normal flight develops into a mercy flight, the pilot in command must take appropriate action.

The pilot in command must submit an Air Safety Incident Report (ASIR) on any mercy flight undertaken, summarising the aspects of irregular operation which caused the operation to be considered under the mercy flight provisions and the factors which led to the decision to make the flight. This report must include the name and address of the authority requesting the mercy fight and, in medical cases, the name of the patient.

section 5 – index

definitions

ACCELERATE STOP DISTANCE AVAILABLE (ASDA) The take-off run available plus the length of stopway available (if stopway is provided).

AERODROME BEACON (ABN) A light, visible intermittently at all azimuths, used to indicate the location of an aerodrome from the air.

AERODROME CONTROL SERVICE ATC service for aerodrome traffic.

AERODROME CONTROL TOWER A unit established to provide ATC service to aerodrome traffic.

AERODROME ELEVATION The elevation of the highest point of the landing area.

AERODROME METEOROLOGICAL MINIMA (Ceiling and Visibility Minima) The minimum heights of cloud base (ceiling) and minimum values of visibility which are prescribed in pursuance of CAR 257 for the purpose of determining the usability of an aerodrome either for take-off or landing.

AERODROME REFERENCE POINT (ARP) The designated geographical location of an aerodrome.

AERODROME TRAFFIC All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.
Note: An aircraft is in the vicinity of an aerodrome when it is, in, entering, or leaving the traffic circuit.

AERONAUTICAL INFORMATION CIRCULAR (AIC) A notice containing information that does not qualify for the origination of a NOTAM, or for inclusion in the AIP, but which relates to flight safety, air navigation, technical, administrative, or legislative matters.

AERONAUTICAL INFORMATION PUBLICATION (AIP) A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

AIP SUPPLEMENT (SUP) Temporary changes to the information contained in the AIP which are published by means of special pages.

AIRCRAFT WEIGHT CATEGORIES For the purposes of wake turbulence separation aircraft are divided into the following weight categories:

- HEAVY (H) - All aircraft of 136,000KG maximum take-off or more;
- MEDIUM (M) - Aircraft of less than 136,000KG maximum take-off weight but more than 7,000KG maximum take-off weight.
- LIGHT (L) - Aircraft of 7,000KG maximum take-off weight or less.

AIR-GROUND COMMUNICATIONS (A/G) Two-way communications between aircraft and stations on the surface of the earth.

AIR-REPORT (AIREP) A report prepared by the pilot during the course of a flight in conformity with the requirements for position, operational or meteorological reporting in the AIREP form.

AIR TRAFFIC CONTROL CLEARANCE Authorisation for aircraft to proceed under conditions specified by an Air Traffic control unit.

Note 1: For convenience, the term "Air Traffic Control Clearance" is frequently abbreviated to "Clearance" when used in appropriate context.

Note 2: The abbreviated term "Clearance" may be prefixed by "Taxi", "Take-Off", "Departure", "En-route", Approach", or "Landing" to indicate the particular portion of the flight to which the Air Traffic control Clearance relates.

AIR TRAFFIC CONTROL INSTRUCTIONS Directions given by a person performing duty in Air Traffic control for an aircraft to conduct its flight in the manner specified in the directions.

AIR TRANSIT Means the airborne movement of a helicopter that is:

- for the expeditious transit from one place within an aerodrome to another place within the aerodrome;
- at or below 100FT above the surface; and
- at speeds greater than those used in air taxiing.

AIR TRAFFIC CONTROL SERVICES Means any service provided by Air Traffic Control when performing a function referred to in Air Service Regulation 3.02 and includes a traffic advisory service, traffic avoidance advice and traffic information.

AIR TRAFFIC SERVICES (ATS) ATC service, flight information service and SAR alerting service.

AIRWAYS CLEARANCE A clearance, issued by ATC, to operate in controlled airspace along a designated track or route at a specified level to a specified point or flight planned destination.

ALERT, TO To warn to prepare for search and rescue and/or to direct the guarding of specified radio frequencies.

definitions

ALERTING SERVICE A service provided to notify an appropriate organisation regarding aircraft in need of search and rescue air, and to assist such organisation as required.

ALL-OVER FIELD A defined landing area selected or prepared for the landing and take-off of aircraft in various directions.

ALTIMETER SETTING A pressure datum which when set on the sub-scale of a sensitive altimeter causes the altimeter to indicate vertical displacement from that datum. A pressure-type altimeter calibrated in accordance with Standard Atmosphere may be used to indicate altitude, height or flight levels, as follows:

- when set to QNH or Area QNH it will indicate altitude;
- when set to Standard Pressure (1013.2 HPA) it may be used to indicate flight levels.

ALTITUDE (ALT) The vertical distance of a level, a point or an object, considered as a point, measured from mean sea level.
Note: In aeronautical terms, altitude is measured in feet. For flight planning, the letter"A" followed by 3 figures denotes specific altitude, eg A060 for 6000FT AMSL.

APPROACH CONTROL SERVICE ATC service for arriving or departing flights.

APPROACH SEQUENCE The order in which two or more aircraft are cleared to approach to land at the aerodrome.

APRON A defined area on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, fuelling, parking or maintenance.

APRON Service A traffic regulatory and information service provided to aircraft using the apron area of an aerodrome.

AREA CONTROL CENTRE (ACC) A unit established to provide area control service.

AREA CONTROL SERVICE ATC service in control areas.

AREA QNH A forecast altimeter setting which is representative of the QNH of any location within a particular area.

AUTOMATIC ENROUTE INFORMATION SERVICE (AERIS) The provision of operational information enroute by means of continuous and repetitive broadcasts.

AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts during the hours when the unit responsible for the service is in operation.

BLOCK LEVEL A section of airspace with specified upper and lower limits on a specified track.

BRIEFING The act of giving in advance, specific pre-flight instructions or information to aircrew.

CEILING The height above the ground or water of the base of the lowest layer of cloud below 20,000FT covering more than one-half of the sky.

CENTRE A generic callsign used in the en route and area environment which can include Air Traffic Control (procedural or radar), Advisory, Flight Information and Alerting services, depending on the classification of airspace in which the service is provided.

CLEARANCE LIMIT The point specified in an air traffic control clearance to which an aircraft is authorised to proceed.

CLEARANCE EXPIRY TIME The time, if specified, in an air traffic control clearance at which the authorisation granted therein is withdrawn.

CLEARWAY A defined rectangular area on the ground or water at the end of a runway in the direction of take-off and under the control of the Competent Authority, selected or prepared as a suitable area over which an aircraft may make a portion of its initial climb to a specified height.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) A frequency for pilots to exchange traffic information while operating to or from an aerodrome without an operating control tower or within a designated area. Where established, a CTAF will be shown in ERSA FAC.

CONTROLLED AIRSPACE Airspace of defined dimensions within which air traffic control services are provided to IFR flights and to VFR flights in accordance with the airspace classification

CONTROL AREA (CTA) A controlled airspace extending upwards from a specified limit above the earth.

CONTROL ZONE (CTR) A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

definitions

CROSSWIND SHEAR A wind shear occurrence which requires a rapid change in aircraft heading to maintain track.

CRUISE/CLIMB An aeroplane cruising technique resulting in a net increase in altitude as the aeroplane weight decreases.

CRUISING LEVEL A level maintained during a significant portion of a flight.

Note: The word "level", except in the expression "flight level" is used to designate the vertical position of an aircraft regardless of the reference datum or the units of vertical distance used. In air-ground communications a level will be expressed in terms of "altitude" or "flight level", depending on the reference datum and the altimeter setting in use.

DAY That period of time from the beginning of morning civil twilight to the end of evening civil twilight.

DEAD RECKONING (DR) NAVIGATION The estimating or determining of position by advancing an earlier known position by the application of direction, time and speed data.

DENSITY HEIGHT An atmospheric density expressed in terms of height which corresponds to that density in the standard atmosphere.

DISTANCE MEASURING EQUIPMENT (DME) Equipment which measures in nautical miles, the slant range of an aircraft from the selected DME ground station.

DME DISTANCE The slant range from the source of a DME signal to the receiving antenna.

DISTRESS A stage of being threatened by serious and imminent danger and of requiring immediate assistance.

DOMESTIC FLIGHT A flight between two points within Australia.

ELEVATION (ELEV) The vertical distance of a point or a level, on or affixed to the surface of the earth, measured from mean sea level.

EMERGENCY PHASES

- Uncertainly Phase: A situation wherein uncertainty exists as to the safety of an aircraft and its occupants..
- Alert Phase: A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

- Distress Phase: A situation wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

ESTIMATE The time at which it is estimated that an aircraft will be over a position reporting point or over the destination.

ESTIMATED ELAPSED TIME The estimated time to proceed from one significant point to another.

ESTIMATED TIME OF ARRIVAL For VFR flights, the time at which the aircraft is estimated to arrive over the aerodrome of intended landing.

FINAL LEG The path of an aircraft in a straight line immediately preceding the landing (alighting) of the aircraft.

FIX A geographical position of an aircraft at a specific time determined by visual reference to the surface, or by navigational aids.

FLIGHT FILE A file stored on the NAIPS system which contains stored briefings, or a stored flight notification. Flight files are owned by pilots and / or operators, and updated at their request.

FLIGHT INFORMATION Information which may be of assistance to a pilot in the planning and progress of a flight.

FLIGHT INFORMATION AREA (FIA) An airspace of defined dimensions, excluding controlled airpsace, within which flight information and SAR alerting services are provided by an ATS unit.

Note: FIA's may be sub-divided to permit the specified ATS unit to provide its services on a discrete frequency or family of frequencies within particular areas.

FLIGHT INFORMATION CENTRE A unit established to provide flight information and SAR alerting services.

FLIGHT INFORMATION OFFICE A unit providing briefing and debriefing services.

FLIGHT INFORMATION REGION (FIR) An airspace of defined dimensions within which flight information service and alerting service are provided.

FLIGHT INFORMATION SERVICE (FIS) A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

definitions

FLIGHT INFORMATION SERVICE STATION (FISS) A unit providing flight information services.

FLIGHT LEVEL (FL) A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2HPA and is separated from other such surfaces by specific pressure intervals.

Note: A pressure type altimeter calibrated in accordance with the Standard Atmosphere

- when set to a QNH altimeter setting, will indicate altitude, and
- when set to a pressure of 1013.2HPA may be used to indicate flight levels.

FLIGHT NOTE Details of the route and timing of a proposed flight provided by the pilot-incommand of an aircraft, which is other than notification submitted to the Airservices Australia, and which is required to be left with a person who could be expected to notify appropriate authorities in the event that the flight becomes overdue.

FLIGHT SERVICES (FS) Air-ground communications services, flight information services and SAR alerting services provided by ATS units.

FLIGHT STAGE A route or part of a route flown between any two aerodromes without an intermediate landing.

FORECAST A statement of expected meteorological conditions for a specified period, and for a specified area or portion of airspace.

FORECASTER A Weather Officer designated by the Bureau of Meteorology to prepare and issue forecasts of meteorological conditions.

FORMATION Two or more aircraft flown in close proximity to each other and operating as a single aircraft with regard to navigation, position reporting and control.

Note: Refer CAR 163AA for conditions under which formation flight may be undertaken.

FULL EMERGENCY (In the context of aerodrome emergency plans) - A situation in which the response of all agencies involved in the Aerodrome Emergency Plan will be activated. A full emergency will be declared when an aircraft approaching the airport is known or suspected to be in such trouble that there is danger of an accident.

GRIB Processed data in the form of grid-point values expressed in binary form. [Wind and temperature values derived from World Area Forecast System (WAFS) models are input to NAIPS and automated flight planning systems in GRIB format].

GROSS WEIGHT The weight of the aircraft together with the weight of all persons and goods (including fuel) on board the aircraft at the time.

HARD SURFACE A surface comprised of asphalt, concrete, bitumen, tar stone covered, tar bound pavements, compacted gravel or coral. It does not include any grass or natural surface.

HAZARDOUS CONDITIONS Meteorological conditions which may endanger aircraft or adversely affect their safe operation, including, but not limited to, dust-storms, icing, thunderstorms, linesqualls, blizzards, sandstorms, severe storms of tropical or sub-tropical origin, other severe or turbulent conditions, abnormal conditions of sea and sea swell, widespread conditions of fog, low cloud and low visibility, heavy precipitation, freezing precipitation and hail.

HEADING The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid).

HEIGHT

- The vertical distance of a level, a point or an object considered as a point measured from a specified datum or;
- the vertical dimension of an object.

HOLD SHORT LINE A line marked across a runway, in accordance with the requirements of AIP AD, at which landing aircraft must stop when required during land and hold short operations (LAHSO). The line shall not be closer than 75M to the intersecting runway centreline.

HOLDING BAY An enlargement or special arrangement of a taxiway, provided near the runway end to permit aircraft to hold without obstructing the passage of other aircraft on the taxiway.

HOLDING POINT A specified location identified by visual or other means in the vicinity of which the position of an aircraft in flight is maintained in accordance with ATC instructions.
Note: Caution, taxiways may also include a holding point.

definitions

HOLDING PROCEDURE A predetermined manoeuvre which keeps an aircraft within a specified airspace whist awaiting further clearance. Note: Clearance not applicable OCTA.

LAND In relation to a helicopter, means to lower the helicopter to bring the undercarriage in contact with a surface.

LAND AND HOLD SHORT OPERATIONS A procedure involving dependent operations conducted on two intersecting runways whereby aircraft land and depart on one runway while aircraft landing on the other runway hold short of the intersection.

LANDING AREA That part of the movement area intended for the landing or take-off of aircraft.

LANDING DISTANCE AVAILABLE (LDA) The length of runway which is declared by the State to be available and suitable for the ground landing run of an aeroplane. The landing distance available commences at the threshold and in most cases corresponds to the physical length of the runway pavement. However, the threshold may be displaced from the end of the pavement when it is considered necessary to make a corresponding displacement of the approach area and surface by reason of obstructions in the approach path to the runway.

LENGTH (LEN) In relation to a helicopter, means the total length of the helicopter (including its rotors).

LEVEL (LVL) A generic term relating to the vertical position of an aircraft in flight and meaning altitude or flight level.

LICENSED AERODROME means a place that is:

- Licensed as a aerodrome under the Civil Aviation Regulations; or
- Established as an aerodrome under the Air Navigation Regulations.

LOCAL STANDBY (In the context of Aerodrome Emergency Plans) - A situation in which activation of only the airport-based agencies involved in the Aerodrome Emergency Plan is warranted. A local Standby will be the normal response when an aircraft approaching an airport is known or is suspected to have developed some defect, but the trouble is not such as would normally involve any serious difficulty in effecting a safe landing.

MANOEUVRING AREA That part of an aerodrome to be used for the take-off landing and taxiing of aircraft, excluding aprons.

MARKER An object, other than a landing direction indicator, a wind director indicator or flag used to indicate an obstacle or to convey aeronautical information by day. MARKINGS Signs displayed on surfaces in order to convey aeronautical information.

MAXIMUM TAKE-OFF WEIGHT (MTOW) The maximum take-off weight of an aircraft as specified in its Certificate of Airworthiness.

MEDICAL A flight providing transport of medical patients, personnel, and/or equipment, prioritised as:

MED 1: An aircraft proceeding to pick up, or carrying, a severely ill patient, or one on whom life support measures are being taken.

MED 2: An aircraft proceeding to pick up medical personnel and/or equipment urgently required for the transport of a MED 1 patient, or returning urgently required medical personnel and/or equipment at the termination of a MED 1 flight.

METEOROLOGICAL BRIEFING Explanation with the aid of relevant meteorological charts, reports and documents of the existing and expected meteorological conditions over an area along air routes, on flight paths and at aerodromes.

METEOROLOGICAL DISPLAY The special exhibition of, and/or availability of, meteorological data for examination by persons concerned with air navigation.

METEOROLOGICAL OFFICE An office of a meteorological authority staff and equipped to provide certain meteorological services for air navigation.

METEOROLOGICAL WARNING A statement or meteorological report of the occurrence or expectation of a deterioration or improvement in meteorological conditions or of any meteorological phenomenon which may seriously affect the safe operation of aircraft.

MOVEMENT AREA That part of an aerodrome to be used for the take-off landing and taxiing of aircraft, consisting of the manoeuvring area and the apron(s).

definitions

NAIPS The National Aeronautical Information Processing System, which provides briefings and flight notification functionality.

NIGHT (NGT) That period of time between the end of evening civil twilight and the beginning of morning civil twilight.

NON-DIRECTIONAL BEACON (NDB) A special radio station, the emissions of which are intended to enable a mobile station to determine its radio bearing or direction with reference to that special radio station.

NOTAM A notice issued by or with the authority of 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.

OPERATIONS MANUAL A manual provided by an operating agency for the use and guidance of its operations staff, containing instructions as to the conduct of flight operations, including the responsibilities of its operations staff.

OVERSHOOT SHEAR A wind shear occurrence which produces an INITIAL effect of overshooting the desired approach path and/or increasing airspeed.

PARKING AREA A specially prepared or selected part of an aerodrome within which aircraft may be parked.

PERMISSIBLE ALL-UP-WEIGHT The all-up-weight to which an aircraft is limited by virtue of the physical characteristics of an aerodrome.

PRIMARY MEANS NAVIGATION SYSTEM A navigation system that, for a given operation or phase of flight, must meet accuracy and integrity requirements, but need not meet full availability and continuity of service requirements. Safety is achieved by either limiting flights to specific time periods, or through appropriate procedural restrictions and operational requirements.

PREFERRED RUNWAY A runway nominated by ATC as the most suitable for the prevailing wind, surface conditions and noise sensitive areas in the proximity of the aerodrome.

PROCEDURE TURN A manoeuvre in which a turn is made away by an aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances or each individual instrument approach procedure.

QNH ALTIMETER SETTING That pressure which, when placed on the pressure setting sub-scale of a sensitive altimeter of an aircraft located at the reference point of an aerodrome, will cause the altimeter to indicate the vertical displacement of the reference point above mean sea level.

RADAR INFORMATION SERVICE (RIS) An add-on ATC service within radar coverage which provides information to flights, not otherwise receiving a separation service, in order to improve situation awareness and assist pilots in avoiding collisions with other aircraft.

RADAR VECTORS Navigational guidance to aircraft in the form of specific headings, based on the use of radar.

REPETITIVE FLIGHT PLAN A flight plan referring to a series of frequently recurring, regularly operated individual flights with identical basic features, submitted by an operator for retention and repetitive use by ATS units.

RESCUE COORDINATION CENTRE (RCC) A centre that co-ordinates search and rescue within an assigned area.

RESCUE UNIT A unit composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue.

ROUTE A way to be taken in flying from a departure to a destination aerodrome, specified in terms of track and distance for each route segment.

RUNWAY (RWY) A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

definitions

RUNWAY NUMBER The number allotted to a runway end, being that whole number nearest to one tenth of the magnetic bearing of the centerline of the runway measured clockwise from magnetic north when viewed from the direction of approach. Single numbers so obtained are preceded by "O" and where the final numeral of the bearing is 5 degrees or greater, the number allocated is the next largest number.

RUNWAY STRIP (RWS) The defined area, including the runway (and stopway if provided), intended both to reduce the risk of damage to aeroplanes inadvertently running off the runway and to protect aeroplanes flying over it during take-off, landing or missed approach. Apart from the use of its runway, the area is not intended for taxi, take-off or landing operations.

SARTIME The time nominated by a pilot for the initiation of SAR action if a report has not been received by the nominated time.

SEARCH AND RESCUE (SAR) The act of finding and returning to safety, aircraft and persons involved in an emergency phase.

SEARCH AREA The area in which an aircraft is believed to have crashed or forced-landed.

SEARCH AND RESCUE REGION The specified area within which search and rescue is coordinated by a particular Rescue Coordination Centre.

SEPARATION

- LONGITUDINAL SEPARATION: Longitudinal spacing of aircraft which is never less than the prescribed standard interval. When using a time standard, the interval between aircraft is calculated at the speed of the following aircraft;
- LATERAL SEPARATION: The lateral spacing of aircraft by requiring operation on different routes, or in different geographical locations as determined by visual observation or by use of radio or other navigation aids;
- VERTICAL SEPARATION: The vertical spacing of aircraft.

SIGNIFICANT POINT A specified geographical location used in defining an ATS route or the flight path of an aircraft and for other navigation and ATS purposes.

SOLE MEANS NAVIGATIONAL SYSTEM A navigation system that, for a given phase of flight, must allow the aircraft to meet all four navigation system performance requirements - accuracy, integrity, availability and continuity of service.

SUPPLEMENTAL MEANS NAVIGATION SYSTEM A navigational system that must be used in conjunction with a sole means navigation system.

SPECIAL VFR FLIGHT A VFR flight authorised by ATC to operate within a control zone under meteorological conditions below the visual meteorological conditions.

STANDARD PRESSURE The pressure of 1013.2 hectopascals which, if set upon the pressure sub-scale of a sensitive altimeter, will cause the latter to read zero when at mean sea level in a standard atmosphere. This pressure must be set on the sub-scale of an altimeter before the vertical displacement indicated by the altimeter is corrected to a true value by applying the temperature correction.

STOPWAY A defined rectangular area on the ground at the end of a runway in the direction of take-off designated and prepared by the Competent Authority as a suitable area in which an aircraft can be stopped in the case of an interrupted take-off.

TAKE-OFF DISTANCE AVAILABLE (TODA) The length of the take-off run available plus the length of clearway available.

TAKE-OFF RUN AVAILABLE (TORA) The length of runway which is declared by the State to be available and suitable for the ground run of an aeroplane taking-off. This in most cases corresponds to the physical length of the runway pavement.

TAXI HOLDING POINT A designated position on a taxiway, runway or channel at which taxiing aircraft may be required to stop pending receipt of permission to proceed.

TAXIWAY (TWY) A defined path on a land aerodrome, selected or prepared for the use of taxiing aircraft.
Note: Caution, taxiways may also include a holding point.

TERRAIN CLEARANCE The vertical displacement of an aircraft's flight path from the terrain. Minimum values are prescribed relative to the flight rules in force and the conditions prevailing.

definitions

THRESHOLD (THR) The beginning of that portion of the runway useable for landing.

TOTAL ESTIMATED ELAPSED TIME For VFR flights the estimated time required from take-off to arrive over the destination aerodrome.

TRACK The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (True, Magnetic or Grid).

TRANSITION ALTITUDE The altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes.

TRANSITION LAYER The airspace between the transition altitude and the transition level.

TRANSITION LEVEL (TRL) The flight level at or above which the vertical position of an aircraft is controlled by reference to flight levels.

UNDERSHOOT SHEAR A wing shear occurrence which produces an INITIAL effect of undershooting the desired approach path and/or decreasing air speed.

UNSERVICEABLE AREA A portion of the movement area not available for use by aircraft because of the physical condition of the surface, or because of any obstruction on the area.

VHF OMNI-DIRECTIONAL RADIO RANGE (VOR) A VHF radio navigational aid which provides a continuous indication of magnetic bearing from the selected VOR ground station.

VISUAL APPROACH SLOPE INDICATOR SYSTEM (VASIS) A system of lights so arranged as to provide visual information to pilots of approaching aircraft of their position in relation to the optimum approach slope for a particular runway.

VISIBILITY (VIS) The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unit objects by day and prominent lit objects by night. Visibility is divided into two classes as follows:

Flight Visibility: The average range visibility forward from the cockpit of an aircraft in flight.

Ground Visibility: The visibility at an aerodrome, as reported by and approved observer.

GENERAL AND METEOROLOGICAL ABBREVIATIONS

This list covers abbreviations which may be found throughout the Guide and on associated charts, or which are used in NOTAM, AIP Supplements and in meteorological messages and documentation.

Abbreviations marked "+" may be used as spoken words in radio telephony. Abbreviations "#" may be spoken using the constituent letters rather than the phonetic alphabet.

A

CODE	DEFINITION
A/A	Air to Air
AACC	Area Approach Control Centre
AAD	Assigned Altitude Deviation
AAIS	Automatic Aerodrome Information Service
AAL	Above Aerodrome Level
ABM	Abeam
ABN	Aerodrome Beacon Information Service
ABT	About
ABV	Above
AC	Altocumulus
+ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACCID	Initial Notification of an Aircraft Accident

CODE	DEFINITION
ACD	Airways Clearance Delivery
ACFT	Aircraft
ACK	Acknowledge Service
ACN	Aircraft Classification Number
ACPT	Accept, Accepted Telecommunication
ACT	Active, Activated, Activity
AD	Aerodrome Zone(s)
ADC	Aerodrome Chart
ADDGM	Aerodrome Diagrams
ADDN	Addition, Additional
#ADF	Automatic Direction Finding Equipment
#ADIZ	Air Defence Identification Zone
ADJ	Adjacent
ADQ	Adequate Aerodrome

abbreviations

CODE	DEFINITION
ADR	Advisory Route
#ADS	Automatic Dependent Surveillance
ADZ	Advise
AEP	Aerodrome Emergency Plan
+AERIS	Automatic En Route Information Service
AFIL	Flight Notification: filed in the air, or indicating the position at which ATS services will first be required.
AFM	Yes, Affirm, Affirmative, that is correct
AFRU	Aerodrome Frequency Response Unit
AFS	Aeronautical Fixed Service
AFT	After...
#AFTN	Aeronautical Fixed Telecommunication Network
AFZ	Australian Fishing Zone(s)
A/G	Air-to-ground
AGA	Aerodromes, Air Routes and Ground Aids
#AGL	Above Ground Level
AGN	Again
AH	After Hours
AIC	Aeronautical Information Circular
#AIP	Aeronautical Information Publication
+AIRAC	Aeronautical Information Regulation and Control
+AIREP	Air-Report
+AIRMET	Information in plain language concerning weather significant to light aircraft operations at or below 10,000FT
#AIS	Aeronautical Information Service
AL	Approach Lights
#ALA	Aircraft Landing Area for the purpose of CAR 92(1)(d)
+ALERFA	Alert Phase
ALM	Aircraft Landing Minima
ALR	Alerting Message
ALS	Approach Lighting System
ALT	Altitude
ALTN	Alternate, Alternating (light alternates in colour)
ALTN	Alternate (aerodrome)
AMD	Amend, Amended
AMDT	Amendment (AIP Amendment)
#AMSL	Above Mean Sea Level
ANC	Aeronautial Chart 1:500,00 (followed by name/title)
AOC	Aerodrome Obstruction Chart
AP	Airport

CODE	DEFINITION
APAPI	Abbreviated Precision Approach Path Indicator
APCH	Approach
APP	Approach Control
APR	April
APRX	Approximate, Approximately Publication
APSG	After Passing
APV	Approve, Approved, Approval
AQZ	Area QNH Zone
ARC	Area Chart
ARFL	Aeroplane Reference Field Length
+ARFOR	Area Forecast (in aeronautical meteorological code)
ARN	Aviation Reference Number
ARNG	Arrange
ARP	Aerodrome Reference Point
ARP	Air-Report (message type designator)
ARR	Arrive, Arrival
ARS	Special Air-Report (message Type designator)
AS	Altostratus
#ASAP	As Soon As Possible
ASC	Ascent to, Ascending to
ASDA	Accelerate-Stop Distance Available

CODE	DEFINITION
ASPH	Asphalt
ASR	Area Surveillance Radar
# ATA	Actual Time of Arrival
#ATC	Air Traffic Control (in general)
#ATD	Actual Time of Departure
ATFM	Air Traffic Flow Management
#ATIS	Automatic Terminal Information Service
ATS	Air Traffic Services
ATTN	Attention
AUG	August
AUTH	Authorised, Authorisation
AUW	All Up Weight
AUX	Auxiliary
AVM	Abrupt Vertical Manoeuvres (by the MIL)
A-VASIS	Abbreviated Visual Approach Slope Indicator System
AT-VASIS	Abbreviated “T” Visual Approach Slope Indicator System (pronounced “AY-TEE-VASIS”)
AVBL	Available
AVG	Average
+AVGAS	Aviation Gasoline
AWIB	Aerodrome Weather Information Broadcast
AWK	Aerial Work

abbreviations

CODE	DEFINITION
AWS	Automatic Weather Station
AWY	Airway
AZM	Azimuth

B

+BASE	Cloud Base
BCFG	Fog Patches
BCN	Beacon (aeronautical ground light)
BCST	Broadcast
BDRY	Boundary
BECMG	Becoming
BFR	Before
BL	Blowing (followed by DU = dust, SA = sand or SN = snow)
BLDG	Building
BLO	Below Clouds
BLW	Below
BOMB	Bombing
BR	Mist
BRF	Short (used to indicate type of approach)
BRG	Bearing
BRKG	Braking
BS	Broadcasting Station Commercial)
BTL	Between Layers
BTN	Between

C

^{0}C	Degrees Celsius (Centigrade)
C	Centre (Runway)
CA/GRS	Certified Air / Ground Radio Service
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
+CAT	Category
CAT	Clear Air Turbulence
+CAVOK	Visibility, cloud and present weather better than prescribed values of conditions
#CB	Cumulonimbus
CC	Cirrocumulus
CCTS	Circuits
CEN	En Route and Area ATC Unit
CET	Clearance Expiry Time
CF	Change Frequency To
CFM	Confirm, I Confirm
CH	Channel
CHTR	Charter

CODE	DEFINITION
CI	Cirrus
CIT	Near, Over Large Town(s)
CIV	Civil
CK	Check
C/L	Centre Line
CLA	Clear type of ice formation
CLBR	Calibration
CLD	Cloud
CLG	Calling
CLIAS	Climbing Indicated Airspeed
CLR	Clear, Cleared to..., Clearance
CLSD	Closed, Close, Closing
CM	Centimetre
CMB	Climb to or Climbing to
CMPL	Completion, Completed, or Complete
CMSD	Commissioned
CNL	Flight Plan cancellation message
CNL	Cancel
CNS	Communications, Navigation and Surveillance
COM	Communications
CONC	Concrete
COND	Condition
CONS	Continuous

CODE	DEFINITION
CONST	Construction, Constructed
CONT	Continue(s), Continued
COOR	Coordinate, Coordinated
COORD	Coordinates
COR	Correct, Corrected, Correction
COS	Conical Surface
COT	At the Coast, Coastal
COV	Cover, Covered, Covering
#CPDLC	Controller Pilot Datalink Communication
CRZ	Cruise
CS	Cirrostratus
CS	Call-sign
#CTA	Control Area
+CTAF	Common Traffic Advisory Frequency
CTAF(R)	Common Traffic Advisory Frequency where the carriage and usage of radio is mandatory.
CTC	Contact
CTL	Control
CTN	Caution
CTR	Control Zone
CU	Cumulus
CUF	Cumuliform
CUST	Customs

abbreviations

CODE	DEFINITION
CWY	Clearway

D

CODE	DEFINITION
D	Danger Area (followed by identification)
D	Deleted
DA	Decision Altitude
DAP	Departure and Approach Procedures
DCMSD	Decommissioned
DCKG	Docking
DCT	Direct (in relation to flight plan clearance and type of approach)
DEC	December
DEG	Degrees
DEP	Depart, Departure, Departed, Departing, Departure Message
DER	Departure End of Runway
DES	Descend to, Descending to
DEST	Destination
+DETRESFA	Distress Phase
DEV	Deviation, Deviating
#DF	Direction Finder/ Finding
DIF	Diffuse
DISP	Displaced
DIST	Distance
DIV	Diversion, Divert, Diverting
DLA	Delay, Delayed
#DME	Distance Measuring Equipment
DMEN	DME (International)
#DMEP	DME (International Precision - used in conjunction with MLS)
DNG	Danger, Dangerous
DOC	Documents
DOM	Domestic
DP	Dew Point
DPT	Depth
#DR	Dead Reckoning
DR...	Low Drifting (followed by DU =dust, SN=snow SA = sand
DRG	During
DS	Duststorm
DTAM	Descend to And Maintain
DTG	Date-Time Group
DTHR	Displaced Runway Threshold
DTRT	Deteriorate, Deteriorating
DU	Dust
DUR	Duration
DUC	Dense Upper Cloud
DVOR	Doppler VOR
DZ	Drizzle

CODE	DEFINITION
E	
E	East, East Longitude
EAT	Expected Approach Time
EB	Eastbound
#EET	Estimated Elapsed Time
EHF	Extremely High Frequency (30 000 to 300 000 MHZ)
ELEV	Elevation
ELR	Extra Long Range
#ELT	Emergency Locator Transmitter
EM	Emission
EMBD	Embedded in a Layer (to indicate cumulonimbus embedded in layers of other clouds)
EMERG	Emergency
ENDCE	Endurance
ENE	East North-East
ENG	Engine
ENR	En Route
ENRC	En Route Chart (followed by name/title)
EOBT	Estimated off Blocks Time
+EPIRB	Electronic Position Indicating Radio Beacon (marine term)
EQPT	Equipment
#ERC	En Route Chart
+#ERSA	En Route Supplement Australia
ESE	East South-East
EST	Estimate, estimate as message type indicator
#ETA	Estimated Time of Arrival, Estimating Arrival
# ETD	Estimated Time of Departure, Estimating Departure
ETO	Estimated Time Over significant point
EV	Every
EET	Estimated Elapsed Time
EXC	Except
EXP	Expect, Expected, Expecting
EXTD	Extend, Extending, Extended
F	
F	Fixed (chart symbol)
FAC	Facility, Facilities
FAF	Final Approach Fix
FAL	Facilitation of International Air
FAP	Final Approach Point
FATO	Final Approach and Take-off Area
+FAX	Facsimile Transmission

abbreviations

CODE	DEFINITION
FBL	Light (used to indicate the intensity of WX phenomena, interference or static reports, eg FBL RA = light rain)
FC	Funnel cloud (tornado or water spout)
FCST	Forecast
FDL	Fixed Distance Lighting
FEB	February
FEW	Few (cloud descriptor)
FFR	Flood, Fire Relief
FG	Fog
#FIA	Flight Information Area
#FIC	Flight Information Centre
FIO	Flight Information Office
#FIR	Flight Information Region
#FIS	Flight information Service
FISS	Flight Information Service Station
FL	Flight Level
FLD	Field
FLG	Flashing
FLR	Flares
FLT	Flight
FLTCK	Flight Check
FLUC	Fluctuating, Fluctuation, Fluctuated

CODE	DEFINITION
FLW	Follow(s), Following
FLY	Fly, Flying
FM	From
FM	From (followed by time weather change is forecast to begin)
FMU	Flow Management Unit
FNA	Final Approach
FPD	Flight Plan Designator
FPL	Filed Flight Plan Message
FPM	Feet Per Minute
FPR	Flight Plan Route
FR	Fuel Remaining
FRI	Friday
FREQ	Frequency
FRNG	Firing
FRQ	Frequent
#FS	Flight Service (in general)
FSL	Full Stop Landing
FSP	Fish Spotting
FST	First
FT	Feet
FU	Smoke
FXD	Fixed
FZ	Freezing
FZDZ	Freezing Drizzle

CODE	DEFINITION
FZFG	Freezing Fog
FZL	Freezing Level
FZRA	Freezing Rain

G

G	Green
GAAP	General Aviation Aerodrome Procedures
#GCA	Ground Controlled Approach
GEN	General
GEO	Geographic, true
GES	Ground Earth Station
GFY	Glider Flying
GLD	Glider
GND	Ground
GNDCK	Ground Check
GNS	Global Navigation System
GNSS	Global Navigation Satellite System
GP	Glide Path
GP FLG	Group Flashing (number) (used in conjunction with aerodrome lighting)
GPS	Global Positioning System
GPI	Glide Path Intercept
GR	Hail

CODE	DEFINITION
+GRASS	Grass Landing Area
GRIB	Processed Meteorological data in the form of grid point values expressed in binary form (aeronautical meteorological code)
GRVL	Gravel
GS	Groundspeed
GS	Small Hail and/or Snow Pellets

H

#H24	Continuous day and night service
HAA	Height Above Aerodrome
HAT	Height Above Threshold
HBN	Hazard Beacon
HDG	Heading
HDS	Hours of Daylight Saving
HEL	Helicopter
HF	High Frequency (3000 to 30,000 KHZ)
HGT	Height, Height above
+HIAL	High Intensity Approach Lighting
HIOL	High Intensity Obstacle Lighting
HIRL	High Intensity Runway Lighting
#HJ	Sunrise to Sunset

abbreviations

CODE	DEFINITION
HLDG	Holding
HLS	Helicopter Landing Site
#HN	Sunset to Sunrise
HO	Service Available to meet operational requirements
HOSP	Hospital Aircraft
HPA	Hectopascal
HR	Hours
HS	Homestead
HS	Service available during hours of scheduled operations
HSL	Hold Short Lights
HURCN	Hurricane
HVY	Heavy
HVY	Heavy (used to indicate the intensity of WX phenomena, eg HVY RA = heavy rain)
HX	No specific working hours
HYR	Higher
HZ	Haze
HZ	Hertz
HZS	Horizontal Surface

I

IAC	Instrument Approach Chart (followed by name/title) IAF
	Initial Approach Fix
#IAL	Instrument Approach and Landing Charts
IAO	In and out of clouds
#IAS	Indicated Air Speed
IBN	Identification Beacon
+ICAO	International Civil Aviation Organisation
IC	Ice Crystals (MET code)
ICE	Icing, Ice
ID	Identifier, identify
IF	Intermediate Approach Fix
#IFF	Identification Friend/Foe
#IFR	Instrument Flight Rules
#ILS	Instrument Landing System
IM	Inner Marker
#IMC	Instrument Meteorological Conditions
IMG	Immigration
IMPR	Improve, Improving, Improvement
IMT	Immediate, Immediately
INBD	Inbound
#INC	In Cloud
+INCERFA	Uncertainty Phase
+INFO	Information

CODE	DEFINITION
+INOP	Inoperative
#INS	Inertial Navigation System
INSTL	Install, Installed, Installation
INSTR	Instrument
INT	Intersection
+INTER	Intermittent, Intermittently
INTL	International
INTRG	Interrogator
INTRP	Interrupt, Interruption, Interrupted
INTSF	Intensify, Intensifying
INTST	Intensity
+ISA	International Standard Atmosphere
ISB	Independent Sideband
ISOL	Isolated
IWI	Illuminated Wind Indicator

J

JAN	January
+J-BAR	Jet Barrier
JF	Saturday, Sunday and PH
JO	Monday to Friday except PH
JTST	Jet Stream
JUL	July
JUN	June

K

KG	Kilograms
KHZ	Kilohertz
KM	Kilometres
KMH	Kilometres per Hour
KPA	Kilopascals
KT	Knots
KW	Kilowatts

L

L	Left (runway identification)
L	Locator (see LM, LO)
LAHSO	Land and Hold Short Operations
LAN	Inland
+LAT	Latitude
LDA	Landing Distance Available
LDG	Landing
LDI	Landing Direction Indicator
LEN	Length
LF	Low Frequency (30 to 300 KHZ)
LGT	Light, Lighting.
LGTD	Lighted

abbreviations

CODE	DEFINITION
LIH	Light Intensity High
LIL	Light Intensity Low
LIM	Light Intensity Medium
LIOL	Low Intensity Obstacle Lights
LIRL	Low Intensity Runway Lights
LJR	Low Jet Route
LLN	Low Level Navigation (by the MIL)
LLO	Low Level Operations (by the MIL)
LL	Lower Limits
LLZ	Localizer
LM	Locator (middle)
LMT	Local Mean Time
LO	Locator (outer)
LOC	Locally, Location, Located, Local
LOE	Lane of Entry
+LONG	Longitude
LRG	Long Range
LSALT	Lowest Safe Altitude
LTD	Limited
LUL	Lowest Usable Level
LV	Light and variable (relating to the wind)
LVE	Leave, Leaving
LVL	Level
LYR	Layer, Layered

M

CODE	DEFINITION
M	Metres (preceded by figures)
M	Mach number (followed by figures)
MAE	Men and Equipment
MAG	Magnetic
MAINT	Maintenance
MAN	Manual
MAP	Aeronautical Maps and charts
MAPT	Missed Approach Point
MAR	March
MAR	At Sea
+MAX	Maximum
MBST	Microburst
MCW	Modulated Continuous Wave (by the MIL)
MDA	Minimum Descent Altitude
MDF	Medium Frequency Direction Finding Station
#MEA	Minimum En-route Altitude
MED	Medical
+MET	Meteorological, Meteorology
+METAR	Routine Weather Report

CODE	DEFINITION
METRAD	MET Radar
MF	Medium frequency (300 to 3000 KHZ)
MHZ	Megahertz
MIFG	Shallow Fog
MIL	Military
MIN	Minutes
MIOL	Medium Intensity Obstacle Lights
MIRL	Medium Intensity Runway Lights
MISC	Miscellaneous
MKR	Marker Radio Beacon
MLJ	Military Low Jet
MLJR	Military Low Jet Route
#MLS	Microwave Landing System
MLW	Maximum Landing Weight
MM	Middle Marker
MNM	Minimum
MNT	Monitor, Monitoring, Monitored
MNTN	Maintain, Maintained, Maintaining
MOA	Military Operating Area
MOC	Minimum Obstacle Clearance (required)
MOD	Moderate, Moderately
MOD	Moderate (used to indicate the intensity of WX phenomena,

CODE	DEFINITION
	interface or static reports, eg MOD RA = moderate rain)
MON	Monday
MON	Above Mountains
MOV	Move, Moved, Moving, Movement
MOWP	Method of Working Plan
MPS	Meters per Second
MRG	Medium Range
MRP	ATS/MET Reporting Point
MS	Minus
#MSA	Minimum Sector Altitude
MSG	Message
MSL	Mean Sea Level
MT	Mountain
MTOW	Maximum Take-off Weight
MTP	Maximum Tyre Pressure
MTW	Mountain Waves
MVA	Minimum Vector Altitude
MWO	Meteorological Watch Office
MX	Mixed type of ice formation (white and clear)

N

N	North, North Latitude
NAIPS	National Aeronautical

abbreviations

CODE	DEFINITION
	Information Processing System
NAP	Noise Abatement Procedures
NAV	Navigation
NAVAID	Navigation Aid
NB	Northbound
NBFR	Not Before
NC	No Change
#NDB	Non Directional Radio Beacon
NE	North-East
NEG	Negative, no, Permission not granted, or that is not correct
NGT	Night
+NIL	None
NM	Nautical Miles
NML	Normal
NNE	North North-East
NNW	North North-West
NOF	International NOTAM Office
+NOSIG	No Significant Change
+NOTAM	Notice to Airmen
NOV	November
NSC	No significant Cloud
NTA	No TAF Amendment
NV	Night VFR
NVG	Night Vision Goggles (by the MIL)

CODE	DEFINITION
NW	North-West
NXT	Next

O

OBS	Observe, Observed, Observation
OBSC	Obscure, Obscured, Obscuring
OBST	Obstacle
OBSTR	Obstruction
#OCA	Oceanic Control Area
OCA	Obstacle Clearance Altitude
OCC	Occulting (light)
OCNL	Occasional, Occasionally
OCT	October
#OCTA	Outside Control Area
#OCTR	Outside Control Zone
OFZ	Obstacle Free Zone
OHD	Overhead
OM	Outer Marker
OPA	Opaque, white type of ice formation
OPMET	Operational Meteorological
OPN	Open, Opening,Opened
OPN	Operational Notification Message

CODE	DEFINITION
OPR	Operator, Operate, Operative, Operating, Operational
OPS	Operations
O/R	On Request
OT	Other Times
OTLK	Outlook (used in SIGMET messages for volcanic ash and tropical cyclones)
OTP	On top
OUBD	Outboard
OVC	Overcast
OW	Over Water

P

P	Prohibited Area
+PAL	Pilot Activated Lighting
PANS	Procedures for Air Navigation Services
+PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PARL	Parallel
PAX	Passengers
PCD	Proceed, Proceeding
PCL	Pilot Controlled Lighting
PCN	Pavement Classification Number
PDC	Pre-Departure Clearance
PEC	Pressure Error Correction
PERM	Permanent
PFR	Preferred Route
PH	Public Holiday
PILS	Practice ILS
PJE	Parachute jumping Exercise
PL	Ice Pellets
PLN	Flight Plan
PLVL	Present Level
PN	Prior Notice Required
#PNR	Point of No Return
PO	Dust Devils
#POB	Persons on Board
POSS	Possible
#PPI	Plan Position Indicator
PRFG	Aerodrome Partially Covered by fog (MET code)
PRI	Primary
PRM	Precision Runway Monitoring
PRKG	Parking
+PROB	Probable, Probability
PROC	Procedure
PROV	Provisional
PS	Plus

abbreviations

CODE	DEFINITION
PSG	Passing
PSN	Position
PSP	Pierced Steel Plank
PTBL	Portable
PTN	Procedure Turn
PVT	Private
PWR	Power

Q

#QNH	Altimeter subscale setting to obtain elevation or altitude
QUAD	Quadrant

R

R	Red
R	Restricted Area (followed by number)
R	Right (runway system identification)
RA	Rain
RAC	Rules of the Air and Air Traffic Services
RAD	Radius
RAFC	Regional Area Forecast Centre
RAG	Ragged
RAG	Runway Arresting Gear
RAI	Runway Alignment Indicator
+RAPIC	Radar Picture (MET)
+RAS	Radar Advisory Service
RCA	Reach Cruising Altitude
#RCC	Rescue Coordination Centre
RCH	Reach, Reaching
RCL	Runway Centre Line
RCLL	Runway Centre Line Lights
RCLM	Runway Centre Line Marking
RDL	Radial
RDO	Radio
RE…	Recent (used to qualify weather phenomena, eg RERA = recent rain)
REC	Receive, Receiver, Received
REDL	Runway Edge Lights
REF	Reference to..., Refer to...
REG	Registration
RENL	Runway End Lights
REP	Report, Reported, Reporting, Reporting Point
REQ	Request, Requested
RERTE	Re-Route
RES	Reserve Fuel
RESTR	Restrictions

CODE	DEFINITION
REV	Review
RFF	Rescue and Fire Fighting Services
RH	Radio Height
RHC	Right Hand Circuit
RIF	Reclearance in flight
RL	Report Leaving
RLA	Relay to
RLLS	Runway Lead-in Lighting
RMK	Remark(s)
+RNAV	Area Navigation
+ROBEX	Regional OPMET Bulletin Exchanges Recommended Practices (ICAO)
ROC	Rate of Climb
ROD	Rate of Descent
+ROFOR	Route Forecast (in aeronautical meteorological code)
RPI	Runway Point of Intercept
RPT	Regular Public Transport
RQ	Require(d)
RQMNTS	Requirements
RR	Report Reaching
RSC	Rescue Sub-Centre
RSCD	Runway Surface Condition
RSP	Responder Beacon System
RSR	En Route Surveillance Radar
RTE	Route
RTF	Radio Telephone
RTIL	Runway Threshold Identification Lights
RTHL	Runway Threshold Light(s)
RTN	Return, Returned, Returning
RTZL	Runway Touchdown Zone Lights
#RVR	Runway Visual Range
RWS	Runway Strip
RWY	Runway

S

S	South, South Latitude
SA	Sand
SAL	Supplementary Airline licence
SALS	Simple Approach Lighting System
+SAR	Search and Rescue
SARPS	Standards and Recommended Practices (ICAO)
+SARTIME	Time search action required
SAT	Saturday
+SATCOM	Satellite Communication
SB	Southbound
SC	Stratocumulus

abbreviations

CODE	DEFINITION
SCT	Scattered
SDBY	Standby
SDC	Standard Departure Clearance
SE	South East
SEC	Seconds
SEC	Second, Secondary
SECT	Section, Sector
+SELCAL	Selective Calling System
SEP	September
SER	Service, Servicing, Served
SEV	Severe (used eg. to qualify icing and turbulence report)
SFC	Surface
SFL	Sequenced Flashing Lights
SG	Snow grains
SH...	Showers (followed by RA=rain, SN=snow, PE=ice pellets, GR=hail, GS=small hail and/or snow pellets or combinations thereof, eg, SHRASN= showers of rain and snow)
SHF	Super High Frequent (3,000 to 30,000MHZ)
+SID	Standard Instrument Departure
SIF	Selective Identification
SIG	Significant
+SIGMET	Information concerning en route weather phenomena which may affect the safety of aircraft operations
SIGWX	Significant Weather
SIMUL	Simultaneous, Simultaneously
SKC	Sky Clear
+SKED	Schedule, Scheduled
SLP	Speed Limiting Point
SLW	Slow, Slowly
#SMC	Surface Movement Control
SMR	Surface Movement Radar
SN	Snow
+SNOWTAM	A special series NOTAM notifying the presence or removal of hazardous conditions due to snow, ice, slush or standing water associated with snow, slush and ice on the movement area
SOC	Start of Climb
SOT	Start of TORA (take-off)
SP	Single Pilot
SPA	Sport Aviation
+SPECI	Aviation Special Weather (in Aeronautical meteorological code)
SPFIB	Specific Preflight Information Bulletin
+SPOT	Spotwind

CODE	DEFINITION
SQ	Squall
SR	Sunrise
SRD	Standard Radar Departure
SRG	Short range
#SRR	Search and rescue region
SRY	Secondary
SS	Sandstorm
SS	Sunset
SSB	Single Sideband
SSE	South South-East
SSR	Secondary Surveillance Radar
SST	Supersonic Transport
SSW	South South-West
ST	Stratus
STA	Straight in Approach
+STAR	Standard Arrival Route
STD	Standard
STF	Stratiform
STN	Station
STNR	Stationary
STODA	Supplementary Take-off distance
STOL	Short Take-off and Landing
STS	Status
STWL	Stopway Light(s)
SUBJ	Subject to
SUN	Sunday
SUP	Supplement (AIP Supplement)
SUPPS	Regional Supplementary Procedures
SVCBL	Serviceable
SVY	Survey Operations
SW	South-West
SWS	Soft Wet Surface
SWY	Stopway

T

...T	Bearing (true)
T	Temperature
TA	Transition Altitude
+TAC	Terminal Area Chart
+TACAN	Tactical Air Navigation Aid
+TAF	Aerodrome Forecast
+TAIL	Tailwind
TAR	Terminal Area Surveliance Area
#TAS	True Airspeed
+TAT	Terminal Area Thunderstorm Service (meteorological term)
TAX	Taxiing, Taxi
TBA	To Be Advised

abbreviations

CODE	DEFINITION
TC	Tropical Cyclone
+TCAS	(tee-kas) Traffic Alert and Collision Avoidance System
TCH	Threshold Crossing Height
TCTA	Trans-continental Control Area
TCU	Towering Cumulus
TDO	Tornado
TDZ	Touchdown Zone
TECR	Technical Reason
TEL	Telephone
+TEMPO	Temporary, Temporarily
TFC	Traffic
TGL	Touch and go Landing
TGS	Taxiing Guidance System
THR	Threshold
THRU	Through
THU	Thursday
TIBA T	raffic Information Broadcasts by Aircraft
+TIL	Until
TIP	Until Past (place)
TKOF	Take-off
TLW	Time Limited WIP (work in progress)
#TMA	Terminal Control Area
TNA	Turn Altitude

CODE	DEFINITION
TNH	Turn Height
TNS	Transitional Surface
TOC	Top of Climb
TODA	Take-off Distance Available
TOP	Cloud Top
TORA	Take-off Run Available
TP	Turning Point
TR	Track
TRA	Temporary Reserved Airspace
TRANS	Transmits, Transmitter
TRL	Transition Level
TROP	Tropopause
TS...	Thunderstorm
#TTF	Trend Type Forecast
TUE	Tuesday
TURB	Turbulence
+T-VASIS	“T” Visual Approach Slope Indicator System (pronounced “TEE-VASIS”)
TWR	Aerodrome Control Tower, Aerodrome Control
TWY	Taxiway
TWYL	Taxiway Link
TYP	Type of Aircraft
TYPH	Typhoon

CODE	DEFINITION
U	
UAB	Until Advised By
#UDF	UHF Direction Finding Stations
UFN	Until Further Notice
UHDT	Unable Higher Due Traffic
#UHF	Ultra High Frequency (300 to 3 000 MHZ)
UIR	Upper Flight Information Region
UL	Upper Limits
UNA	Unable
UNAP	Unable to Approve
UNLC	Unlicensed
UNL	Unlimited
UNREL	Unreliable
U/S	Unserviceable
UTA	Upper Control Area
#UTC	Coordinated Universal Time
V	
VA	Volcanic Ash
VAL	In Valleys
VAR	Magnetic Variation
+VASIS	Visual Approach Slope Indicator System
VCY	Vicinity
VC	Vicinity of the aerodrome
I#VDF	VHF Direction Finding Station
VER	Vertical
#VFR	Visual Flight Rules
#VHF	Very High Frequency (30 to 300 MHZ)
VIA	By way of...
#VIP	Very Important Person
VIS	Visibility
VLF	Very Low Frequency (3 to 30 MHZ)
VLR	Very Long Range
#VMC	Visual Meteorological Conditions
+VOLMET	Meteorological Information for Aircraft in Flight
#VOR	VHF Omni-directional Radio Range (OMNI)
VRB	Variable
VTC	Visual Terminal Chart
W	
W	West, West Longitude
W	White
WAC	World Aeronautical Chart - ICAO 1:1 000 000 (followed by name/ title)

abbreviations

CODE	DEFINITION
WAFC	World Area Forecast Centre
WB	Westbound
WDI	Wind Direction Indicator
WDSPR	Widespread
WED	Wednesday
WEF	With Effect From, Effective From
WI	Within
WID	Width
WIE	With Immediate Effect, Effective Immediately
+WILCO	Will Comply
WIND	Wind (used in connection with direction and speed)
WINTEM	Forecast upper wind and temperature at specified points (in aeronautical met code)
WIP	Work in Progress
WKN	Weaken, Weakening
WNW	West North-West
WO	Without
WPT	Way Point
WRNG	Warning
WS	Wind Shear
WSW	West South-West
WT	Weight
WWW	World Wide Web
WTSPT	Water Spout
WX	Weather

X

X	Cross
XBAR	Crossbar (of approach lighting system)
XNG	Crossing
XS	Atmospherics

Y

YCZ	Yellow Caution Zone
YR	Your(s)

Z

Z	Coordinated Universal Time (in meteorological messages)

A

B

subject and page

C

D

E

F

subject and page

I

L

M

N

O

Q

R

S

T

U

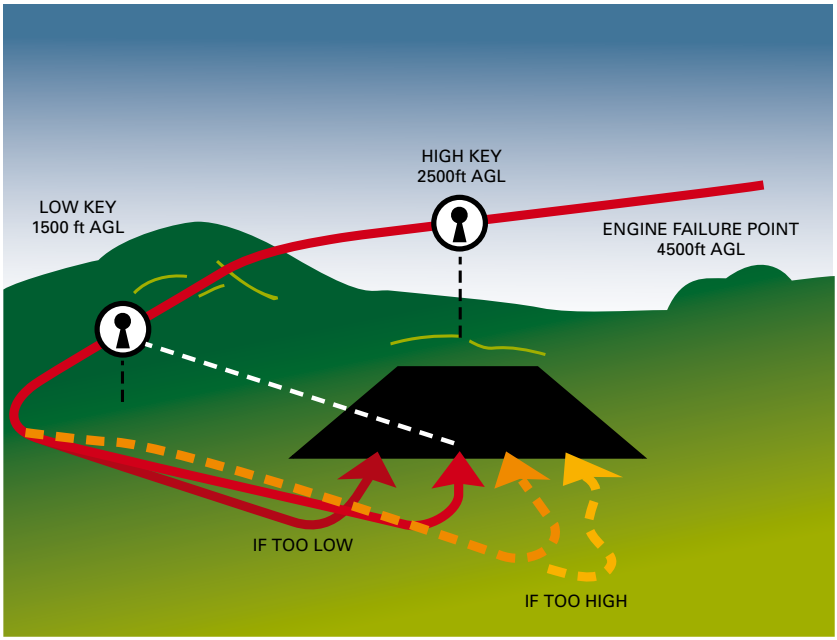
V

W

TYPE		REGISTRATION	
Best rate of climb speed (VX)			kts
Best angle of climb speed (VX)			kts
Normal climb speed			kts
Best glide speed - Heavy			kts
Best glide speed - Medium			kts
Best glide speed - Light			kts
Stall speed 0° Flap			kts
Full Flap			kts
Short field take-off speed			kts
Short field landing speed			kts
Flapless landing speed			kts
Normal landing speed			kts
Maximum gear extension speed			kts
Maximum VFE flap extension speed (VFE)			kts
Fuel capacity (usable)			litres
Fuel Flow (65% power)			litres/hr
Fuel flow (75% power)			litres/hr
Basic empty weight			kg
Maximum take-off weight			kg
Maximum baggage weight			kg

ARE YOU SAFE TO FLY?		
I	llness	*Are you physically well?*
M	edication	*Are you free from the effects of drugs?*
S	tress	*Are you free from significant stress?*
A	lcohol	*Are you free from the effects of alcohol?*
F	atigue	*Are you adequately rested?*
E	ating	*Have you eaten properly to work effectively?*

Don't fly if you are not safe!



INITIAL CHECK

Hold Attitude	for best glide speed
Fuel On **Pump** On	**Change tanks**
Carburettor heat	Full hot
Mixture	Rich
Magnetoes	Left then right, if no improvement back to both

FIELD SELECTION

Wind -	Determine direction
Surroundings -	Power lines, trees
Size & Shape -	In relation to wind
Surface & Slope	
S(c)ivilisation -	Close proximity if possible

FMOST CHECK

Fuel	Contents, pump on, primer locked
Mixture	Up & down range, leave rich
Oil	Temps & pressures green range
Mags switch	Left then right, if no improvement back to both
Throttle	Up & down range, then close

MAYDAY CALL & SQUAWK 7700

"Mayday Mayday Mayday
Sydney ZFR a Piper
Engine Failure
3nm west of Picton 4500 feet
landing in paddock"

Any other useful information such as number of passengers etc.

BRIEF YOUR PASSENGERS

FINAL ACTIONS

Fuel	Off
Mixture	Close
Mags	Off
Harness	Tight
Door	As required
Master switch	Off

Caution if flaps are electrically operated

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