



Australian Government
Civil Aviation Safety Authority

visual flight rules guide



CASA Aviation Safety Promotion

Tel 131 757

The Visual Flight Rules 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 this guide is correct at the time of upload to the internet but is subject to change without notice. Pilots should refer regularly to the CASA website for the latest edition.

Plan your route thoroughly, and carry current charts and documents.
Always check ERSA, NOTAMs, and the weather, BEFORE you fly.

pilot recency check

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

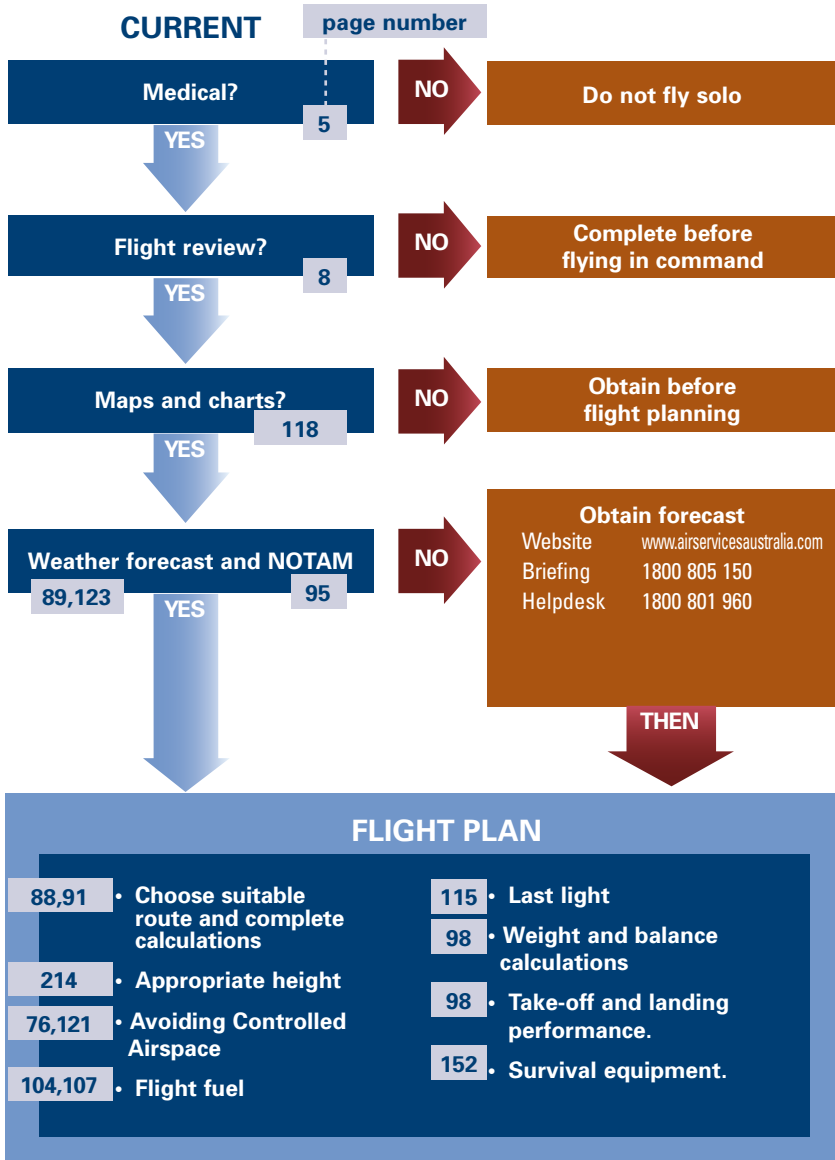
Due:

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

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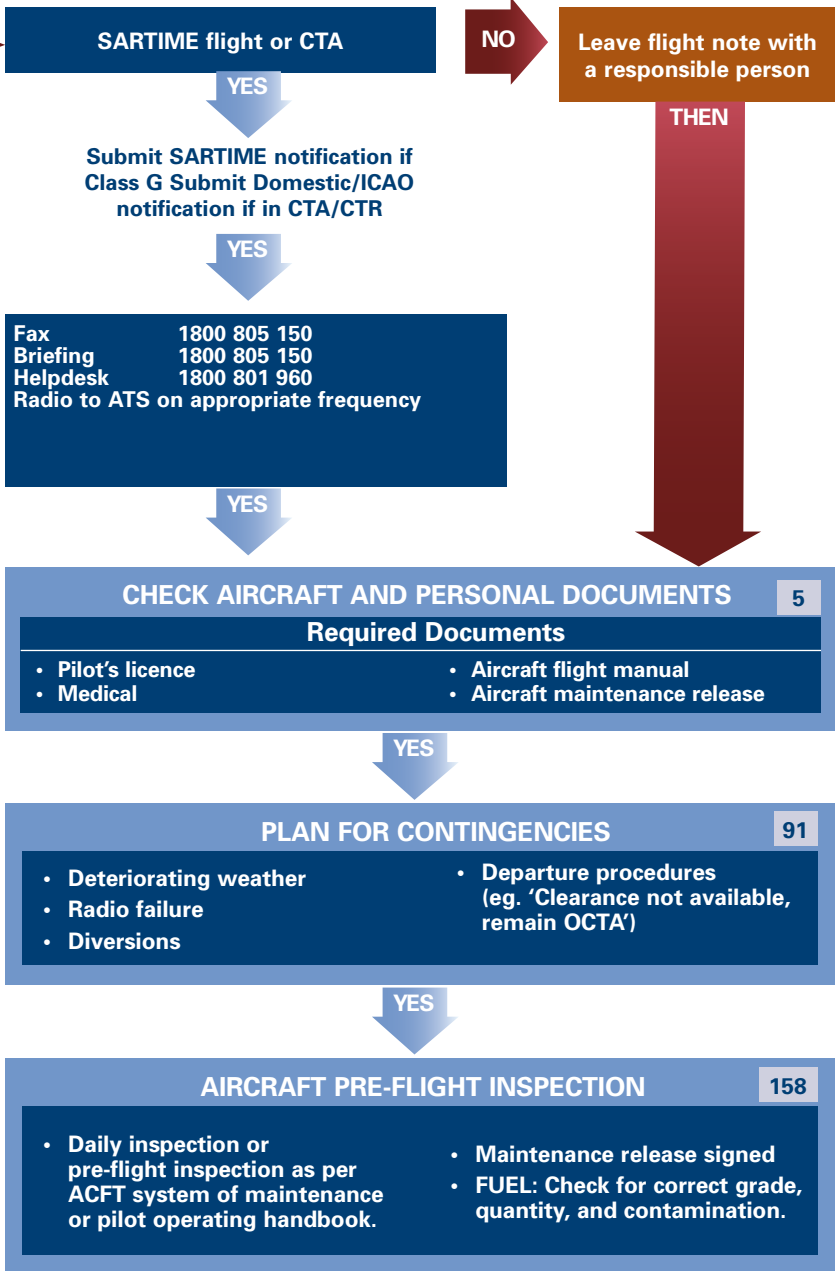
(TO CARRY PASSENGERS)

pilot recency check



Check CTA and restricted area boundaries.

pilot recency check



safety promotion products

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

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section 1 – general



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.

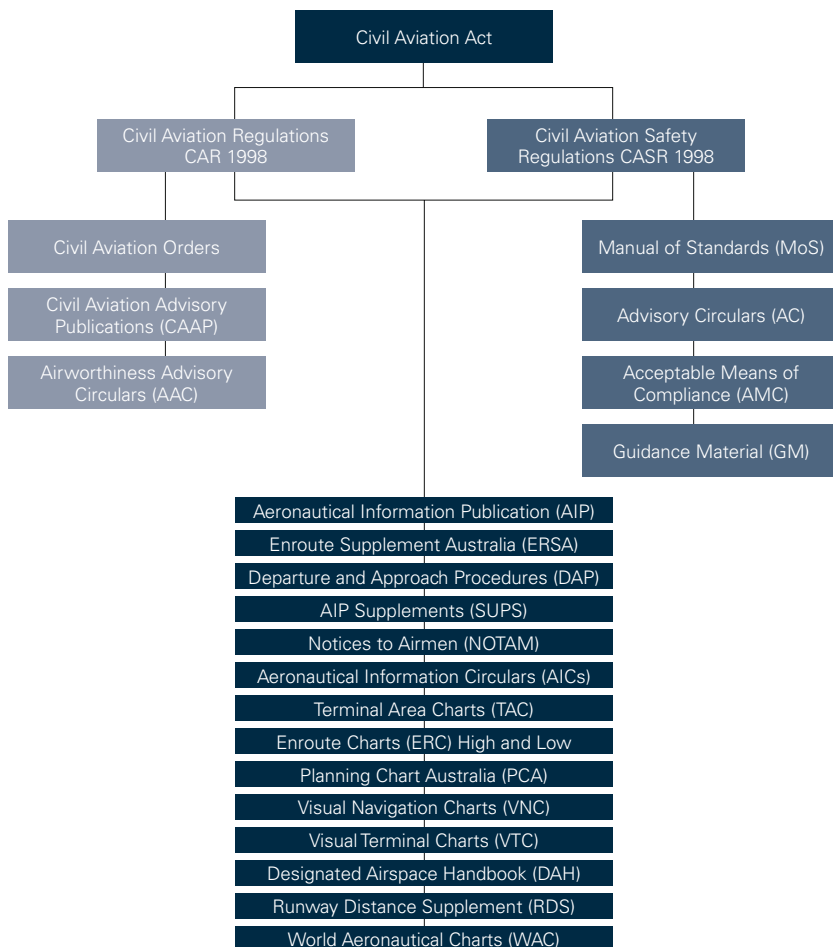
For ease of understanding, the wording has been modified considerably from that of the source documents. Since the precise wording of a regulation may be required by some readers, appropriate references to the source documents have been provided throughout the text where appropriate.

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.

This version of the guide incorporates changes resulting from GAAP to Class D towers, and changes at non-towered aerodromes relating to radio and operational procedures.



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 AND 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)** 1:500000 with airspace detail
- **Visual Terminal Chart (VTC)** 1:250000 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 organisation.

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.

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 IN COMMAND (CAR 5.72)

A student is not permitted to fly as pilot in command in an aircraft in which a passenger 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 operations (page 5) or in as pilot in command in flying training operations.

private pilot licence

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

- 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.

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

PRODUCTION OF LICENCE, LOGBOOK OR MEDICAL CERTIFICATE (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;

pilot in command

- 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 organisation) 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 considers 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 (vi) (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 testing 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 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 eight 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; and
- the flight manual (if any) for the aircraft.

CARRIAGE OF ANIMALS (CAR 256A)

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.

The above paragraph 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 a positive method.

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 e.g. 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

refuelling

- 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 must ensure that avgas is not loaded onto an aircraft while passengers are on board, or entering or leaving, the aircraft.

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.

refuelling

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.

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 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:

- mobile power units, vehicles and power operated loading devices operating within 15 metres (50 ft) of the spilled fuel are shut down; and
- 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 5 (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

engine ground operation

- 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; and
- 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 two 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 one 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 two or more pilots are required to be on board an aircraft, the pilot in command must ensure that two 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.

seating

SEAT BELTS AND SAFETY HARNESSSES (CAO 20.16.3)

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:

seating

- during take-off and landing;
- during an instrument approach;
- unless CASA otherwise directs, when the aircraft is flying at a height of less than 1000ft above the terrain; and
- at all times in turbulent conditions.

SEAT BELTS AND SAFETY HARNESSSES (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.

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.

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.

pre take off

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-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 $\pm 100\text{ft}$ or 110ft at sites above 3300ft .

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

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 required 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 VMC; 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 ft above the highest point of the terrain, or any obstacle thereon, within a radius of 600 m 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;

in flight

- 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 ft; or
- any other area at a height lower than 500 ft.

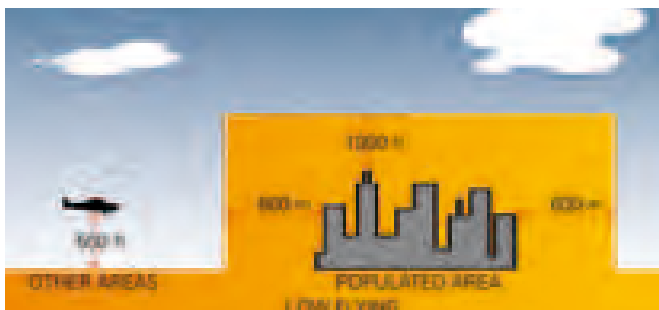
A height specified in the above is the height above the highest point of the terrain, and any object on it, within a radius of:

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

Paragraph one 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 one (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.



in flight

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 the Regulations.

accidents and incidents

INTRODUCTION

The Australian Transport Safety Bureau (ATSB) is Australia's national safety investigator for aviation incidents, accidents and safety deficiencies. As an independent Commonwealth Government statutory agency, the ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB is established by the Transport Safety Investigation Act 2003 (TSI Act) and conducts its investigations in accordance with the provisions of the Act. Under the TSI Act, it is not a function of the ATSB to apportion blame or provide a means for determining liability. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

The purpose of the ATSB's investigations is to enhance aviation safety through the identification of safety issues.

THE ATSB AND TRANSPORT SAFETY

The ATSB's accident investigation role is a fundamental part of Australia's transport safety framework. Lessons arising from the investigations

conducted by the ATSB are used to reduce the risk of future accidents and incidents through the implementation of safety action by industry and the Government.

The independence of the ATSB is integral to its safety role. Investigations that are independent of the parties involved in an accident, as well as transport regulators and government policy makers, are better positioned to avoid conflicts of interest and external interference. Being able to investigate without external direction provides an assurance that the findings will be determined and fully reported on without bias.

ATSB publications include reports on the facts and findings of investigations, safety research material, and statistics. Reports often contain safety action and recommendations for authorities and other parties to address in the interests of safety improvements.

AVIATION

The ATSB is responsible for the independent investigation of accidents and incidents involving civil aircraft in Australia. The ATSB's primary focus for its investigations is fare-paying passenger operations. **However, all accidents and incidents related to flight safety in Australia or involving Australian registered aircraft overseas must be reported to the ATSB.** While the ATSB does not investigate all of these, it still needs to be notified so that the data can be recorded for possible future safety research and analysis.

The ATSB often works closely with the Civil Aviation Safety Authority and Airservices Australia when conducting investigations.

Contacting the ATSB

Reporting an accident or incident:

Call 1800 011 034, or

Submit an online form via the ATSB website www.atsb.gov.au.

REPCON confidential reporting:

Call 1800 020 505, or

Submit an online form via the ATSB website www.atsb.gov.au.

(REPCON reporting is not an alternative to complying with reporting obligations under the Transport Safety Investigation Regulations 2003)

General enquiries: 1800 020 616

Email: atsbinfo@atsb.gov.au

Postal address: PO Box 967, Civic Square ACT 2608

accidents and incidents

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 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 and 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 (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 (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 in Class G airspace should use these generic phrases unless specific Class G airspace 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-towered (non-controlled) aerodrome or in E or G airspace, the transmission must commence with the location followed by 'TRAFFIC' e.g.: 'BUNDABERG TRAFFIC' at the end of the transmission, the name of the location, ie BUNDABERG.

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 a 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,

words and phrases

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

In all cases a conditional clearance will be given in the following order and consist of:

- identification (call-sign);
- the condition (including position of the subject of the condition);
- the clearance; and
- brief reiteration of the condition, e.g:

- ATS: '(aircraft call-sign) Behind A340 on short final, line up [RUNWAY (number)] behind';

- Pilot: 'Behind the A340 lining up [RUNWAY (number)] (aircraft call-sign)'.

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, in the initial clearance, is cleared on a route and/or at a level other than that expected according to the flight notification, ATS will prefix the route and/or level details with the term 'Amended' to alert the pilot that the clearance is different to that expected, e.g:

- ATS: '(aircraft call-sign) Cleared to (destination) [AMENDED ROUTE] (route clearance details) [AMENDED LEVEL] (level).

The prefix 'Amended' will not be used:

- when an initial level for ATC traffic management purposes has been issued as part of an airways clearance to an aircraft departing an active

CTR - in which case 'Maintain' shall be used;

- during normal progressive climb/descent instructions.

When an issued airways clearance needs to be changed ATS will prefix the new route and/or level details with the term 'Recleared' to indicate to the pilot that a change has been made to the previous clearance and this new clearance supersedes the previous clearance or part thereof. The level will be stated in all clearance changes regardless of whether a change to the initially cleared level is made or not, e.g:

- ATS: '(aircraft call-sign) Recleared [TO (destination)] [(route clearance details)] (level)'.

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 oah
C	CHARLIE	CHAR lee	P	PAPA	pah PAH
D	DELTA	DELL tah	Q	QUEBEC	keh BECK
E	ECHO	ECK ho	R	ROMEO	ROW mee oh
F	FOXTROT	FOKS trot	S	SIERRA	see AIR tah
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

words and phrases

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 dreed
2	TWO	7	SEV en	THOUSAND	TOU SAND
3	TREE	8	AIT		
4	FOW en	9	NIN en		

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, e.g.:

ALTITUDES

- 800 'EIGHT HUNDRED'
- 1500 'ONE THOUSAND FIVE HUNDRED'
- 6715 'SIX SEVEN ONE FIVE'
- 10000 'ONE ZERO THOUSAND'

CLOUD HEIGHT

- 2200 'TWO THOUSAND TWO HUNDRED'
- 4300 'FOUR THOUSAND THREE HUNDRED'

VISIBILITY

- 200 'TWO HUNDRED'
- 1500 'ONE THOUSAND FIVE HUNDRED'
- 3000 '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' (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.

words and phrases

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.
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: <ol style="list-style-type: none">1. Unreadable2. Readable now and then3. Readable but with difficulty4. Readable5. 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 AND SARWATCH

SARTIME (AIP GEN 3.4)

Circumstances	Phraseologies * Denotes pilot transmission
1. SARTIME nomination	<ul style="list-style-type: none"> •a. *SARTIME details •b. STANDBY or (call-sign) •c. *SARTIME FOR DEPARTURE (or ARRIVAL) [location] (time)
2. SARTIME cancellation	<ul style="list-style-type: none"> •a. *SARTIME details •b. STANDBY or (call-sign) •c. *(position/location) CANCEL SARTIME
3. SARTIME amendment	<ul style="list-style-type: none"> •a. *SARTIME details •b. STANDBY or (call-sign) •c. As required, including specific phrases nominated above if applicable.

SARWATCH OTHER THAN SARTIME

Circumstances	Phraseologies * Denotes pilot transmission
1. Departure Reports to initiate a SARWATCH when communication on the ground is not available.	<ul style="list-style-type: none"> •a. *AIRBORNE (location)
2. Flight and Arrival Reports form of acknowledgement to CANCEL SARWATCH when the ATS unit accepting the arrival report is other than the unit addressed	<ul style="list-style-type: none"> •a. *(position) CANCEL SARWATCH [ADVISE (unit) if appropriate] •b. SARWATCH CANCELLED [WILCO (unit)] •c. [location] SARWATCH TERMINATED •d. ROGER (identity of unit acknowledging)

GENERAL PHRASES (AIP GEN 3.4)	
Circumstances	Phraseologies *Down as pilot discretion
1. Description of levels (subsequently referred to as "level")	a. flight level (number of b. number feet)
2. LEVEL CHANGES AND RATES when there is an expectation that the aircraft will maintain the level of its immediate previous, the instruction "AND MAINTAIN" shall be omitted. when rate of reduction is to be specified, use "STANDARD RATE" specification. (pilot requesting a change of level) to require action at a specific time of pass	a. climb (or descent) followed as necessary by: 1. to level 2. to and maintain level 3. to reach level at (or by) time or significant point 4. report leaving (or reaching or passing or approaching) level 5. at (number) feet per minute (minimum (or maximum)) b. at standard rate c. step climb (or descent) aircraft (identification) above (or beneath) you d. request level change from (name of level) at (time or significant point) e. stop climb (or descent) at level f. continue climb (or descent) to (and maintain) level g. expedite climb (or descent) until passing level h. request climb (or descent) at (time or location) i. request climb (or descent) at (time or location) to level j. immediately after passing (significant point) k. at (time or significant point)

general phrases

GENERAL PHRASES (AP GEN 3.4) (CONTINUED)

<p>To request action while descending</p> <p>When a pilot is unable to comply with a clearance or instruction</p> <p>When a pilot is assigned and required to maintain separation with a sighted aircraft</p>	<p>when ready (instruction)</p> <p>unable to comply</p> <p>maintain separation with (or pass behind or follow) (aircraft type or identification) (instructions of clearance)</p>
<p>3. Maintenance of Specified Levels. <i>Note:</i> The term "MAINTAIN" must not be used in lieu of "DESCEND" or "CLIMB" when instructing an aircraft to change level.</p>	<p>a. maintain (level to) (significant point) (condition)</p>
<p>4. Use of Block Levels</p> <p>canceling block level clearance</p>	<p>a. request block level (level to level)</p> <p>b. maintain block (level to level)</p> <p>c. cancel block clearance climb (or descend) to and maintain (level)</p>
<p>5. Specification of Cruising Levels</p> <p>reply to cruise climb request</p>	<p>a. cross (significant point) at (or above, or below) (level)</p> <p>b. cross (significant point) at (time) or later (or before) at (time)</p> <p>c. cruise climb not available (reason)</p>

FREQUENCY MANAGEMENT (AIP GEN 3.4)	
Circumstances	Phraseologies *Denotes pilot transmission
<p>1. Transfer of Control and/or Frequency Change</p> <p>Note: An aircraft may be requested to "STANDBY" on a frequency when the intention is that the ATIS unit will initiate communication, and to "MONITOR" a frequency when information is being broadcast only.</p> <p>an IFR pilot changing to the CTAF frequency</p> <p>When a pilot/ATIS broadcasts general information</p> <p>When a pilot broadcasts location specific general information</p>	<p>a. contact (unit call sign) (frequency)</p> <p>b. *frequency</p> <p>c. at (or over) (time or place) contact (unit call sign) (frequency)</p> <p>d. if no contact (instructions)</p> <p>e. *request change to (frequency) (service)</p> <p>f. frequency change approved</p> <p>g. monitor (unit call sign) (frequency)</p> <p>h. *monitoring (frequency)</p> <p>i. remain this frequency</p> <p>j. *changing to (location) CTAF (frequency)</p> <p>k. *all stations (instructions) (information)</p> <p>l. location/traffic (instructions) (information) (location)</p>
<p>2. Flights Contacting Approach Control</p> <p>rad: radar identified or presumed known</p> <p>if visual approach can be made</p>	<p>a. *distance (miles) (DME) radial (VOR radial or compass quadrant from aerodrome, eg. south/south east etc) followed as necessary by: <ul style="list-style-type: none"> i. maintaining (or descending) to (level) </p> <p>b. visual</p>

frequency management

FREQUENCY MANAGEMENT (WP GEN 5.4) (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 ATIS	b. revert to flight plan callsign (callsign) at (significant point)
1. 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 for (over) (significant point) at (time)
to acknowledge traffic information	e. *looking f. *traffic in sight g. *negative contact (reason)
acknowledgment of received traffic information transmitted by other aircraft or ATIS 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	Phraseology *Denotes pilot transmission
<p>1. Meteorological Conditions: Note: Wind is always expressed by giving the main direction and speed and any significant variations.</p> <p>Note: CAVOK, pronounced C-A-V-O-K</p> <p>Intend responding to a request for turbulence or icing information</p>	<p>a. wind (number) degrees (number) knots</p> <p>b. Wind at (height) at (altitude level) (number) degrees (number) knots</p> <p>c. visibility (distance) (phrase)</p> <p>d. runway visual range (or RVR / runway (number)) (distance)</p> <p>e. present weather (phrase)</p> <p>f. cloud (amount, type) and height (if low) or sky clear</p> <p>g. CAVOK temperature (minus) (number) and/or dewpoint (minus) (number) QNH (number) (unit), moderate (or severe) icing or turbulence (in cloud) (clear)</p> <p>h. report flight conditions * BMC or VMC</p>

REPORTS AND INFORMATION (AIP GEN 3.4)

Circumstances	Phraseology *Denotes pilot transmission
<p>1. Additional Reports:</p> <p>(to request a report @ a specified place or distance)</p> <p>(to request a report of present position)</p> <p>when descending a non-DME equipped aircraft to (SAL) above CTA steps</p> <p>the pilot will give this only when satisfied that the CTA step has been passed, always for reciprocal bearings.</p>	<p>a. report passing (significant point)</p> <p>b. report (GPS) (distance) from (name of DME station) DME (or reference point)</p> <p>c. report passing (three digit) radial (name of VORT) VOR</p> <p>d. report distance from (significant point)</p> <p>e. report distance from (name of DME station) DME</p> <p>f. report passing control area steps for further descent</p> <p>g. *inside (distance of a CTA step as shown on ENR) miles</p>

clearances

REPORTS AND INFORMATION (AIP GEN 3.4) (CONTINUED)

<p>1. Aerodrome Information</p>	<p>a. runway (number) (condition)</p> <p>b. landing surface (condition)</p> <p>c. caution (work in progress) (obstruction) (position and any necessary advice)</p> <p>d. braking action reported by aircraft (type) at (time) good (or medium, or poor)</p> <p>e. runway (or taxiway) wet (or damp, water patches, flooded (depth))</p>
<p>2. Information to Aircraft Wake turbulence Jet blast on apron or taxiway Propeller-driven aircraft clearance Helicopter downwash</p>	<p>a. caution</p> <p>i. wake turbulence</p> <p>ii. jet blast</p> <p>iii. slipstream</p> <p>iv. downwash</p>
<p>3. Pilot Initiated Waiver or Wake Turbulence Separation Standards</p>	<p>a. *accept waiver</p>

CLEARANCES (AIP GEN 3.4)

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

CLEARANCES (AIP GEN 3.4) (CONTINUED)	
<p>2. Indication of Route and Clearance Limit</p> <p>issuing a specific clearance (and</p> <p>issuing a SID</p> <p>when pilot requests, or ATC anticipates, a visual departure in lieu of a SID</p>	<p>a) from (place) to (place)</p> <p>b) to (place) followed as necessary by:</p> <ol style="list-style-type: none"> 1) direct 2) via (route and/or reporting point) 3) via flight planned route 4) via (distance) arc (distance) of (name of DME station) DME <p>c) (level or route) not available due (reason) alternative(s) is/are (level or route) advise</p> <p>d) clearance limit (specified)</p> <p>e) (identify) departure</p> <p>f) visual departure</p>
<p>3. When a Clearance has been Cancelled</p>	<p>a) cancel clearance</p> <p>b) cancel clearance</p>
<p>4. Requesting Clearance</p> <p>when notification of flight details has not been provided to ATIS</p> <p>flight details to be issued after ATIS message</p> <p>if clearance cannot be issued immediately upon request</p> <p>if giving warning of loss of communication</p>	<p>a) flight details (inbound or for departure or transit)</p> <p>b) aircraft type, speed, altitude in controlled airspace and next estimated arrival level</p> <p>c) expect clearance at (time or place)</p> <p>d) expect clearance required (specify type) VFR (if appropriate) for (specify route) via (point) outside controlled airspace in which clearance will be requested) estimate (not made at destination) at (altitude) enroute for entry to controlled airspace</p>

approach and area control

APPROACH AND AREA CONTROL SERVICES (AIP GEN 3.4)	
Circumstances	Phraseologies *Denotes pilot transmission
1. Departure instructions	a. track three digit degrees (magnetic) to or from (significant point) (until filed) for reaching (to or significant point or filed)
2. Approach instructions	<ul style="list-style-type: none"> 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) e. track via (short title) approach (runway number) not below (level)
<p>When a temporary level restriction is to be imposed (Application to civilian aircraft only during practical approaches in VMC and to military aircraft)</p> <p>First to advise when able to conduct a visual approach</p>	<ul style="list-style-type: none"> f. report visual g. report runway (light) in sight h. report (significant) point (outbound or inbound)
Visual approach by night	i. when established (position) cleared for visual approach

starting and initial clearance

STARTING AND INITIAL CLEARANCE ISSUE	
Circumstances	Phraseologies *Denotes pilot transmission
<p>1. Starting Procedures To request permission to start engine</p> <p>ATIS received</p>	<p>a. *(aircraft location) request start b. *(aircraft location) request start information (ATS identification) c. start approved d. start at (time) e. expect start at (time) f. expect departure (time) start at own discretion</p>
<p>2. When Clearance Delivery is in Operation</p> <p>(if runway other than (runway) nominated is required)</p>	<p>a. *(flight number, if any) to aerodrome of (file) (aircraft landing) request clearance b. * require runway (number)</p>
<p>3. To request Aerodrome data for Departure When no ATIS broadcast is available</p>	<p>a. *request departure information b. runway (number), wind (direction and speed), QNH (value), temperature (detail) (visibility for take-off) (height) (or RVR) (detail)</p>

TAXI PROCEDURE	
Circumstances	Phraseologies
1. Taxi procedures for departure at a controlled aerodrome	a. Aircraft number(s) and type (wake turbulence category if "heavy") (POB) received (ATIS identification) (squawk (SSR code) level) location (flight rules, if IFR) (to aerodrome of destination) request taxi (intention)
for departure at a noncontrolled aerodrome	b. Aircraft type (POB) (PR) (if operating IFR) taxiing location for identification or individual runway (number)
where detailed taxi instructions are required	c. Aircraft type/wake turbulence category if "heavy" request detailed taxi instructions
	d. taxi via (specifying to be forward) to holding point (identifier) runway (number) (time intended)
	e. *holding point (identifier) runway (number)
where aeronautical information is not available from an operational source such as ATIS	f. taxi to holding point (identifier) (followed by aerodrome information as applicable) (time intended)
	g. holding point (identifier) runway (number)
for arrival at a controlled aerodrome	h. Aircraft class (piling level or key number) taxi to terminal or other location, eg general aviation area (stand number)

taxi procedures

TAXI PROCEDURE (CONTINUED)	
Circumstances	Phrasalognes *Denotes pilot transmission
<p>1 Intersection Departures</p> <p>When a pilot requests an intersection departure</p> <p>When a pilot accepts an intersection departure</p>	<p>*request intersection departure from (runway identifier)</p> <p>taxi to holding point (runway identifier) (runway number)</p> <p>taxi to holding point (runway identifier) (runway number)</p>
<p>2 Specific routing</p>	<p>take (or turn) first (or second) left (or right)</p> <p>taxi via (identification of taxiway)</p> <p>taxi via runway (number)</p>
<p>4 Maneuvering on Airside</p> <p>General</p> <p>(NOTE: The pilot must, when requested, report "RUNWAY VACATED" when the aircraft is well clear of the runway)</p>	<p>*request backtrack</p> <p>backtrack approved</p> <p>backtrack runway (number)</p> <p>(aircraft location) request taxi to (destination or aerodrome)</p> <p>taxi straight ahead</p> <p>taxi with caution (reason)</p> <p>give way to (description of other aircraft or vehicle)</p> <p>*giving way to (traffic)</p> <p>taxi into holding bay</p> <p>follow (description of other aircraft or vehicle)</p> <p>vacate runway</p> <p>*runway vacated</p> <p>expedite taxi (reason)</p> <p>*expediting</p>

AERODROME MOVEMENTS

Circumstances	Phraseologies *Denotes pilot transmission
<p>1. Holding</p> <p>Note: This 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.</p>	<ol style="list-style-type: none"> a. hold (direction of location, runway number, etc) b. hold position c. hold short of (position) d. *holding e. *holding short
<p>2. To Cross a Runway</p> <p>Note: If the Control tower is unable to see the crossing aircraft (eg. night, low visibility) and the instruction should always accompanied by a request to report when the aircraft has vacated and is clear of the runway.</p>	<ol style="list-style-type: none"> a. (at or end location) request cross runway number b. (at or end location) cross runway number [report vacated] c. (at or end location) crossing runway number d. expedite crossing runway number (traffic/aircraft type)

RUNWAY OPERATIONS

NOTE: The runway should be stated when the pilot wishes to expedite, to frequency, the runway to be vacated, or there is the possibility of confusion during multiple runway operations.

Circumstances	Phraseologies *Denotes pilot transmission
<p>1. Preparation for take-off</p>	<ol style="list-style-type: none"> a. report when ready (for departure) b. are you ready for immediate departure? c. *ready

aerodrome movements

RUNWAY OPERATIONS (CONTINUED)

<p>2. Clearance To Enter Runway and Await Take-Off</p> <p>When the pilot desires to enter the runway and assume take-off position for take-off before departure</p> <p>Conditional clearance</p> <p>Acknowledgment of conditional clearance</p>	<p>a. *request line-up (require required number of seconds delay in holding position before departure) seconds on runway</p> <p>b. line up (and wait) runway number (be ready for immediate departure)</p> <p>c. (conditional) line up (runway number)</p> <p>d. *conditional line up (runway number)</p>
<p>3. Take-off clearance</p> <p>when there is a possibility of conflicts</p> <p>when take-off clearance has not been completed yet</p> <p>When LAHSO are in use</p> <p>when a take-off SID has been issued</p> <p>When a take-off SID has been issued with a heading which approximates the runway bearing (rounded off to the nearest 30) the instruction will not contain a direction of turn</p>	<p>a. cleared for take-off / report airborne</p> <p>b. runway number cleared for take-off</p> <p>c. take off immediately or vacate runway</p> <p>d. take off immediately or hold short of the runway</p> <p>e. *landing type / landing on crossing runway will hold short - runway number</p> <p>f. cleared for take-off assigned heading (three digit) (three digit) (plus any altitude instructions) (runway number) cleared for take-off</p> <p>g. left (or right) (three digit) (plus any altitude instructions) runway number cleared for take-off</p> <p>h. assigned heading (three digit) cleared for take-off</p> <p>i. *heading (three digit) cleared for take-off</p>

RUNWAY OPERATIONS (CONTINUED)

<p>4. Take-off Clearance Cancellation-----</p> <p>To effect a take-off in emergency conditions-----</p>	<p>a. hold position, cancel, I say again cancel take-off (number) *holding</p> <p>b. stop immediately (repeat aircraft tail/nom) stop immediately *stopping runway (number)</p>
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AFTER TAKE-OFF

Note: All "Target" systems in Table number to the number of GPTC.

Circumstances	Phraseologies *Denotes pilot transmission
<p>1. Tracking After Take-Off-----</p> <p>Heading to be followed-----</p> <p>When a specific track is to be followed-----</p>	<p>a. *request right (or left) turn (when airborne)</p> <p>b. left (or right) turn approved</p> <p>c. after passing (vector/instruction)</p> <p>d. continue on (magnetic direction of runway) (instruction)</p> <p>e. track (magnetic direction of runway) (instruction)</p> <p>f. climb straight ahead (instruction)</p>
<p>2. Airborne Report (including SDO- Radar) (Assigned Runway)-----</p> <p>Heading specified by ATC-----</p> <p>Continuation of an Assigned Radar SID heading when established/ cleared with ATC and unable to execute turn immediately due to procedural requirements-----</p> <p>When assigned heading approximates runway heading-----</p>	<p>a. *turning left (or right) passing (level) climbing to (level)</p> <p>b. *turning left (or right) direct (digital) passing (level) climbing to (level)</p> <p>c. *maintaining runway heading passing (level) climbing to (level)</p> <p>d. assigned heading left (or right) three digital passing (level) climbing to (level)</p> <p>e. *heading (three digit) passing (level) climbing to (level)</p>

after take-off

AFTER TAKE-OFF (CONTINUED)	
<p>1. Departure Report - <u>Procedural</u> ----- a</p> <p>when notifying departure report to a control tower</p> <p>Concerning <u>procedural</u> use after final departure clearance</p>	<p>a. *departed (time) tracking (track being flown) (from reference alt used to establish track) or via SID identifier) climbing to level) estimating (first reporting point) at tower or</p> <p>b. departed (approx) (time or minutes) tracking (to intercept track) climbing to level) estimating (first reporting point) at tower</p>

arrival at aerodrome

Circumstances	Phraseologies
<p>1. Entering an Aerodrome Traffic Circuit ----- a</p> <p>When ATIS information is available ----- b</p>	<p>*Denotes pilot transmission</p> <p>a. *aircraft type (location) level (intentional)</p> <p>b. *aircraft type (position) level information ATIS identification (intentional) join (instruction) runway (number) CRN (arrival) traffic (arrival) track (requirements)</p>
<p>2. In the Circuit ----- a</p> <p>Heading position in which approach must be started (if not cleared to land) ----- e</p>	<p>a. *position in circuit, eg downwind/final</p> <p>b. number (sequence number) follow (aircraft type and position) (additional instructions, if required)</p> <p>c. *base (or downwind)</p> <p>d. *final (or long final)</p> <p>e. *short final</p>

ARRIVAL AT AERODROME (CONTINUED)	
<p>3. Approach Instructions</p> <p>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.</p>	<ol style="list-style-type: none"> a. make short approach b. make long approach (or extend downwind) c. report base (or final) of long final d. continue approach
<p>4. Landing</p> <p>Multiple runway operations</p> <p>When the aircraft cannot be sequenced by ATIS</p> <p>Plot requesting option (or touch and go, full stop, stop and go, or overboard)</p> <p>Advancing the clear (the option to touch and go, full stop, stop and go, or overboard)</p> <p>When runway is occupied and ATIS statement is that the runway will not become available</p>	<ol style="list-style-type: none"> a. cleared to land (or touch and go) b. runway (number) cleared to land (or touch and go) c. runway (number) not in sight - cleared to land d. *position in queue request the option e. runway (number) cleared for the option f. make full stop g. at the minima go around
<p>5. When Landing Approved and LAHSO Are in Use</p> <p>(reported readback)</p>	<ol style="list-style-type: none"> a. aircraft type departing (or landing) on crossing runway, hold short runway (number) cleared to land runway (number) b. *hold short runway (number) cleared to land runway (number)
<p>6. Delaying Aircraft</p>	<ol style="list-style-type: none"> a. orbit right (or left) from present position

arrival at aerodrome

ARRIVAL AT AERODROME (CONTINUED)

<p>7 Pilot request for Low Approach or Pass to make an approach along a runway, depending on an agreed minimum level</p> <p>to fly past the control tower or other observation point for the purpose of visual inspection by persons on the ground</p>	<p>a. *request low approach (optional)</p> <p>b. cleared low approach (runway number) (altitude/restriction) (go around instructions)</p> <p>c. *request low pass (optional)</p> <p>d. cleared low pass (runway number) (altitude/restriction) (go around instructions)</p>
<p>8 Missed Approach To discontinue an approach (multiple runway systems)</p>	<p>a. go around (optional information)</p> <p>b. *going around</p> <p>c. *going around runway number</p>

phraseologies

Circumstances	Phraseologies *Denotes pilot transmission
<p>1 Identification of Aircraft</p>	<p>a. report heading (and flight level (or altitude))</p> <p>b. for identification turn left (or right) heading (three digits) identified (optional)</p> <p>c. identified (optional)</p> <p>d. not identified (reason) (resume (or continue) own navigation)</p>
<p>2 Termination of ATIS Surveillance Service</p>	<p>a. identification terminated (optional) (instructions)</p> <p>b. resume own navigation (position of aircraft) (optional) (instructions)</p> <p>c. will shortly lose identification (appropriate instructions (or information))</p> <p>d. identification lost (optional) (with/without)</p>

3. ATS Surveillance System Position Information to request traffic, position, and/or navigation information

to request an ongoing RIS

•a. *REQUEST

- (i) ATS SURVEILLANCE ASSISTANCE (reason)
- (ii) POSITION BY RADAR (or ADS-B) [WITH REFERENCE TO (aid or location)]
- (iii) TRAFFIC (or POSITION or NAVIGATION) ADVISORY [BY SURVEILLANCE]
- (iv) FLIGHT FOLLOWING
- (v) (specific ATC surveillance service)

ATS surveillance system communication

Circumstances	Phraseologies *Indicates pilot transmission
<p>1. Communications</p> <p>If link of communication is suspected</p>	<p>(i) radio contact lost: instructions</p> <p>(i) if no transmissions received for (inserted minutes or seconds): instructions</p> <p>(ii) reply not received: instructions</p> <p>(iii) if you need repetitive instructions or squawk: (mode or ident)</p> <p>(iii) (squawk or mode): observed, position (position of aircraft), will continue to pass instructions</p>
<p>2. Aircraft Directional Indicator Failure</p> <p>When notified by pilot</p> <p>When suspected by ATC</p> <p>If heading response squawk is received with the loss of the radio return</p>	<p>(i) compass failure acknowledged, ATS surveillance system will continue using no-compass procedures, confirm familiar</p> <p>(ii) confirm heading</p> <p>(iii) suspect your compass has failed, ATS surveillance system will continue using no-compass procedures, confirm familiar</p>

ATS surveillance system

ATS SURVEILLANCE SYSTEM COMMUNICATION AND NAVIGATION (CONT)

<p>In case of simulator or cockpit instruments on board aircraft</p>	<ul style="list-style-type: none"> 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
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ATS SURVEILLANCE SYSTEM MANOEUVRES

Circumstances	Phraseologies *Devices pilot transmission
<p>1. General Manoeuvres</p> <p>For advising action:</p> <p>When instructing an aircraft to turn 180° or more and unable to emphasize the fractional turn</p> <p>When necessary to specify a reason for a manoeuvre, the following phraseologies should be used:</p>	<ul style="list-style-type: none"> a) leave (significant point) heading (three digit) (inbound) (at) (mode) b) continue heading (three digit) c) continue present heading d) fly heading (three digit) e) turn left (or right) (number) degrees (or) heading (three digit) (reason) f) orbit left (or right) (mode) g) turn left (or right) immediately (read back) degrees (or) heading (three digit) to avoid (unidentified) traffic (reason) by clock reference and distance h) stop turn heading (three digit) i) turn left (or right) - I say again - left (or right) heading (three digit) (reason) j) due traffic k) for spacing l) for delay m) for downwind (or base, or final)
<p>2. Aircraft Vectoring by ATS surveillance Service</p>	<ul style="list-style-type: none"> a) request vectors (to (or) from (and) (location of interest)) b) do you want vectors?

SPEED CONTROL	
Circumstances	Phraseologies
<p>Speed</p> <p>1. Speed — All speed communications shall refer to INDICATED AIRSPEED unless otherwise specified. Where applicable, Mach Number may be indicated on the basis of a speed reference.</p> <p>when aircraft is required to reduce speed to the minimum position in a clear configuration</p> <p>when aircraft speed is pilot's discretion</p> <p>when ATC speed restrictions for enroute cruise and the aircraft is required to resume profile speeds or accelerate with procedural restrictions</p>	<p>*speed (number) knots or MACH number</p> <p>1. report speed (if climb or cruise) MACH number</p> <p>2. maintain (number) knots (or MACH (number) until (location))</p> <p>3. maintain present speed</p> <p>4. increase (or reduce) speed to (by) (number) knots</p> <p>5. reduce to minimum approach speed</p> <p>6. reduce to minimum clean speed</p> <p>7. no [ATC] speed restrictions</p> <p>8. resume normal speed</p>

traffic information

TRAFFIC INFORMATION	
Circumstances	Phraseologies
<p>1. Traffic Information</p> <p>when all applicable to the cleared aircraft</p>	<p>*Denotes pilot transmission</p> <p>1. traffic (number) o'clock (distance) (direction of flight) (eg, other pertinent information)</p> <p>2. unknown</p> <p>3. slow moving</p> <p>4. fast moving</p> <p>5. climbing</p> <p>6. opposite (or same) direction</p> <p>7. overtaking</p> <p>8. crossing left to right or right to left</p> <p>9. climbing or descending</p> <p>10. clear of traffic (exception: no restriction)</p>

secondary surveillance radar

SECONDARY SURVEILLANCE RADAR (SSR) AND ADS-B

Circumstances	Phraseologies * Denotes pilot transmission
<p>1. To instruct Setting of Transponder (the word 'code' is not used in transmissions).</p> <p>to request:</p> <p>reselection of the assigned mode and code</p> <p>reselection of aircraft identification</p> <p>confirmation of Mode A Code selection</p> <p>operation of the IDENT feature</p> <p>temporary suspension of transponder operation</p> <p>emergency code selection</p> <p>termination of SSR transponder or ADS-B transmitter operation</p> <p>transmission of pressure altitude</p> <p>pressure setting check and confirmation of level</p> <p>termination of pressure altitude transmission because of faulty operation</p> <p>altitude check</p> <p>confirmation of ADS-B operation</p> <p>change to secondary transponder</p>	<ul style="list-style-type: none"> •a. SQUAWK (code) [AND IDENT if required] •b. *[SQUAWK] (code) [AND IDENT if instructed by ATIS] •c. SQUAWK NORMAL •d. RECYCLE [(mode)] (code) •e. *RECYCLING [(mode)] (code) •f. RE-ENTER MODE S (or ADS-B) AIRCRAFT IDENTIFICATION •g. CONFIRM SQUAWK (code) •h. *SQUAWKING (code) •i. SQUAWK IDENT •j. TRANSMIT ADS-B IDENT •k. SQUAWK STANDBY [TRANSMIT ADS-B ONLY] •l. SQUAWK MAYDAY •m. STOP SQUAWK [TRANSMIT ADS-B ONLY] •n. STOP ADS-B TRANSMISSION [SQUAWK (code) ONLY] •o. SQUAWK CHARLIE •p. TRANSMIT ADS-B ALTITUDE •q. CHECK ALTIMETER SETTING AND CONFIRM LEVEL •r. STOP SQUAWK CHARLIE, WRONG INDICATION •s. STOP ADS-B ALTITUDE TRANSMISSION [(WRONG INDICATION, or reason)] •t. VERIFY [LEVEL] (level) •u. ADS-B TRANSMISSIONS NOT RECEIVED, CONFIRM ADS-B OPERATIONAL •v. SELECT SECONDARY TRANSPONDER
<p>2. Advice or traffic level where the pressure altitude derived level information has not been verified.</p>	<ul style="list-style-type: none"> •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.
DELIVERY	Clearance delivery to departing aircraft.
RADAR	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 call-signs can result in pilots executing a clearance intended for another aircraft. Call-signs should never be abbreviated on an initial contact or at any time when other aircraft call-signs 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 call-signs of air carrier or other civil aircraft having authorised call-signs. ATS may initiate abbreviated call-signs 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 call-sign in subsequent contact with ATS. When aware of similar/identical call-signs, ATS will take action to minimise errors by:

- emphasising certain numbers/letters;
- repeating the entire call-sign;
- repeating the prefix; or
- asking pilots to use a different call-sign temporarily.

Pilots should use the phrase 'VERIFY CLEARANCE FOR (complete call-sign)' if doubt exists concerning proper identity.

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

Bonanza CHARLIE ALPHA ECHO.

Cherokee ALPHA BRAVO CHARLIE.

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

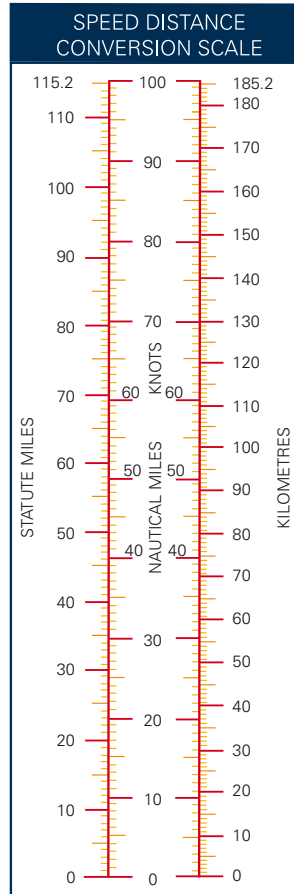
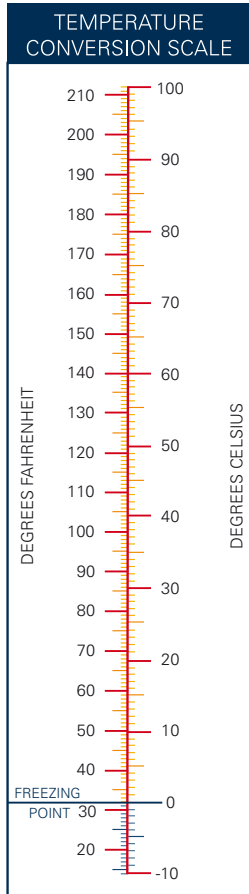
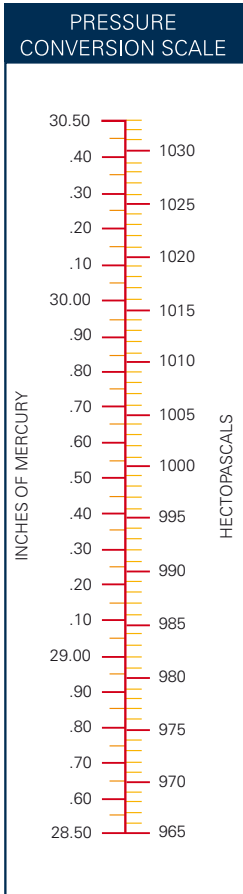
Ground vehicles shall be identified by the type of vehicle e.g. car, truck, tractor, tug etc or an ATS approved format, followed by the assigned vehicle number spoken in group form, eg:

TRUCK 12 'TRUCK TWELVE'

CAR 23 'CAR TWENTY THREE'

conversions – navigation

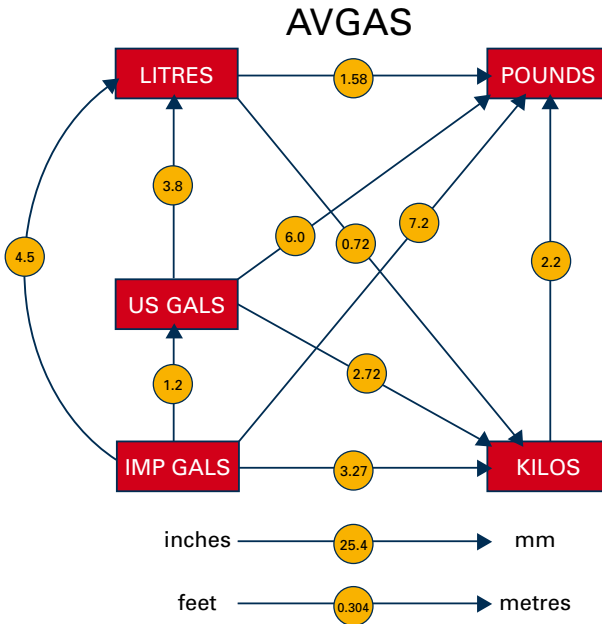
CONVERSIONS - NAVIGATION (AIP ERS A GEN-CON)



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

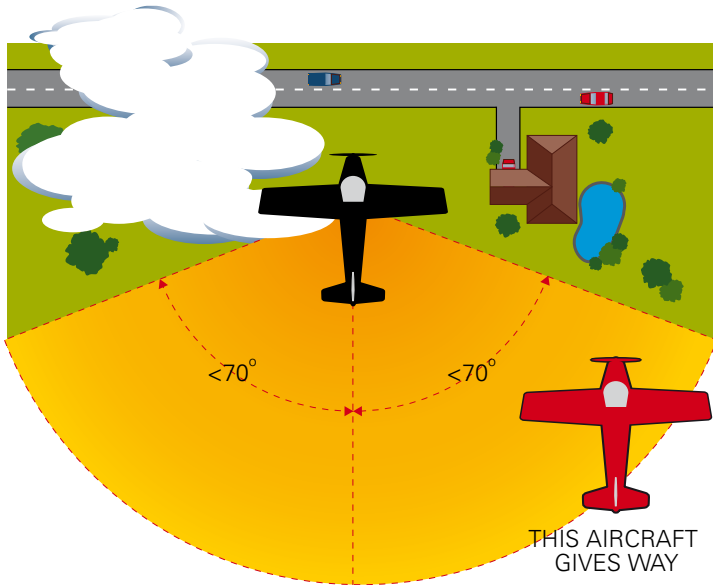
conversions – mass and volume



WHEN FOLLOWING THE ARROW - MULTIPLY
WHEN BACKTRACKING THE ARROW - DIVIDE

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.



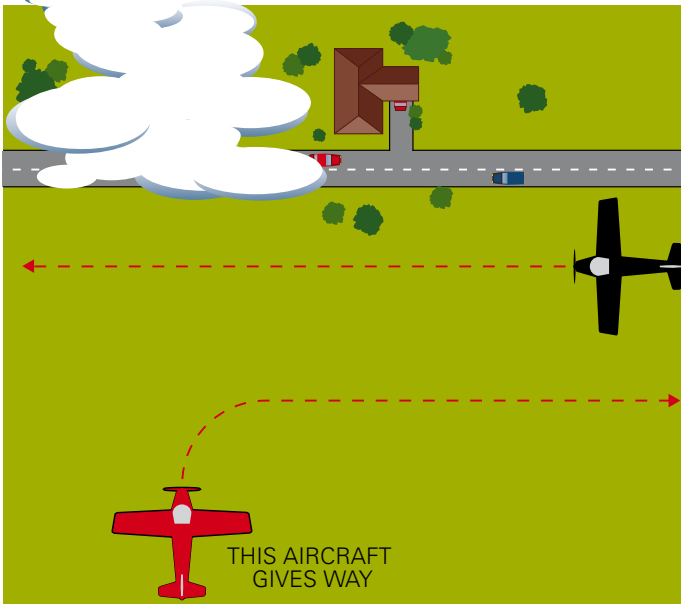
right of way

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

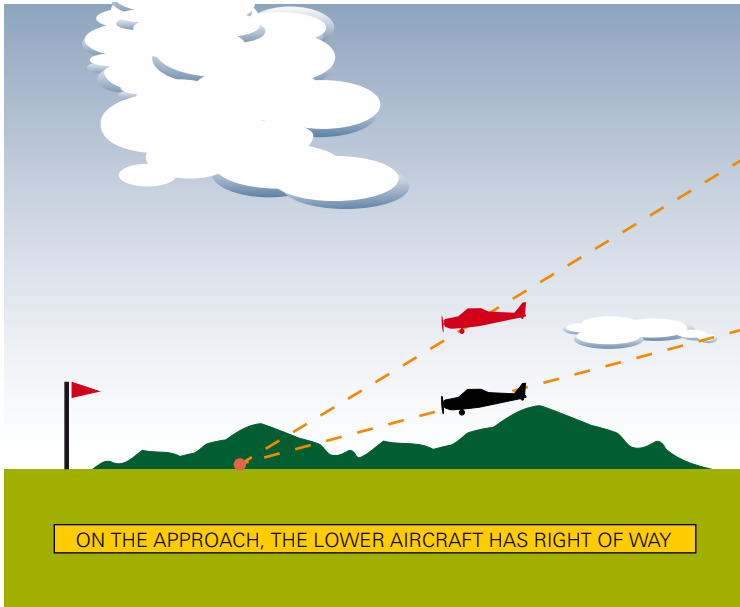


When two aircraft are on converging headings at approximately the same height, the aircraft that has the other on its right shall give way, except that:

- 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.



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 front of another that is on final approach to land, or overtake that aircraft.

Notwithstanding anything contained in the paragraph above, power-driven heavier-than-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 IFR or VFR, maintain vigilance so as to see, and avoid, other aircraft.

AIRCRAFT EQUIPMENT

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.

night VFR equipment

In addition, as set out below, aircraft flown under the VFR 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 VFR by day or by night.

SERVICEABILITY (CAO 20.18)

All instruments and equipment fitted to an aircraft shall be serviceable prior to take-off 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 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 2000 ft 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 in AIP ENR 1.1.
- 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 or the other navigational requirements of AIP ENR 1.1 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 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 SCT 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 flight on-top when weather conditions are marginal. Before committing their flight to operating VFR flight 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 Class E or G airspace, the following tolerances must be applied to the planned tracks in order to avoid controlled airspace or restricted areas.

0-2000 AGL	± 1 nm (day)	± 2 nm (night)
2,001-5000 AGL	± 2 nm (day)	± 3 nm (night)
5,001-10000 AGL	± 4 nm (day)	± 5 nm (night)
Gliders should apply	± 5 nm	
From 10 001 to FL 200 all VFR aircraft should apply ± 8 nm		

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;
- the formation is pre-arranged between the pilots in command; and
- the formation flight is conducted either:
 - under the VFR 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	250 kt IAS below 10000 ft AMSL
Class D	IFR and VFR	200 kt below 2500 ft AAL of primary Class D aerodrome
Class E	IFR and VFR	250 kt IAS below 10000 ft AMSL
Class G	IFR and VFR	250 kt IAS below 10000 ft 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.

aerodromes

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 NON-CONTROLLED AERODROMES (CAR 166, CAR 166A AND CAR 166B)

Note: Non-controlled aerodromes include those aerodromes with Class C or D ATS services when those services are not available. Consult ERSA and NOTAMs for operating times.

An aircraft is 'in the vicinity of' a non-controlled aerodrome if it is within:

- airspace other than controlled airspace;
- 10 nm from the aerodrome; and
- a height above the aerodrome that could result in conflict with operations at the aerodrome.

If an Aerodrome Reference Point (ARP) is published for the aerodrome in AIP, the distance or height must be measured from that point.

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

- must maintain a lookout for other aircraft to avoid a collision;
- must ensure the aircraft does not cause a danger to other aircraft; and
- must not take-off or land on a part of the aerodrome outside the landing area.

If a pilot is flying in the vicinity of the aerodrome they must:

- join the circuit pattern for the aerodrome; or
- avoid the circuit pattern.

When approaching or taking off from an aerodrome the pilot must make all turns to the left unless:

- CASA has directed otherwise for that particular aerodrome; or
- visual signals indicating the direction of turn are displayed in the signal circle.

After take-off the pilot must maintain the same track from take-off until the aircraft is 500 ft above the terrain unless a turn is required to avoid terrain.

The pilot in command must take-off or land in to wind unless:

- the aircraft's flight manual allows the aircraft to take-off or land downwind; and
- after considering other aircraft operating on, or in the vicinity of, the aerodrome the pilot believes it is safe to do so.

aerodromes

The pilot in command may carry out a straight-in approach to land provided:

- the pilot can determine the wind direction and the runways in use;
- gives way to any other aircraft flying in the circuit pattern for the aerodrome; and
- manoeuvres to establish the aircraft on final approach at least 3 nm from the threshold intended for landing.

The pilot in command is responsible for making a broadcast on the aerodrome frequency when the aircraft is operating on, or in the vicinity of, a non-controlled aerodrome.

The pilot must broadcast information necessary to do so to avoid risk of collision and must include:

- the name of the aerodrome;
- the aircraft's type and call-sign; and
- the position of the aircraft and the pilot's intentions.

PROCEDURE AT CONTROLLED AERODROMES

The pilot in command of an aircraft that is part of the traffic at a controlled aerodrome must:

- maintain a lookout for other aerodrome traffic to avoid a collision;
- maintain a continuous watch on the radio frequency for the aerodrome control service; and
- obtain clearance by radio, or visual signals, prior to carrying out any taxiing, landing or take-off manoeuvre.

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 certificate, or registration under CASR Part 139; 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 points 1, 2 or 3) 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(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;

- High performance, above 150 kt, 1500 ft AGL
- Medium performance, between 55 kt and 150 kt, 1000 ft AGL; and
- Low performance, maximum 55 kt, 500 ft AGL




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

light and ground signals

LIGHT SIGNALS

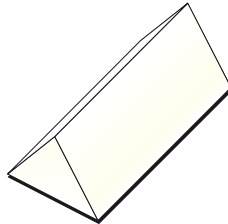
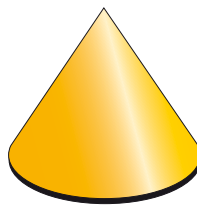
ON GROUND		IN FLIGHT
Authorised to TAKE-OFF if pilot is satisfied that no collision risk exists		Authorised to LAND if pilot is satisfied that no collision risk exists
Authorised to TAXI if pilot is satisfied that no collision risk exists		RETURN for landing
STOP		GIVE WAY to other aircraft CONTINUE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

SYMBOLS NEAR WIND DIRECTION INDICATOR

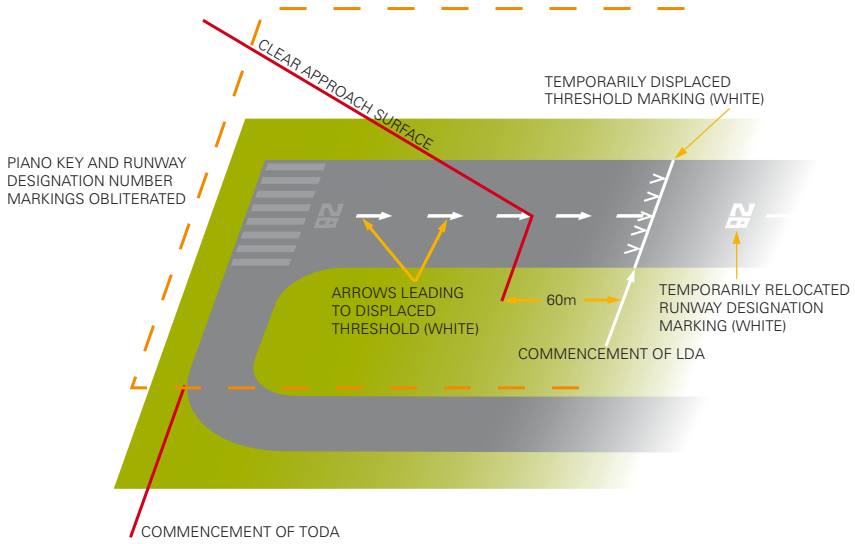
		
AERODROME UNSERVICEABLE	GLIDING OPERATIONS IN PROGRESS	OPERATIONS ARE CONFINED TO HARD SURFACE RUNWAYS, APRONS AND TAXIWAYS ONLY



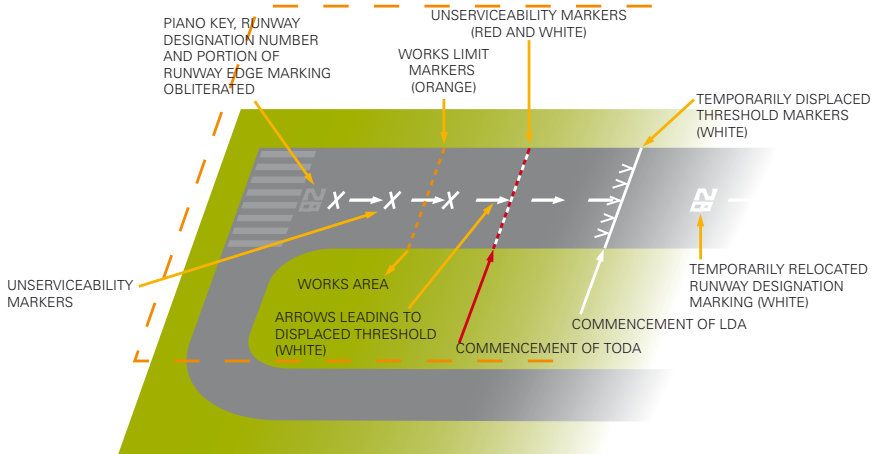
UNSERVICEABLE AREA MARKER



BOUNDARY MARKERS

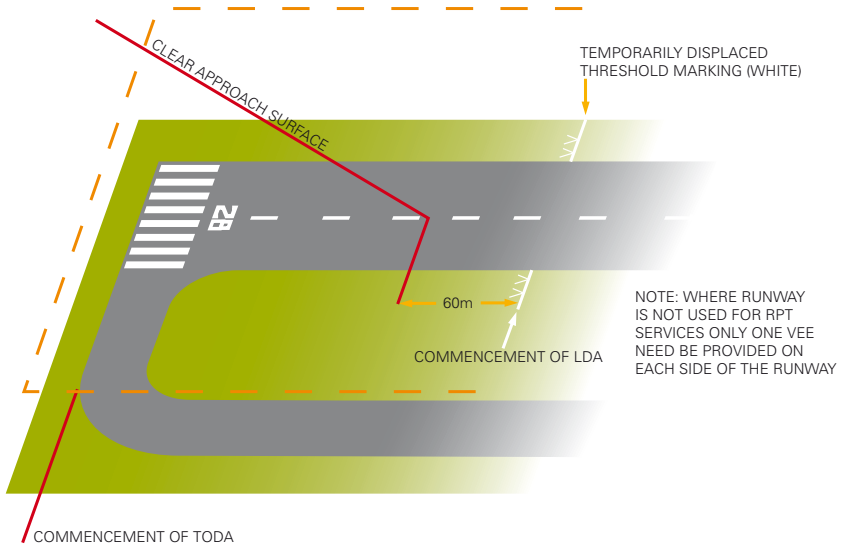


MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO OBSTACLE INFRINGEMENT OF THE APPROACH PATH FOR A PERIOD IN EXCESS OF 30 DAYS

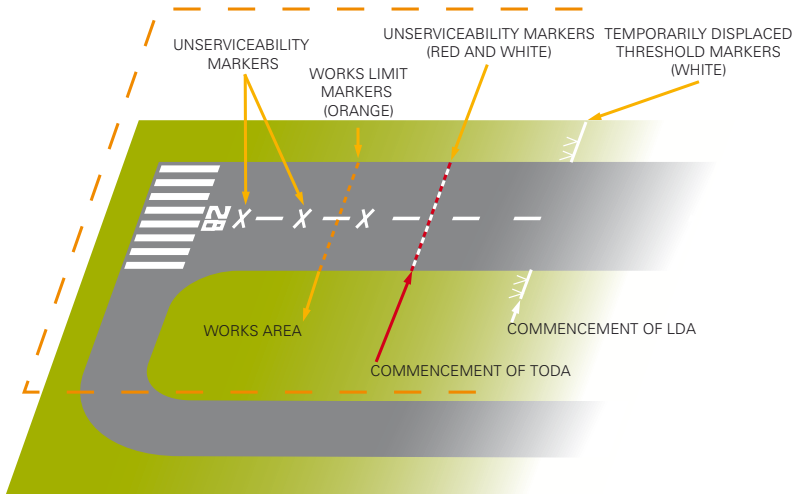


MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO WORKS ON THE RUNWAY FOR A PERIOD IN EXCESS OF 30 DAYS

displaced threshold



MARKINGS FOR A TEMPORARILY DISPLACED THRESHOLD DUE TO OBSTACLE INFRINGEMENT OF APPROACH SURFACE FOR A PERIOD OF 30 DAYS OR LESS.



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 a 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.

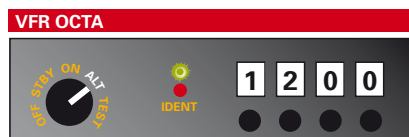
A **Traffic Alert and Collision Avoidance System (TCAS)** is an airborne system which is capable of interpreting the transponder returns of nearby aircraft and displaying the positions of these aircraft on a cockpit display. TCAS can warn the crew of impending collisions and advise avoiding manoeuvres 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 Class D, E and G airspace. It is therefore in everybody's interest for all VFR transponder equipped aircraft in Class E or G to squawk code 1200 with ALT selected.

ADS-B APPROVAL AND OPERATIONS

Automatic Dependent Surveillance - Broadcast (ADS-B) is a means by which aircraft, aerodrome vehicles and other objects can automatically transmit or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link. To receive an ADS-B derived ATS surveillance service in Australian airspace, aircraft operators must make application to Airservices Australia. Only aircraft meeting the criteria for ADS-B operations in Australia as specified in CASA CAOs shall be eligible to receive ADS-B derived services. ADS-B data from ineligible aircraft will not be displayed to ATC.

VFR FLIGHTS IN CLASS E OR G AIRSPACE SQUAWK 1200 MODE C (ALT)



transponder operation

STANDARD TRANSPONDER CODES

- 1200 Civil VFR flights in Class E or G airspace.
- 2000 Civil IFR flights in Class G airspace.
- 3000 Civil flights in A, C and D airspace, or IFR flights in Class E airspace.
- 6000 Military flights in Class 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-authorized 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 5632' for example, means select STBY, then select code 5632, 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 'ATS surveillance services' (page 224).

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 through the briefing offices. 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 obtained.

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 case of VFR flights away from the vicinity of an aerodrome and 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.

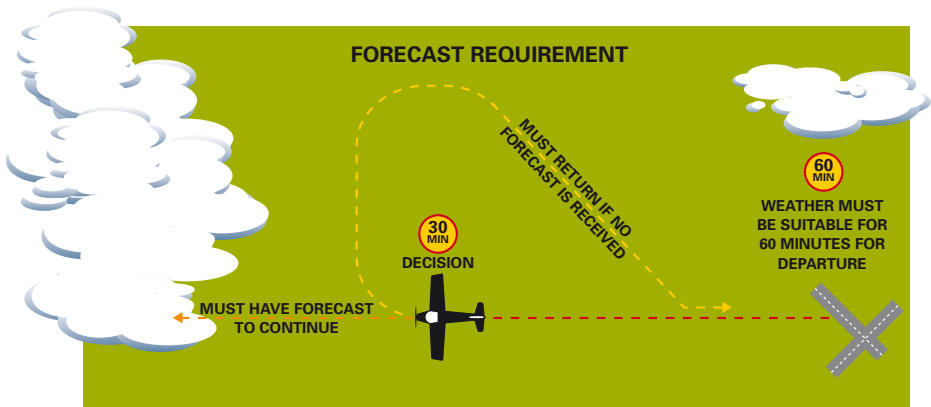
When meteorological conditions at the aerodromes of intended landing are forecast to be less than VFR minima of a 1500 ft ceiling and a visibility of 8 km (AIP ENR 1.1), the pilot in command shall make provision for an alternative course of action and shall arrange for the aircraft to carry the necessary additional fuel.

This alternate provision does not apply to day VFR flights within 50 nm 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 8 km (AIP ENR 1.1).

responsibilities of pilot

RADIO REQUIREMENTS (CAR 239)

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 an MTOW not exceeding:
 - in the case of an aeroplane other than a seaplane 544 kg;
 - in the case of a seaplane with a single seat 579 kg; and
 - in the case of a seaplane with two seats 614 kg;
- 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 two-way 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.

PVT, 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).

alternate due to weather

ALTERNATES DUE TO WEATHER CONDITIONS

GENERAL (CAR 239, 234 AND CAAP 234)

A pilot in command must make provision for flight to an alternative 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.

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).

alternate due to weather

WEATHER CONDITIONS

Except when operating an aircraft under the VFR by day within 50 nm 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 phenomenon 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 requirements, 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 1500 ft and a visibility of 8 km (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 SCT below a ceiling of 1000 ft; or
- visibility - less than 3000 m (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 or a BECMG causing an operational requirement to either become effective or be removed, the timing for the change in operational requirement is as follows:

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

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). If the holding time required because of INTER or TEMPO or the probability of INTER or TEMPO requirements (as described above) extends past 30 minutes after the forecast cessation of these deteriorations, the aircraft need only carry sufficient fuel to hold until 30 minutes after the forecast cessation time.

alternate 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 1500 ft and a visibility of 8 km (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 359 are met. When these additional conditions are met, the alternate requirements are as shown on page 358 (AIP ENR 1.1).

A flight permitted to operate under the VFR at night (see page 328) 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 requirements of AIP GEN 1.5 (AIP ENR 1.1).

alternate due to facilities

For night VFR operations alternates are required based on airport lighting and nav aids. Details of these requirements are given in the night VFR section on page 348.

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 and which may immediately affect aircraft operations. A NOTAM is issued in a format containing the following fields:

- Location identification;
- Time of commencement of information or time of publication where prior notification is required. 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;
- Lower limit; and
- Upper limit.

In the domestic environment, NOTAM numbering is preceded by the letter 'C' followed by the year e.g. C0689/08.

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

In the international environment, Australia issues NOTAM against a series of registers. These registers are by individual FIRs, multiple FIRs, or Australia General. The individual FIRs and multiple FIRs registers are further subdivided by NOTAM category.

The series are as follows:

Brisbane FIR - ATS and PRD NOTAM category	D
Brisbane FIR - all other NOTAM category	N
Melbourne FIR - ATS and PRD NOTAM category	E
Melbourne FIR - all other NOTAM category	F
Australia General FIR	G

notice to airmen

A preflight information service is provided from an office located in Brisbane. This office provides a NOTAM, meteorological, and flight notification service. Some charges are applicable.

A description of the preflight information service available in Australia is contained in ERSA GEN as well as on page 168.

NOTAM EXAMPLES

HEAD OFFICE NOTAMS

AUSTRALIA GEN (YBBB/YMMM)

C3/10

AMD AIP ENR 1.5 HANDLING SPEEDS AS FLW:
AMD ASTERISK NOTE TO TABLE 1.1 ON PAGE 1.5-11 DATED 19 NOV 2009
TO: MAX SPEED FOR REVERSAL PROCEDURES.
FROM 01 200601 TO PERM

C10/10

AMD AIP DESIGNATED AIRSPACE HANDBOOK (DAH) DATED 19 NOV 2009
SECTION 22 - IFR WAYPOINTS
DELETE THE FOLLOWING WAYPOINTS:
BADJA, BINDI, BRISO, CASPA, CLIFY, DONGA, FUNAL, MULGI, NAMBU
PAYNE, RABIT
FROM 02 250610 TO PERM

FIR NOTAMS

MELBOURNE FIR (YMMM)

C6866/09

AMD AIP MAP AD VTC DATED 19 NOV 2009 AS FLW:
ON INSET MAP RE-LABEL IN TWO PLACES (IN VICINITY OF OUTER
HARBOUR),
D220 TO D213.
REFER TO MAIN MAP FOR CORRECT DEPICTION OF D213 AND D220
(D220 IS BEYOND 20 DME AD AND IN THE VICINITY OF RIVER MOUTH
FROM 10 192339 TO PERM

C7178/09 REVIEW C7022/09

OBST LIT CRANE ALUMINA REFINERY ERECTED
PSN S33 14.2 E116 03.8
SFC TO 1434FT AMSL
FROM 11 012320 TO PERM

LOCATION NOTAMS

ARCHERFIELD (YBAF)

C216/09

START APPROVAL REQUIRED FOR CIRCUIT OPERATIONS
FROM 07 200057 TO PERM

C14/10 REVIEW C266/09

SIGNIFICANT INCREASE IN FLYING FOX ACTIVITY
IN VCY OF W BDRY IN THE APCH TO RWY 10
FROM 01 290215 TO PERM

C66/10

TEMPO OBST CRANE ERECTED
150FT AMSL BRG 037 MAG 1500M FM ARP
SFC TO 120FT AMSL
FROM 04 152329 TO 04 230700
DAILY 2000/0700
EXC SAT AND SUN

take-off and landing aircraft

WEIGHT AND BALANCE (CAR 235)

CASA may give directions as to how to 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 maximum 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 divergences 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 CAR 235 is applicable to the take-off, that lesser weight.

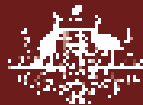
An aircraft shall not take-off, or attempt to take-off, if its gross weight exceeds, by more than the weight of fuel that would normally be used in flying to its next landing place or planned alternative aerodrome, its maximum landing weight or, if a lesser weight determined in accordance with a direction under CAR 235 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 CAR 235 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 the 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.



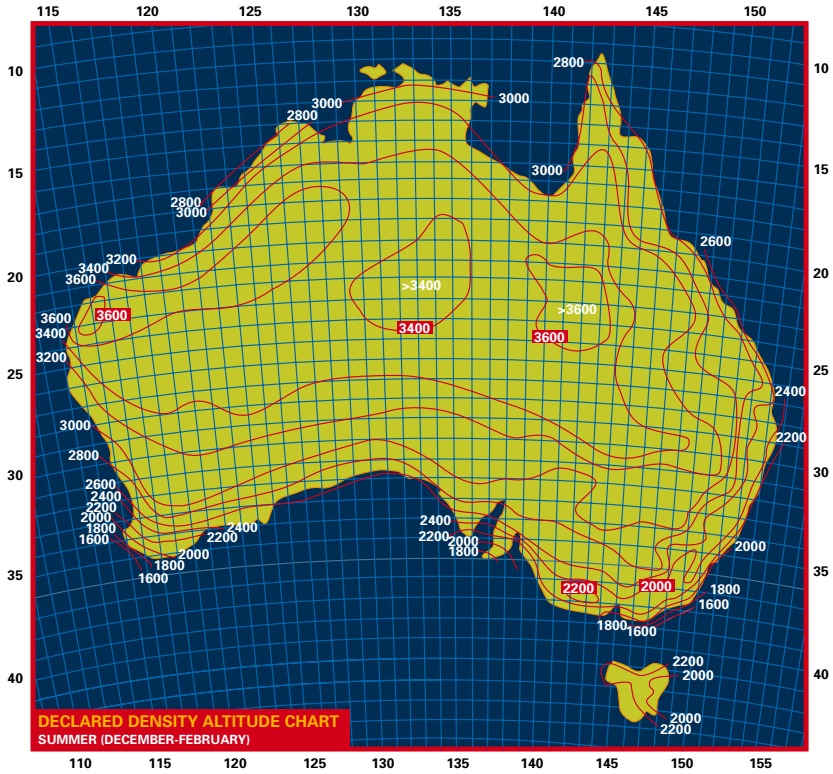
Australian Government
Civil Aviation Safety Authority

NATIONAL LOCAL CALL NUMBER

1 3 1 7 5 7

declared density chart

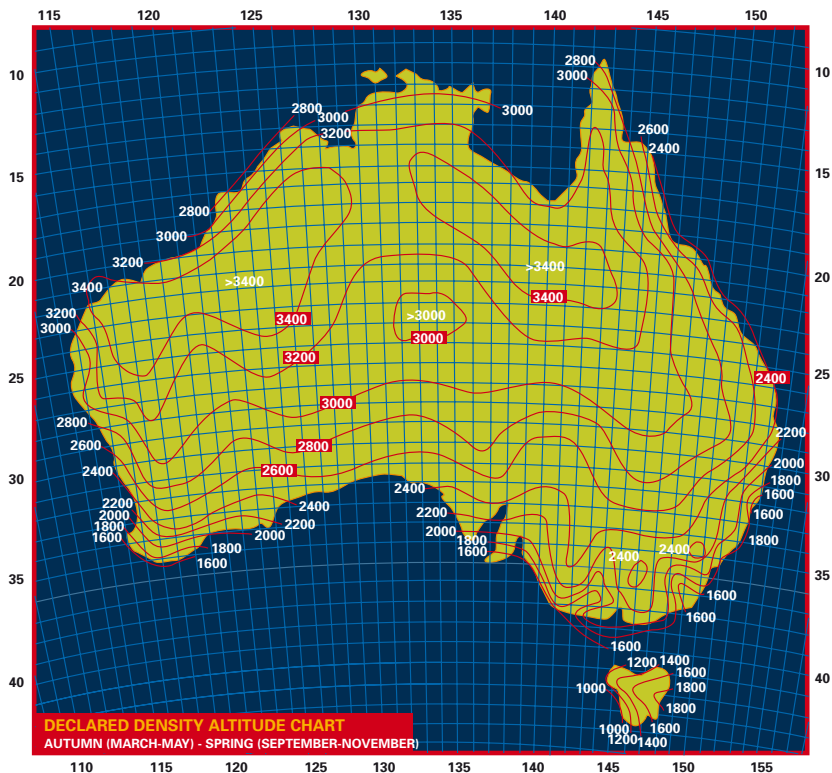
DECLARED DENSITY CHART (CAR 138, CAO 20.7.0)



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.

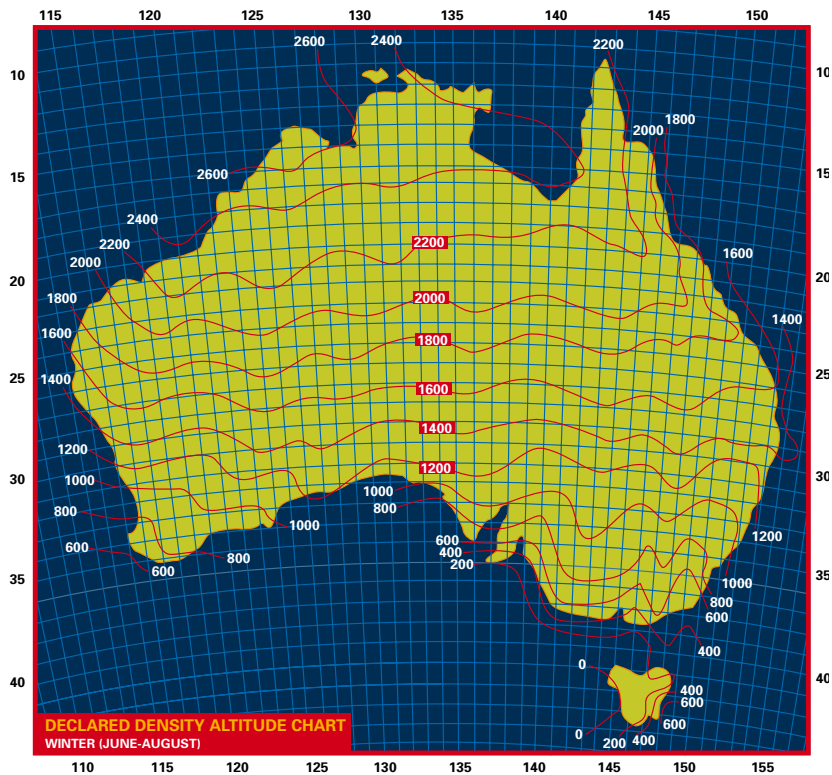


INSTRUCTIONS FOR USE

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

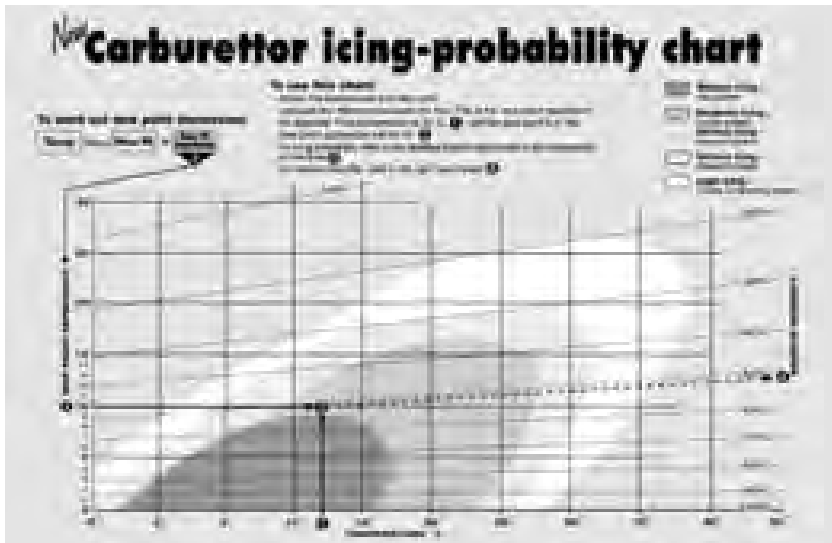
Locate the position of the aerodrome by means of latitude and longitude.

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 either 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

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 paragraphs (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

Web: www.casa.gov.au

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); and
- 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 5700 kg).

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

TYPE	CATEGORY	FLIGHT	VARIABLE RESERVE	FIXED RESERVE
PISTON	Private	VFR	not mandatory	45 minutes
	Charter	VFR	15%	45 minutes
TURBINE	PVT and 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	160 nm		

PIPER LANCE TYPICAL FUEL FLOW:

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

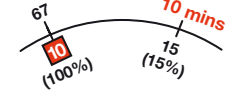
1 CLIMB



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,

e.g. 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,

e.g. 0001 'ZERO ZERO ZERO ONE'

1920 'ONE NINE TWO ZERO'

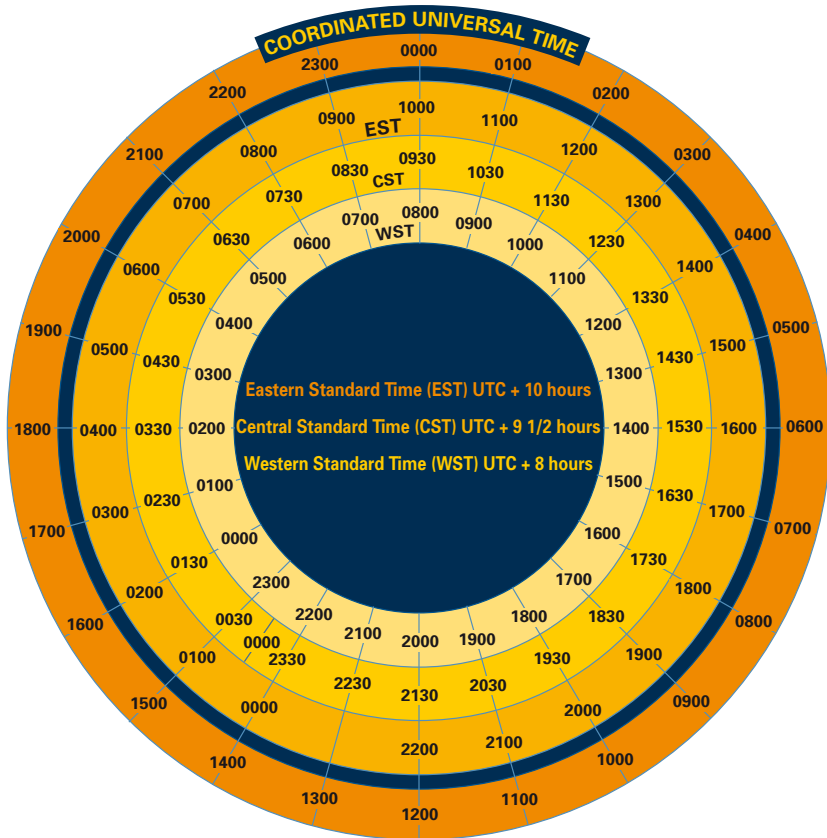
Time may be stated in minutes only (two figures) in radiotelephone communications when no misunderstanding is likely to occur. Current time in use at a station is stated to the nearest minute in order that pilots may use this information for time checks.

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

e.g. 0925:10 'TIME, TWO FIVE'

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

2145:50 'TIME, FOUR SIX'



TIME

Date and time is indicated in a combination of the date and time in a single six figure group. However, a 10 figure group comprising the year, month, date, hours and minutes is used for NOTAM and SUPs. This is reduced to an eight figure group (nil year) for SPFIB. The format is as follows: YYMMDDHHMM

For example, 1215 hours UTC on 23 March 2010 would be written as 1003231215.

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 and 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; and
- 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: $1919 - 0939 = 0940$ UTC.

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 Flightwatch (AIP GEN 2.7).

LOCAL TIME

Local Time in Australia falls into three separate zones:

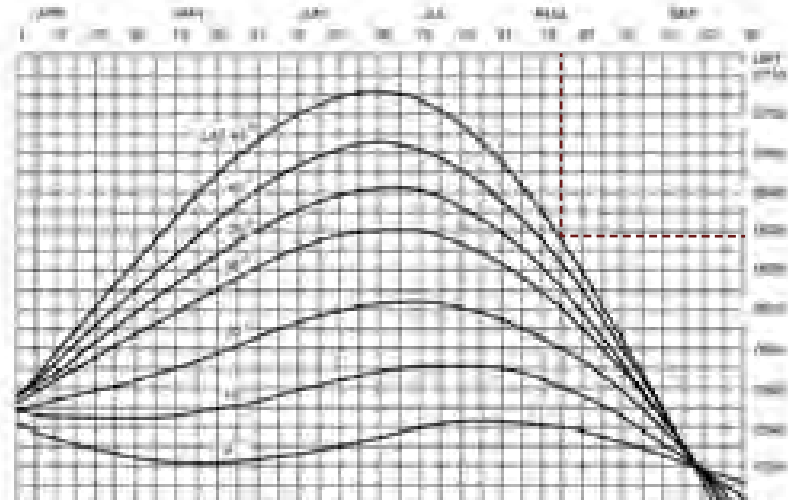
- EST is used in the States of New South Wales (except the Broken Hill Area), Queensland, Victoria, Tasmania and the Australian Capital Territory;
- CST is used in the State of South Australia, the Northern Territory and the Broken Hill area; and
- WST is used in the State of Western Australia.

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 State 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

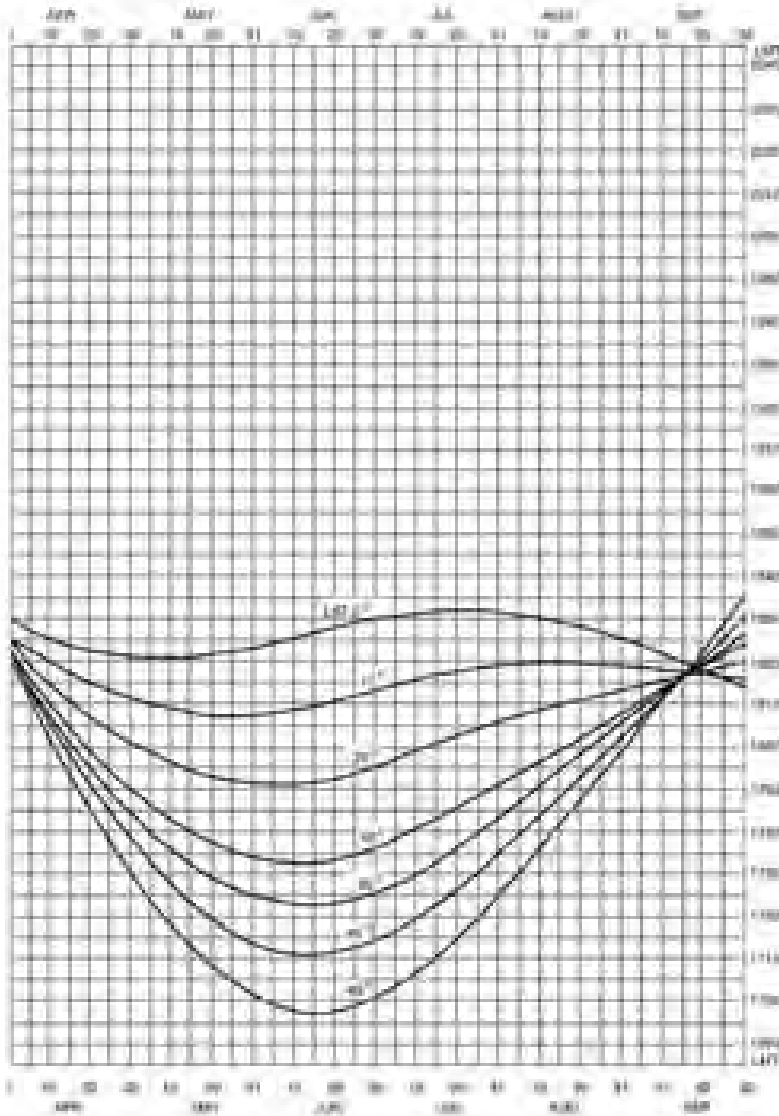
Enter at 15 August and follow downward until reaching latitude 41 32.7. (41 will do) then straight across to read the Local Mean Time (LMT) = 06 29
Technically 15 06 29 (date added).

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 + 01 01 (rounding up) = 09 49.

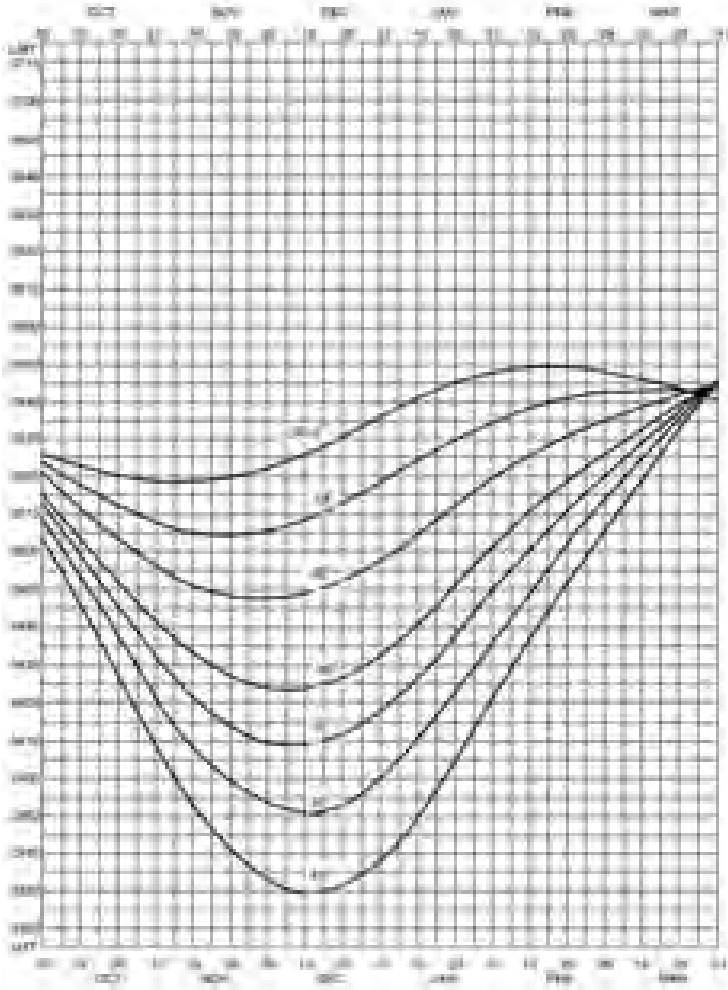
Subtract the Arc to Time from the LMT to give the Beginning of Daylight in UTC = (15) 06 29 - 09 49 = (14) 20 40 on the 14th.

END OF DAYLIGHT (AIP GEN 2.7)

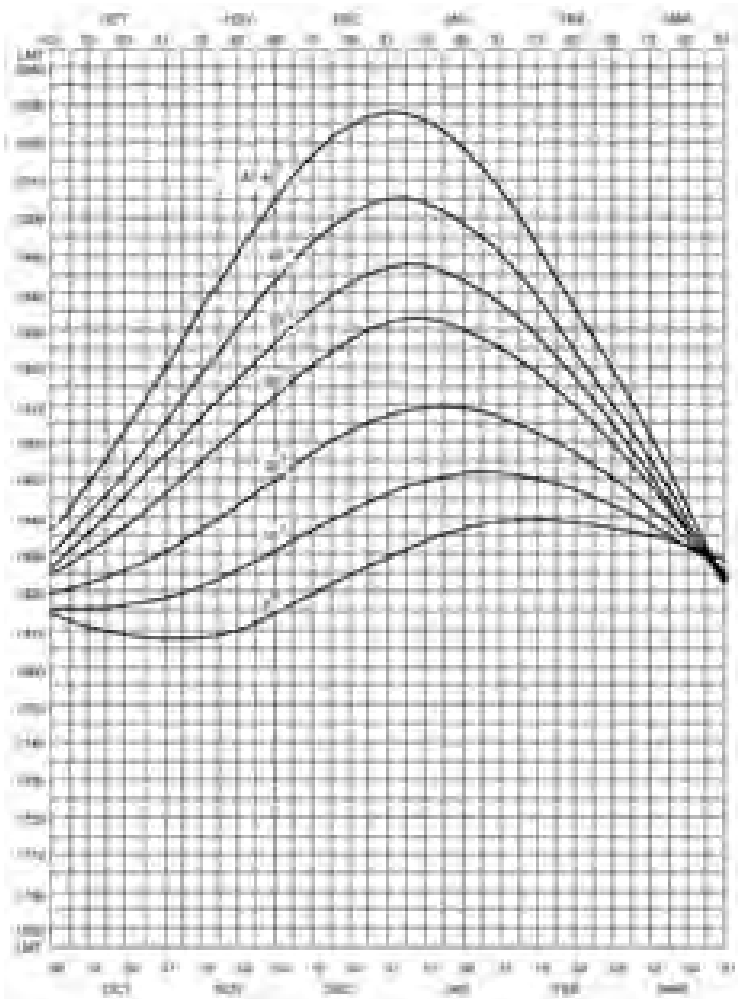


daylight and darkness

BEGINNING OF DAYLIGHT (AIP GEN 2.7)



END OF DAYLIGHT (AIP GEN 2.7)





ARC TO TIME CONVERSION (AIP GEN 2.7)

DEGREES				MINUTES							
LONG DEG	TIME		LONG DEG	TIME		TIME			TIME		
	HOURS	MIN		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 5000 ft and 10 000 ft; 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. VNCs 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 ERCs and TACs, Danger areas are shown with a solid magenta line.

charts

- On the VTCs, 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; e.g. '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 (126.7 MHz) 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. 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, danger

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 find 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 ATC unit; and
- land at such aerodrome as is designated by the ATC unit and, for that purpose, obey any instructions given by the ATC 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.

The most effective range of the radars is up to 75 nm.

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

When providing METRAD 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 (RFCs) and meteorological offices on the following telephone numbers:

Adelaide	08 8366 2617	Melbourne	03 9669 4850
Brisbane	07 3229 1854	Perth	08 9263 2255
Cairns	07 4034 9437	Rockhampton	07 4922 3597
Canberra	02 6247 0411	Sydney	02 9296 1527
Darwin	08 8920 3833	Townsville	07 4775 7311
Hobart	03 6221 2026		

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;
- 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; and
- 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; and
- 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).

forecasts and reports

SIGNIFICANT 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:

NCD	Nil Cloud Detected (in fully automated reports only)	
SKC	Sky Clear	
FEW	Few	1 to 2 OKTAS
SCT	Scattered	3 to 4 OKTAS
BKN	Broken	5 to 7 OKTAS
OVC	Overcast	8 OKTAS
NSC	Nil Significant Cloud	
CAVOK	Cloud and visibility OK	

The only cloud type that are included in aeronautical code format are towering cumulus (TCU) and cumulonimbus (CB). Forecasts in narrative form, such as low level area forecasts, will include cloud types other than CB and TCU when appropriate; and in the case of CB and TCU, 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
EMBD	embedded	embedded in layers of other cloud

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

WEATHER CODE AND TRANSLATION (AIP GEN 3.5)**CODE TRANSLATION****WEATHER DESCRIPTORS**

BC	Patches (of fog)
BL	Blowing
DR	Drifting
FZ	Freezing
MI	Shallow
SH	Showers
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 (from weather sensor)
VA	Volcanic Ash

Note 1: There is an option for intensity to be described with certain weather types. 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'

forecasts

TEMPO, INTER, FM AND BECMG (AIP GEN 3.5)

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

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

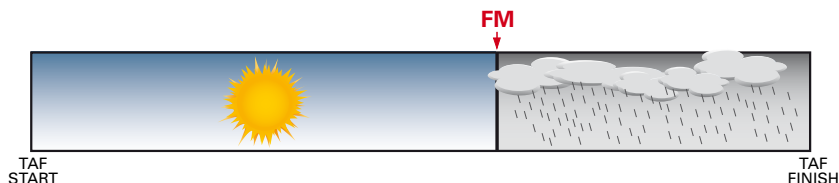
INTER is used to indicate changes expected to occur frequently and more or less continuously for periods of less than 30 minutes in each instance and where the aggregate of the changes is expected to be less than half the total period indicated.

The validity period is given in the format ddhh/ddhh in TAF and hhmm in TTF, where d is day, h is hour and m is minute.

FM (from) and **BECMG** (becoming) are used when significant changes (both deteriorations and improvements) from the preceding information are expected to occur.

FM is used when rapid changes are expected at the specified time, and is given in the format FMddhhmm, e.g. FM301000 (from 1000 UTC on the 30th).

BECMG is used (in TAF only) when the changes are expected to develop during the specified time period, and is given in the format BECMG ddhh/ddhh, e.g. BECMG 3010/3011 (between 10 and 11 UTC on the 30th). In both cases (FM and BECMG), the new conditions will continue until the end of the validity period of the TAF, or until replaced by another change group.



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 CORRECTIONS

Corrections (COR) to the TAF metadata (e.g. validity) are issued as required.

FORECAST AMENDMENTS

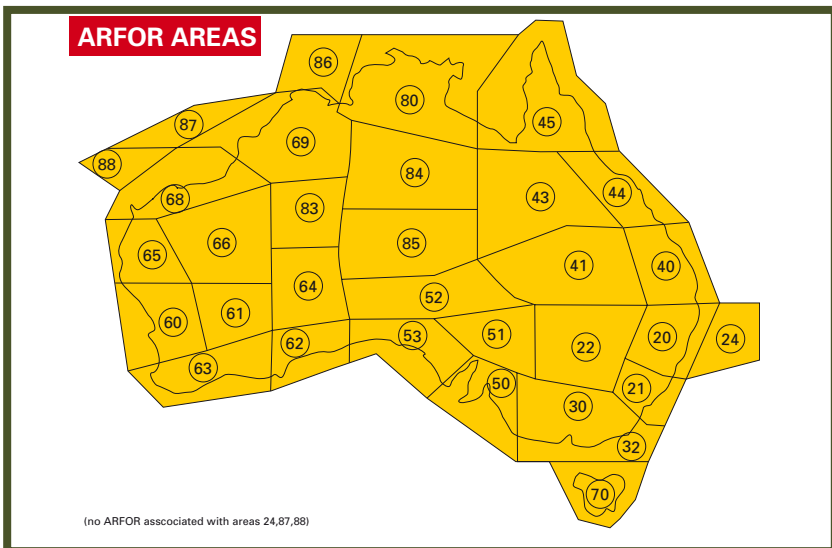
Amendments (AMD) to forecasts are issued as necessary when changes are expected during the period of validity of a given forecast.

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:

FORECAST NAME

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 LOCALITIES (if any)

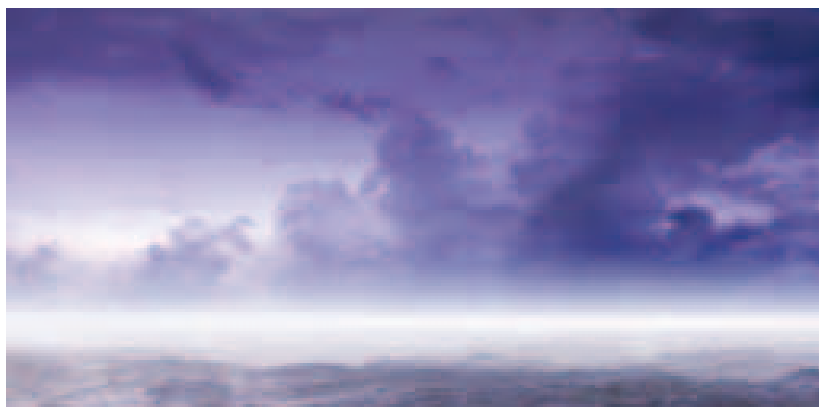
aerodrome forecasts

AERODROME FORECASTS (TAF)

An aerodrome forecast (TAF) is a statement of meteorological conditions expected for the specified period in the airspace within a radius of 5 nm of the centre of the aerodrome or runway complex.

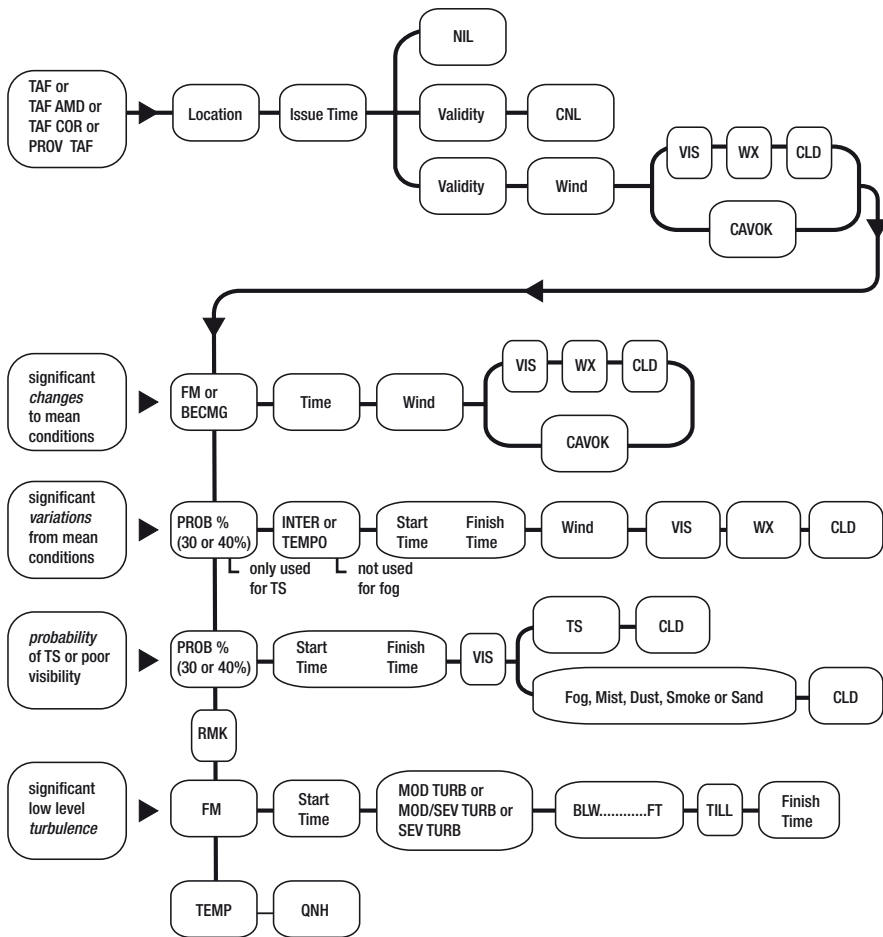
The TAF service provided is in accordance with the airfield category, the category of airfield being determined by the type and the amount of traffic (AIP GEN 3.5).

CATEGORY DESCRIPTION AND SERVICE (AIP GEN 3.5)		
CATEGORY	AERODROME TYPE	ROUTINE TAF SERVICE
A	International Major International Restricted Use International Operational Alternate International Non-Scheduled External Territory International Airport	Issued 6 hourly, valid for 18, 24 or 30 hours Commencement times 00, 06, 12, 18 Z Continuous meteorological watch and amendment service
B	Major Domestic Passengers above 40 000 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 40 000 p.a	As determined by consultation with clients Meteorological watch and amendment service during validity
D	Strategic Domestic Alternate for NPT Other Aerodromes	As determined by consultation with clients Meteorological watch and amendment service during validity
E	Observations only Critical Locations Aerodromes with AYS	No TAF Service except for SAR, Military Flights, etc. on request

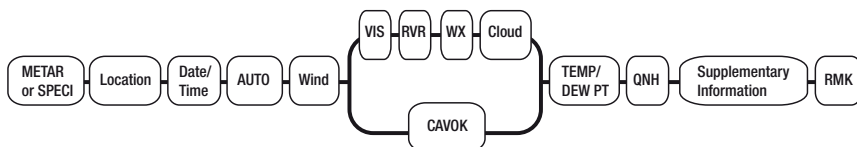


aerodrome forecasts and reports

TAF (aerodrome forecast) format



METAR/SPECI (aerodrome weather report) format



AERODROME WEATHER REPORT AND FORECAST DECODE

Identifier

METAR is used to identify routine observations (hourly or half-hourly) when conditions are above specified levels. SPECI is used to identify special observations, i.e. observations when conditions are below specified criteria, or when there have been significant changes since the previous report. SPECI is also used to identify observations reported 10 minutes following an improvement to above SPECI conditions.

TTF METAR or TTF SPECI is used to identify METAR or SPECI to which a trend forecast is appended. The use of this identifier is restricted to those locations that issue trend forecasts.

TAF, TAF AMD, TAF COR, TAF.. CNL, TAF ... NIL and PROV TAF are used to identify Aerodrome Forecast, Amended Aerodrome Forecast, Corrected Aerodrome Forecast, Cancelled Aerodrome Forecast, Nil Aerodrome Forecast and Provisional Aerodrome Forecast respectively.

Location

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

Issue Time

The origination date/time of TAF and METAR/SPECI is given in UTC using a six figure group followed by the code Z (for UTC).

Validity Period

The validity period of a TAF is given in UTC in the format ddhh/ddhh, where ddhh is the day of month and hour, e.g. 0100/0206 is a validity period from 00 UTC on the 1st until 0600 UTC on the 2nd.

AUTO

This group will be included when the METAR/SPECI contains only automated observations, which may include visibility, present weather, and cloud.

When the Automatic Weather Station (AWS) includes sensors for horizontal visibility, present weather and cloud, the AUTO report will include the parameters from these sensors in the "body of the message" (where previously only manually observed visibility, present weather and cloud data were included).

aerodrome forecasts and reports

Note: Pilots should exercise caution when interpreting automated visibility, present weather and cloud information as data from these instruments may not be equivalent to human observations.

Wind

Wind direction is rounded to the nearest 10 degrees and is given in three figures relating to True North. Wind speeds are given in two figures. When the wind is calm, the group is encoded as 00000KT.

A variable wind direction is given as VRB and is used when the reporting or forecasting of a mean wind direction is not possible, such as in the following conditions:

- Light winds (3 kt or less).
- When forecasting a single direction is not possible; e.g. with a tropical cyclone, or with the passage of a thunderstorm, in which case the forecast wind might be, for example, VRB60KT.

Maximum wind speed is given only when it is 10 kt or more greater than the mean wind speed. It is indicated by the letter G which is followed by the maximum wind speed; e.g. 280°, mean speed 20 kt, maximum speed 35 kt, is given as 28020G35KT.

Visibility

In TAF, the prevailing visibility (the greatest visibility covering more than half the aerodrome) is always given.

In METAR/SPECI, if the visibility is not the same in different directions and:

- the minimum visibility is the prevailing visibility, or
- the visibility is fluctuating rapidly, then

the minimum visibility is the only information provided. Otherwise, both the prevailing visibility and the minimum visibility will be given when the minimum visibility is less than 5000 m. In this case the prevailing visibility is reported first followed by the minimum visibility including an indicator to show the general direction of the minimum visibility in relation to the observing point (the meteorological station), e.g. the visibility groups 9000 0600N indicate a prevailing visibility of 9000 m and a minimum visibility of 600 m to the north.

A visibility of 10 km or more is given by 9999.

Automatic Visibility Information

A report from an AWS with a visibility sensor will include data from this

sensor if the report is fully automated (in which case the abbreviation AUTO is also included in the message). When the data has been obtained from only one sensor, the data will be followed by NDV to indicate that no directional variation can be reported (manual observations of visibility will include, when certain criteria are met, a directional variation in addition to the prevailing visibility).

Note: Pilots should exercise caution when interpreting automated visibility information as it may not be equivalent to a human observation because:

- the information is reported as a ten minute average; and
- as it is sourced from a single instrument sampling only a very small parcel of the atmosphere, it may not be representative of the entire airport.

Fully automated AWS may issue special reports (SPECI) for visibility using data from visibility sensors.

Runway Visual Range (RVR)

RVR at the runway's touchdown zone may be reported in SPECI messages from aerodromes with RVR instrumentation. It will be reported in the format RDD/VVVVi or RDD/VVVVVVVVi where R and V are fixed indicators, DD gives the runway number, VVVV gives the RVR value and i gives the tendency (either U, D or N for up, down or nil). When RDD/VVVV is reported, VVVV is the 10-minute average. RDD/VVVVVVVV is reported when the RVR has varied significantly during the averaging period. The group gives the one-minute mean minimum value followed by V followed by the one-minute mean maximum value during the averaging period.

Present Weather

Present Weather is given using the codes listed on page 125.

If more than one form of precipitation is observed, the appropriate letter abbreviations shall be combined in a single group with the first being the dominant type of precipitation. In such a group, the intensity shall refer to the total precipitation.

Up to three groups may be given.

The intensity of precipitation, blowing dust, sand or snow, dust storm and sand storm will be indicated by the prefix (-) for light, (+) for heavy, and no prefix for moderate.

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The qualifier VC will be used to report certain significant weather phenomena in the vicinity (between approximately 8 and 16 km of the aerodrome reference point) of the aerodrome.

Automatic Present Weather Information

A report from an AWS with a present weather sensor will include data from this sensor if the report is fully automated, in which case the abbreviation AUTO is also included in the message. Pilots should exercise caution when interpreting automated present weather information, as it may not be equivalent to a human observation.

Cloud

Cloud height is given in hundreds of feet using three figures; e.g. 700 ft is reported as 007.

Cloud amount is given using the following abbreviations listed on page 124.

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

- The lowest layer or mass, regardless of amount;
- The next layer or mass, covering more than 2 OKTAS;
- The next higher layer or mass, covering more than 4 OKTAS; and
- Cumulonimbus and/or towering cumulus clouds whenever observed or forecast and not given in one of the groups above.

Type of cloud is identified only for cumulonimbus and towering cumulus. These will be given as CB and TCU respectively. When an individual layer or mass of cloud is composed of cumulonimbus and towering cumulus with a common cloud base, the type of cloud is reported as cumulonimbus only, and the amount shall be reported as the sum of the CB and TCU amounts.

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

A clear sky will be indicated in a report by SKC. When the sky is obscured, the cloud group is omitted and vertical visibility may be given in the format VVhhh, where hhh is the vertical visibility in hundreds of feet. When information on vertical visibility is not available, hhh may be given as ///, indicating that the sky is obscured but information on the vertical visibility is not available.

Automatic Cloud Information

A report from an AWS with a cloud sensor will include data from this sensor if the report is fully automated (in which case the abbreviation AUTO is also included in the message). The data will be in the same form as manual reports except that:

- NCD will be reported if no cloud is detected; and
- there will be no indication of cumulonimbus or towering cumulus.

Note: Pilots should exercise caution when interpreting automated cloud information as it may not be equivalent to a human observation because:

- The information is reported as a 30 minute average with double weighting given to the last 10 minutes; and
- As it is sourced from a single ceilometer sampling only the sky directly overhead, it may not be representative of the skyline.

Fully automated AWS may issue special reports (SPECI) for cloud using data from cloud sensors.

CAVOK

CAVOK is included in reports (from staffed stations only) and forecasts when the following conditions are observed, or forecast to occur, simultaneously:

- visibility of 10 km or more;
- nil significant cloud, i.e. no cloud below 5000 ft or below the highest 25 nm minimum sector altitude, whichever is greater, and no cumulonimbus or towering cumulus at any height; and
- nil significant weather.

When the term CAVOK is given, the elements visibility, weather and cloud will not be given.

Whenever a total of BKN or more of low or middle cloud cover is at or above 5000 ft, and CAVOK has been used, the cloud amount and base may be given as a remark (i.e. after RMK).

Significant Variation

Aerodrome forecasts will include significant changes or variations (indicated by FM, BECMG, INTER and TEMPO) to the previously given conditions when the relevant criteria are met. These relate to improvements as well as deteriorations.

aerodrome forecasts and reports

The variation groups TEMPO and INTER are used to indicate significant variations of a temporary or intermittent nature. The change groups FM and BECMG are used to specify changes that are more lasting in nature. The indicators are the beginning of a self-contained forecast.

When reduced visibility due to fog, mist, dust, smoke or sand is forecast, but the probability is assessed at between 30% and 40%, the terms PROB30 or PROB40 are used. The term may also be added before a TEMPO or INTER statement to express probability assessments of thunderstorms. If greater than, or equal to, 50% probability is forecast, reference is made to the phenomena in the forecast itself and not by the addition of the statements PROB30 or PROB40.

The terms NSW (nil significant weather), SKC and NSC may be included following FM or BECMG to indicate significant improvements expected.

If a TAF or TTF includes a forecast of turbulence, its commencement will be indicated by the abbreviation FM, and its cessation within the forecast coverage will be indicated by the abbreviation TILL. Start and finish times are given in the format ddhhmm (day of month, hour, minute).

Temperature

Aerodrome weather reports contain both air temperature and dewpoint in whole degrees celsius.

Up to four forecast values of air temperature are given in TAF, for the times HH, HH+3 hours, HH+6 hours and HH+9 hours, where HH is the time of commencement of the TAF validity period. These forecasts are point forecasts for these times but are valid for:

- in the case of the first value, ninety minutes after the time point HH; and,
- for subsequent values, ninety minutes each side of the time point.

The temperature forecasts are prefixed by the letter T. Negative values are indicated by the letter M before the numeral.

QNH

QNH is given in whole hectopascals using four figures.

In aerodrome weather reports, QNH is prefixed by the letter Q (e.g. Q0999). Observed intermediate values are rounded down (e.g. 1001.9 is reported as 1001).

Up to four forecast values of QNH are given in TAF, for the times HH, HH+3 hours, HH+6 hours and HH+9 hours, where HH is the time of

commencement of the TAF validity period. These forecasts are point forecasts for these times but are valid for:

- in the case of the first value, ninety minutes after the time point HH; and,
- for subsequent values, ninety minutes each side of the time point.

The QNH forecasts are prefixed by the letter Q.

Supplementary Information

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

- recent weather (RE) of operational significance; and
- wind shear (WS) information on a take-off or landing runway.

Remarks Section

Rainfall

The remarks section of the report will include rainfall recorded by an automatic rain gauge. The information is in the form RF##.##### where the first three digits after the indicator RF will report the rainfall recorded in the 10 minutes prior to the observation time, and the next four digits report the total rainfall recorded since 0900 local time. Both amounts are expressed in millimetres to the nearest 0.2 mm.

Plain Language

Any other significant weather conditions (e.g. an approaching front or visible bushfires) are appended as plain language.

Elements Not Available

A report from a fully automated AWS that does not include information from sensors for visibility, weather, or cloud will report *////*, *//* or */////* respectively in lieu of these parameters.

AERODROME FORECAST (TAF) EXAMPLES

TAF YCOM 070635Z 0708/0720 18015KT 9999 FEW005 BKN020

TEMPO 0710/0714 2000 -SHSN BKN005 SCT020

RMK T 03 00 M02 M04 Q 1008 1007 1006 1006

TAF YSSY 020435Z 0206/0312 31005KT CAVOK

FM021400 16015KT 8000 SHRA BKN008 SCT030

aerodrome forecasts

FM022300 23010KT 9999 NSW SCT030
RMK T 25 21 18 15 Q 1012 1013 1014 1014
TAF YSCB 270448Z 2706/2806 33015G28KT 3000 +RA
BKN010 OVC100 FM271400 16015KT 8000 SHRA FEW010 SCT040 SCT100
INTER 2710/2714 1000 +TSRA BKN005 SCT040CB
RMK FM270800 MOD TURB BLW 5000FT TILL271300
T 14 13 13 11 Q 1016 1015 1013 1016

AERODROME WEATHER REPORT EXAMPLES

SPECI YMML 092000Z 22002KT 0600 R16/0600D R27/0500N FG VV///
04/04 Q1020 RMK RF00.0/004.0

SPECI YBCS 221745Z 23014G29KT 6000 1200NE TSRA
FEW040CB BKN100 26/22 Q1003 RMK RF04.0/004.0

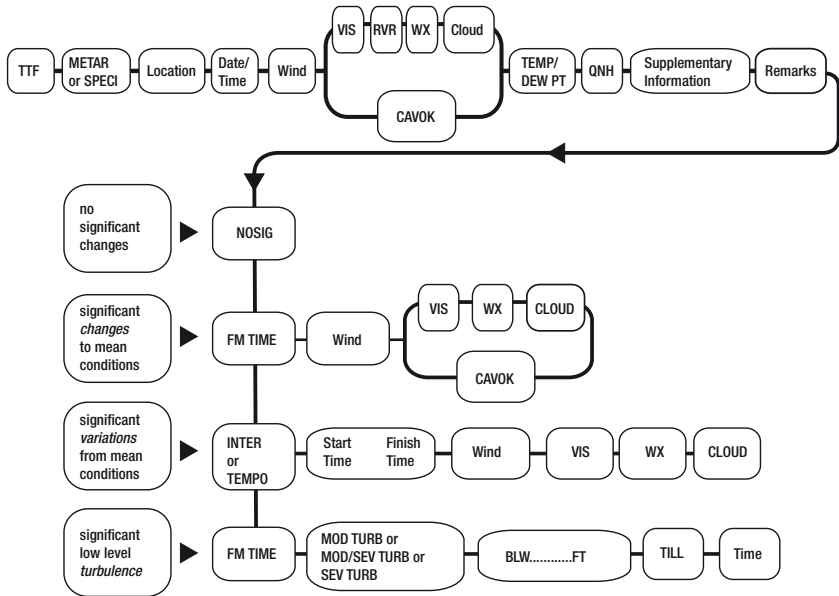
SPECI YSSY 271915Z VRB01KT 3000 VCFG FEW030 18/17
Q1018 RMK RF00.0/000.0

METAR YMOR 100400Z 06013KT 9000 VV/// 31/08 Q1010
RMK RF00.0/000.0 SKY OBS DUE BUSH FIRE SMOKE

SPECI YSCB 141400Z AUTO 20008KT 9000NDV // BKN016
14/11 Q1001 RMK RF00.0/000.0

SPECI YMAV 240215Z AUTO 36018G28KT 9999NDV // NCD
31/10 Q1014 RMK RF00.0/000.0

METAR YSBK 241700Z AUTO 15002KT 0900NDV // /////
04/04 Q1020 RMK RF00.0/000.0 CLD: SKY MAY BE OBSC



Trend Forecast (TTF)

At major aerodromes, a statement of trend, valid for three hours (unless otherwise indicated) from the time of the observation, is appended to the observation. The TTF relates to weather conditions expected to affect the aerodrome of origin for the validity period of the forecast.

The decode of the TTF is as per that for the METAR/SPECI except there is a statement of trend appended to the end of the forecast. This may contain the following:

- NOSIG is used to indicate that no significant changes to the elements wind, visibility, weather and cloud, as reported in the METAR/SPECI, are expected to occur during the validity period of the TTF;
- FM (time) indicates that significant changes to a new set of mean conditions, from those previously given, are expected to occur at the

trend forecast

specified time and to persist until the end of the validity period of the TTF or until new mean conditions are given;

- Intermittent variations (for periods less than 30 minutes) and temporary variations (for periods of 30 minutes or more but less than 60 minutes) are given as INTER and TEMPO respectively, followed by the validity period in the format hhmm/hhmm where h = hour and m = minute UTC; and
- Moderate or severe low-level turbulence excludes turbulence associated with convective weather. TILL (time) is used if the turbulence is expected to cease before the end validity period of the TREND.

The TTF supersedes the TAF for its validity period and is the current forecast for pilots of aircraft whose arrival time falls within the validity period. For aerodromes where the TTF service is not a 24 hour service, the TAF will become the valid forecast from the time indicated in the remarks section of the TTF e.g. USE TAF FOR ARRIVAL AFTER 0800Z.

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 Forecast (TTF) Examples

TTF SPECI YPAD 012200Z 00000KT 5000 DZ OVC005 14/14 Q1025 RMK
RF00.4/000.4

FM2200 00000KT 9999 NSW BKN008 FM2300 03005KT 9999 NSW SCT020

TTF SPECI YMML 100200Z 05008KT 4000 DZ BKN005 OVC100 16/15 Q1017
RMK RF00.2/000.2

NOSIG

TTF METAR YPPH 120500Z 36015KT CAVOK 32/08 Q1014 RMK
RF00.0/000.0

FM0630 28025KT 9999 NSW BKN030 INTER 0530/0730 5000 SHRA
BKN008

TTF METAR YBTL 220730Z 35006KT 9999 FEW050TCU 31/21 Q1005 RMK
RF00.0/000.0 DISTANT THUNDER

NOSIG

TTF SPECI YBTL 240800Z 03010KT 4000 TSRA BKN030CB SCT120 27/24
Q1008 RMK RF00.0/000.0

FM0830 03005KT 9999 SHRA BKN035

INTER 0830/1100 4000 TSRA SCT010 SCT030CB

TTF METAR YSCB 140600Z 20008KT CAVOK 14/11 Q1001 RMK
RF00.0/000.0
NOSIG

USE TAF FOR ARRIVALS AFTER 0800Z

windshear warnings

Windshear warnings provide information on observed, reported or assessed risk of wind shear which could adversely affect aircraft between runway level and 1600 ft above that level. A Windshear warning will be cancelled when the wind shear is no longer expected.

This service is provided at Cairns, Brisbane, Sydney, Melbourne, Adelaide, Darwin, Perth and some Defence locations.

When windshear is forecast, or reported by pilots at an intensity greater than 'light', this information, together with a forecast low level wind, will be included on the ATIS at any of the above aerodromes.

meteorological reports

Aerodrome Weather Reports are reports of observations of meteorological conditions at an aerodrome. The reports are generated by electronic recording devices called automated weather stations (AWS) and may have manual input by approved observers.

ROUTINE REPORTS (METAR) are issued at fixed times, hourly or half-hourly, and are made available at preflight briefing or on request to aircraft in flight.

SPECIAL REPORTS (SPECI) are aerodrome weather reports issued whenever weather conditions fluctuate about or are below specified criteria.

meteorological reports

TAKE-OFF AND LANDING REPORTS

Are provided at aerodromes where a control tower is established. This service may also be provided by a CA/GRS or 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 5000 m, above this value in km. A visibility greater than 10 km 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;
- CAVOK - when the following conditions are observed to occur simultaneously:
 - visibility of 10 km or more;
 - no cloud below 5000 ft 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. 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 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.

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:

- thunderstorms
- tropical cyclones
- severe line squalls
- hail
- severe turbulence
- severe icing
- severe mountain waves
- heavy sandstorms or duststorms
- volcanic ash cloud

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 at or below 18 500 ft in an area over which meteorological watch is being maintained, of one or more of the following phenomena:

- isolated and occasional thunderstorms;
- moderate icing except when associated with convective cloud;
- moderate turbulence, except when this is expected to occur in an area, or at a time, where or when it is a normal seasonal feature, or if it is associated with convective cloud;
- extensive areas of visibility of less than 8 km, or of cloud coverage of BKN or OVC below 1500 ft above ground level;
- winds of 40 kt or more within 2000 ft above ground level;

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

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 Flight Information 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, and volcanic ash cloud.

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-towered 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.

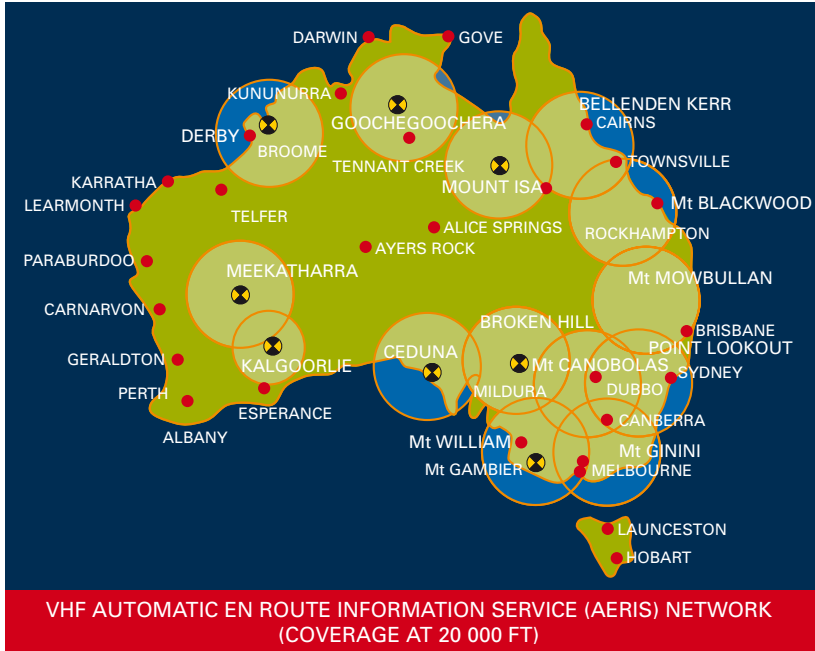
AUTOMATIC METEOROLOGICAL BROADCASTS

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)		
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, Williamstown
POINT LOOKOUT	119.75	Brisbane, Canberra, Gold Coast, Melbourne, Rockhampton, Sydney, Williamstown
Mt. MOWBULLAN	119.95	Brisbane, Gold Coast, Mackay, Maroochydore, Rockhampton, Sydney
Mt. BLACKWOOD	119.85	Brisbane, Cairns, Hamilton Island, Mackay, Rockhampton, 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, Mt. Magnet, 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 SPECIAL

A pilot in command should make a special AIREP 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 40 kt or more within 2000 ft of ground level.

The report comprises:

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

safety equipment

LIFE JACKETS

Aircraft shall be equipped with one life jacket that complies with the standards specified in CAO 20.11 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 nm.

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

Note 2: Except as specified for RPT or CHTR, 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 CAO 20.11, 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 by single engine aircraft each occupant shall wear a life jacket during flight over water. However, occupants of aeroplanes need not wear life jackets during flight above 2000 ft 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 ft 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 nm, 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 a standard approved by CASA.

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 ELT when one life raft is carried and at least two ELTs when more than one raft is carried. The ELTs shall meet the standards specified by CASA and shall be stowed so as to facilitate their ready use in an emergency; and
- a supply of pyrotechnic distress signals.

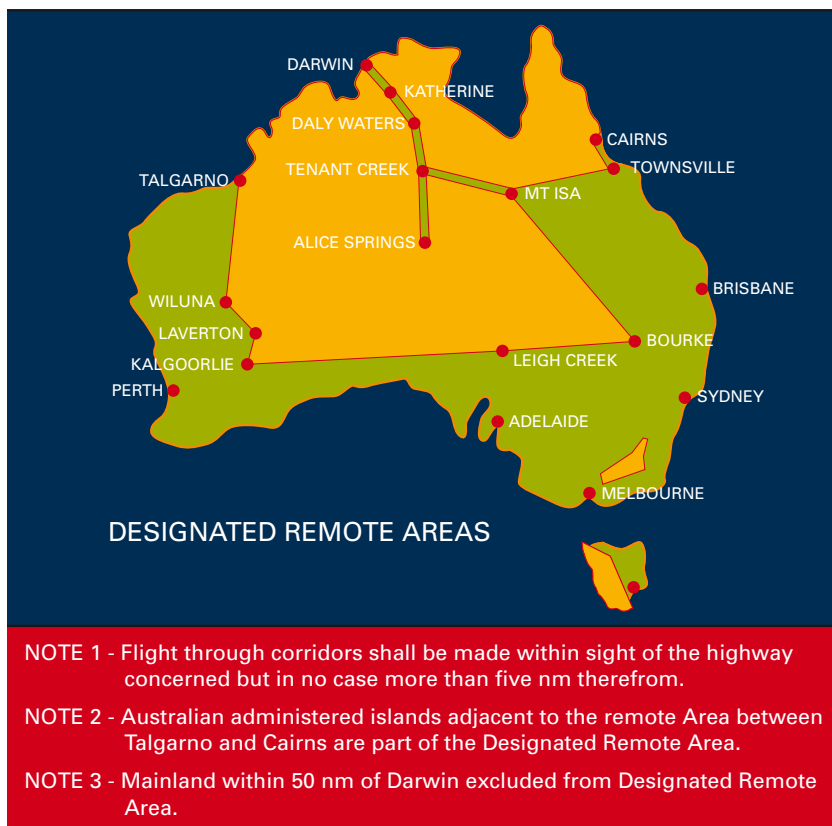
Single engine aircraft on flights over water, which are not equipped with radio communication equipment or are not capable of continuous air – ground communication and which are not required to carry a life raft, shall be required to carry an ELT.

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 CASA.

maps





REMOTE AREAS (CAO 20.11)

Aircraft planned to operate within or through the designated remote areas are required to carry survival equipment suitable for sustaining life in the area over which the flight is planned (CAO 20.11).



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;
- the use of flotation devices 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 taxiing 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 taxiing 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; and
- 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 kt 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 taxiing 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; and

pre-flight

- 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 operator's 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 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 have 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 50 nm 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 50 nm of the aerodrome of departure;
- an aerial agriculture flight;
- where CASA have issued an approval (CASR 21.197);
- 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;

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

MONITORING OF 121.5MHz

Pilots should monitor 121.5 MHz before engine start and after shut down (AIP GEN 1.5). Reception of an ELT transmission must be reported to ATS or the RCC 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, and where the beacon is operated on 406 MHz, its HexID must be provided.

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 COSPAS-SARSAT satellites and by other aircraft.

ELT FREQUENCIES

In addition to 121.5 MHz, current ELTs may also radiate on frequencies of 243 MHz and 406 MHz.

EMERGENCY USE OF ELTS

Information on the emergency use of ELTs is contained in section 4 of this guide and in ERSA at EMERG.

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) must submit flight details to ATS.

The preferred methods for pilots to submit comprehensive flight notification are:

- via pilot access to NAIPS via the internet;
- in writing;
- by telephone; or
- 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, may submit details in the NAIPS flight notification SARTIME 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:

notification general

- RPT and CHTR flights;
- over-water flights;
- flights in Designated Remote Areas; and
- flights at night proceeding beyond 120 nm 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;
- overwater 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 unit requires that the data be programmed into the computerised SSR Code/Call-sign Management System.

Pilots may cancel a SARTIME via:

- telephone to CENSAR on 1800 814 931,
- Flight Service or ATC when telephone facilities are not available, or
- relay through another pilot.

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:

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.

Flight Category	Class Of Operation	Type of Operation	Summary of Flight Notification Options
IFR	All classes	All Operations	FULL FLIGHT DETAILS
VFR	SPFLIGHT	All Operations	SARTIME FLIGHT NOTIC
VFR	Standard VFR	Overwater ops	SARTIME FLIGHT NOTIC
		In-adjacent Remote Area Altitude procedure beyond 100nm from the centreline of clearance	SARTIME FLIGHT NOTIC SARTIME FLIGHT NOTIC
VFR	ASSISTANT	All Class Operations	SARTIME FLIGHT NOTIC FLIGHT NOTIC

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 and notification options, in order of preference are:

NAIPS direct dial pilot access

User software is required. Software is 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 Briefing Service". The user interface is different to NAIPS. NAIPS from the web site also has the flight notification facilities.

AVFAX

Phone 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 tone-generated 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 the operator. This is a verbal briefing but long-distance 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 are available direct from the BoM web site at www.bom.gov.au. A user ID of: bomw0007 and a password: "aviation" have been provided.

Information for the purposes of flight planning should be obtained from Airservices through the National Aeronautical Information Processing System (NAIPS) which 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; or
- accessing via the internet

A username and password are required as described in NAIPS access below.

PRE-FLIGHT BRIEFING REQUIREMENTS

Remember that a weather 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 8 km (AIP ENR 1.1).

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 flight 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

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. 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 7000 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 NOTAMS;
- Head Office NOTAMS; and
- 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**); and
 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 AREAS



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; and
- 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.



NAIPS

BRIEFING BY ROUTE

Specific Pre-Flight Information Briefing

SPFIB I

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ALTERNATE SPFIB

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<input type="checkbox"/> Turning Points																	
Location Summary																	
Route Charting																	
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Route Charting	Route Charting																

OPTIONS

<input type="checkbox"/> True Air Speed	<input type="checkbox"/> Visibility Percent	<input type="checkbox"/>
<input type="checkbox"/> Expanded Wind Profile	<input checked="" type="checkbox"/> Domestic Only	<input type="checkbox"/>
<input type="checkbox"/> Alert (notifications before NOTAM)	<input type="checkbox"/> Fuel Used NOTAM	<input type="checkbox"/>
<input type="text" value="PRA ID"/>		
<input type="button" value="Submit"/> <input type="button" value="Add Item"/>		

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; and
- 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.
- The SARTIME notification may be used for flights in Class G airspace.

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; or
- 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;

NAIPS

- 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 Category B 120 KIAS (AIP ENR1.5); and
- 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.airservicesaustralia.com.

NAIPS SARTIME FLIGHT NOTIFICATION

The screenshot shows the NAIPS SARTIME FLIGHT NOTIFICATION form. It includes the following fields and sections:

- Flight Number:** A text input field.
- Altitude:** A text input field.
- Departure Time:** A text input field.
- Arrival Time:** A text input field.
- Departure Location:** A text input field.
- Arrival Location:** A text input field.
- Legs Table:** A table with columns for 'Leg', 'Altitude', 'Departure Time', and 'Arrival Time'. The table is currently empty.
- Remarks:** A text input field.
- Submit Button:** A yellow button labeled 'Submit'.

The SARTIME form of flight notification is the simpler alternative and only requires basic information but it can only be used for operations wholly within Class G airspace.

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.

NAIPS

Departure:	Enter the departure aerodrome. This may be entered as a standard abbreviation (e.g. YSWG) or as a latitude/longitude. A directory of locations can be obtained by clicking on the 'Location Directory' link and entering the details in the pop-up window.
ETD:	Enter a 4-figure UTC date/time group.
Significant Points:	Enter significant points along the route.
Destination:	Enter the destination as a standard abbreviation (e.g. YMIA) or as a latitude and longitude.
Alternate:	Enter the alternate aerodrome.

After completing the stage data, enter 'Other/SAR Information' as follows:

RMK/:	Enter any other relevant information here.
SARTIME:	Only one SARTIME is permitted per flight notification.
	DTG: Enter SARTIME as a 6-figure DTG or TBN or TBA.
	For: Select either Arrival or Departure.
	To ATS Unit: Enter the name of the ATS unit who will hold the SARTIME for Departure (e.g. BRISBANE). SARTIME for ARR are held by CENSAR.
	At: Enter the destination aerodrome (or the latitude/longitude if the location does not have an approved abbreviation) for the SARTIME.
Endurance:	Enter the aircraft's endurance as a 4-figure time in hours and minutes (e.g. 0523 is an endurance of 5 hours and 23 minutes).
Persons on Board:	This field accepts up to 20 characters of free text.
ELB(A):	Select the type of emergency locator beacon carried.
Pilot in Command:	Enter the name of the pilot in command.
Contact Phone Number:	Enter a phone number where the person filing the flight notification can be reached.

NAIPS

The screenshot shows the NAIPS flight notification form. The top section is titled 'VFR Route' and contains a table with the following columns: Altitude, Significant Point, Turn Speed, Turn Altitude, and Turn Radius. Below this is the 'VFR Significant Points' section, which includes a list of points with fields for Name, Altitude, and Coordinates. The bottom section is 'VFR Performance', which includes fields for Fuel, Time, and other performance metrics.

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).

The screenshot displays a flight planning software interface. At the top, there is a large text input field. Below it, a section titled "Summary" contains several sub-sections: "Performance" with a dropdown menu, "Weather Conditions" with a dropdown, and a "Flight Profile" section with three columns of checkboxes for "Emergency Profile", "Normal Profile", and "Alternate Profile". Below these are "Fuel" and "Crew" fields. A "Remarks" section follows with a large text area. At the bottom, there are "Print All Comments" and "Cancel Flight Plan" buttons, and a "Comments" field containing the text "DLA/CG030". Two yellow buttons labeled "Cancel" and "Execute" are at the very bottom.

A training flight with airwork being conducted at Gold Coast for 30 minutes:

- A** This is indicated by DLA/CG030 (delay CG for 30 min) this is the location or area that the aircraft will be operating for a specified time.

NAIPS

The screenshot shows the NAIPS web interface. The form includes the following sections and fields:

- Flight Details:**
 - Flight No: []
 - Date: []
 - Time: []
 - Altitude: []
 - Altitude Unit: []
- Aircraft Information:**
 - Registration: []
 - Manufacturer: []
 - Model: []
 - Year: []
 - Engine: []
 - Engine Type: []
 - Engine Power: []
 - Engine Unit: []
- Destination:**
 - Destination: **ZZZ** (highlighted in yellow)
- Other Information:**
 - Remarks: []
 - Latitude: []
 - Longitude: []
 - Altitude: []
 - Altitude Unit: []
 - Speed: []
 - Speed Unit: []
 - Direction: []
 - Direction Unit: []
 - Altitude: []
 - Altitude Unit: []
 - Speed: []
 - Speed Unit: []
 - Direction: []
 - Direction Unit: []

Buttons: **Submit** and **Clear Form**

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 designated format for the aircraft ie P28A for Warrior, C150 for Cessna 150. Full list available from Airscape website or NAIPS.
Wake Turbulence Category	L for aircraft MTOW of 7,000 KG or less.
Nav/Comm Equipment	Use V for VHF, D for DCR, F for ADF, N for no servicable equipment; for GPS enter Z and in information enter NAV/GPSRNAV .
SSR Equipment	C for mode C responder, N for no servicable 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 DEPT field specify the location as described below (under DEPT).
ETD	Enter the estimated departure time in a four figure UTC format HHMM or six figure DDHHMM if notification is more than 24 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. A005.
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/L).
Total EET	Estimated Elapsed Time as HHMM .
Alternate	Enter four letter designator of alternate if applicable.
Route Description	Is used only for stored routes.

NAIPS

ATS Route	Use the designated route identifier, usually not applicable to VFR
Significant Point	Use the four letter designation or alternatively use either latitude and longitude in degrees (7 characters) DDSSDDDE or degrees & minutes (11 characters) DDMMSSDDOMME or bearing and distance (10 characters) YXXXDDCONNN
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 VAF (speed at threshold), for most light aircraft this is less than 91 knots which is category A .
DLA/:	(Date) used for holding operations in a particular area for a given time; format DLA/XXXX HHMM .
RMK/:	Remarks line pilot (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 DDMMSSDDMMME (or in the magnetic bearing (M) and distance from a known location format as follows: YXXXXDDNNN where D =degrees magnetic and N =nautical miles.
DEST/:	If ZZZZ was used in the destination field enter latitude and longitude in the format DDMMSSDDMMME (or in the magnetic bearing (M) and distance from a known location format as follows: YXXXXDDNNN 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 or relay flight.
SARTIME/:	Use six figure UTC group DDHHMM . Only one SARTIME is permitted per flight notification.
CODE/:	Applies to Mode S transponders.
DATA/:	Data/ Applies to data link capability.
COM/:	Enter significant data relating to communications equipment.
TPY/:	Type. If ZZZZ was used in the Aircraft Type field, enter types followed by the number, if applicable.
ALTN/:	If ZZZZ was used in the Alternate field, enter the latitude and longitude of the alternate aerodrome.
RALT/:	Enter the name of any alternate alternative if applicable.
SEL/:	SEL-CHL code applicable to international aircraft.
OPR/:	Enter name of operator if applicable.
RP/:	Enter route details to revised destination aerodrome followed by four letter indicator if applicable.

NAIPS

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

Bellanca Citabria

Citabria 7ECA CH7A
other models CH7B

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 M20P
Mark 21 M20P
Mark 22 M22
201 M20P
231 M20T

Partenavia

P.68 P68

Piper

J2 Cub J2
J3 Cub J3
Colt PA22
Pacer PA20
Tri-Pacer PA22
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 PA27
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	<input type="text"/>
YOUR PASSWORD	<input type="text"/>

Information available via the Internet includes:

- location specific NOTAM;
- FIR and sub-FIR NOTAM;
- Head Office NOTAM; and
- 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. 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 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 200 nm 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.

domestic flight notification form

		ZFR				Page 1 1	
C-172							
YBAF 0100		0105		045		YBRK 0205	
DCT DBO MLY TNG DCT							
YBRK 0330		0105		055		YBAF 0210	
DCT GLA MYB DBO DCT							
ZFR							
230700		CENSAR		YBAF		07 40 355 555	
WHITE / RED							
0500						2	
0500						2	
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							

domestic flight notification form

ATS FLIGHT NOTIFICATION - USER GUIDE

ITEM 7 - AIRCRAFT IDENTIFICATION

Enter Aircraft registration/flight number. ZZZZ and TBA cannot be accepted.

Requirements For VH registered aircraft, enter the three letters after the prefix only, e.g. for VH-ZFR enter ZFR.

For flight numbers, and other approved callsigns, enter a mixture of figures and letters that do not exceed seven characters; e.g. 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; e.g. 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 MTOW or more

M for aircraft between 7000 and 136 000 kg MTOW

L for aircraft 7000 kg MTOW 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.

domestic flight notification form

SURVEILLANCE EQUIPMENT

- Circle N for Nil
- A for SSR Transponder Mode A
- C for SSR Transponder Mode C
- D for ADS-C 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; e.g. BN270120 is a position 120 nm, 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 as DDHMM.
ETDs of more than 7 days at the time of notification cannot be accepted. A change of more than 30 minutes to a submitted ETD should be advised to ATS or through NAIPS.

ITEM 15 - CRUISING SPEED

- Enter Enter TAS in knots or enter Mach number.
- Requirements Circle N, then enter zero and three figures for knots; e.g. 0180. Circle M, then enter zero and two figures for mach number to the nearest hundredth of a unit; e.g. 082.

LEVEL

- Enter First planned cruising level.
'A' followed by three figures to indicate altitude in hundreds of feet up to and including 10 000 ft e.g. A085.
'F' followed by three figures to indicate flight levels above 10 000 ft e.g. 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 for locations / published waypoints For an aerodrome, use the authorised abbreviation; eg YMBL for Marble Bar. For a navaid identifier, use two or three letter abbreviation; e.g. KSC for Kingscote NDB. For a latitude and longitude identification, use degrees and minutes in an eleven character group; eg 2730S15327E. For a waypoint use assigned designator; e.g. 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; e.g. BN270120 is a position 120 nm, 270 degrees from Brisbane.
- Requirements For ATS route designator, enter published chart designator;

domestic flight notification form

for route e.g. 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); e.g. 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; e.g. DCT PH CKL BIU PH DCT or DCT 1239S14325E 1300S14335E DCT

When operating in a designated ATS route, enter the name of the location where the route is joined followed by the route designator; e.g. on a flight departing Ceduna for Griffith via the route designators J149 and B469 enter DCT CD J149 WHA B469 GTH DCT 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; e.g. 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; e.g. 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 1.1 para 20 'Route Specifications' and AIP ENR 1.1 para 19 '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; e.g. 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; e.g. YBAF VFR.
Can accompany change in level; e.g. ROM/N0180A090 IFR.
- Requirements for cruise climb/block level reservation Enter the letter C followed by an oblique stroke, the point at which the cruise climb or reservation is 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; e.g. C/FERET/N0380F370F390, or C/FERET/N0380F370PLUS

TOTAL EET

- Enter Total estimated elapsed time of the flight as four figures in hours and minutes; e.g. 0340 and include any aerial work delay noted as DLA in Item 18(a).

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 For flights that enter or leave the Australian FIR use EET/ to indicate the estimated elapsed time to the FIR boundary.
- 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; e.g. DEP/BN090120.
- DEST DEST/ when ZZZZ has been entered in Item 16 followed by latitude and longitude or bearing and distance from a location with an authorised abbreviation; e.g. DEST/2730S1527E.

domestic flight notification form

ALTN	ALTN/ when ZZZZ has been entered in item 16 followed by latitude and longitude or bearing and distance from a location with an approved abbreviation; e.g. 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 e.g. 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; e.g. 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; e.g. TYP/ Echo Mk1.
REG	REG/VH enter full aircraft registration; e.g. REG/VHZFR
PER	PER/ to indicate aircraft performance as described in AIP ENR 1.5 para.1.2; e.g. PER/B. IFR aircraft arriving at a controlled aerodrome must insert their performance category.
STS	STS/ for special aircraft handling; e.g. STS/MED 1, STS/MED 2.

COM	COM/ when changes to communication equipment and Z has already been entered in Item 10; e.g. COM/HF3452.
NAV	NAV/ when changes to navigation equipment and Z has already been entered in Item 10; e.g. NAV/GPSRNAV.
DAT	Datalink capability as follows: DAT/S Satellite DAT/H HF DAT/V VHF DAT/M S SR Mode S
CODE	CODE/ ICAO 24.6 + Aircraft Address expressed in hexadecimal format.

STS/SARTIME

Requirements	Date/time as a six figure group. Only one SARTIME to be entered as per flight notification; e.g. 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.

domestic flight notification form

Survival equipment to be circled as follows:

- 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


A Flight Note is **not** lodged as part of the ATS SARWATCH system as is the 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



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)		1500	Date	15/8/01	
Call-sign ZFR	Type C-172	Nav aids carried and used (include GPS) VOR/NDB/GPS			
Pilot A. BROWNE	Mobile phone No. 047007007	Home contact (name & phone) Christine Browne-0730073007		TAS 105 KT	

Complete a separate line for each flight sector

DEP AD / Point & phone No.	ETD (Local time)	Route (Turning points)	DEST & phone No.	POB	Endurance	
					Hr	Min
YGD1047007007	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 White/Blue	Operating company name & contact No. 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)

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);
- Aerodrome Weather Information Service (AWIS), 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 the CTAF 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 on the ATIS: (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; e.g. "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 (number/s) FOR DEPARTURES,
[DAMP] [WET] [WATER PATCHES] [FLOODED] (if applicable)
Holding delay, if appropriate; e.g. "...MINUTES HOLDING MAY BE EXPECTED", etc (when being used) LAND AND HOLD SHORT OPERATIONS IN PROGRESS

CURFEW RUNWAY NOMINATION (when runway is nominated due to Noise Abatement legislation and the crosswind and/or downwind component is in excess of that specified in ENR 1.1).

in-flight information

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 (e.g. the variation is less than 60°, but the variation from the mean results in 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 (3 kt or less); or
 - ii the wind is veering or backing by 180° or more (e.g. passage of thunderstorms, or localised wind effect).

WIND SPEED quoted as either:

- A. CALM (less than 1 kt, eg 'WIND CALM');
- B. SINGLE MAXIMUM VALUE whenever the extremes between minimum and maximum are 10 kt or less (e.g. 'WIND 250 DEGREES MAXIMUM 25 KNOTS');
- C. TWO VALUES REPRESENTING MINIMUM AND MAXIMUM VALUES whenever the extremes in wind vary by more than 10 kt (e.g. '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 criteria specified for the revision of ATIS, threshold winds may be broadcast on the ATIS; eg. THRESHOLD WIND RUNWAY...(number),.../..., RUNWAY...(number),.../...

VISIBILITY (distance is reported as appropriate):

- A. >10 km – ‘GREATER THAN WUN ZERO KILOMETRES’ or actual distance ‘...KILOMETRES’;
- B. Greater than 5 km and 10 km (inclusive) – ‘...KILOMETRES’;
- C. Up to and including 5000 m – ‘...METRES’; and
- D. <1500 m – RVR is reported when available.

PRESENT WEATHER (as applicable; eg, showers in area)

or

CAVOK

CLOUD (below 5000 ft or below MSA, whichever is greater; cumulonimbus, if applicable; if the sky is obscured, vertical visibility when available).

TEMPERATURE

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 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 5 kt or more, and the variation is anticipated to continue for more than 15 min. Such information shall be passed by use of the phrase ‘WIND AT UPWIND END.../...’.

in-flight information

WIND SHEAR

When moderate, strong or severe wind shear 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 ATIS)] REPORTED MODERATE WIND SHEAR ON APPROACH RUNWAY 34 AT TIME 0920, (plus, if available, wind shear advice issued by MET, e.g. 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) AND WEATHER AND TERMINAL INFORMATION RECITER (WATIR)

AWIS and WATIR provide actual weather conditions via telephone and/or radio broadcast at specified locations. AWIS provides information from the AWS only. WATIR combines the AWS information with additional terminal information from the airport operator.

Basic AWS provide wind direction and speed, temperature, humidity, pressure setting and rainfall. Advanced AWS provide automated cloud and visibility. Information provided in AWIS will contain some of the following information:

- station identifier as a plain language station name
- identifier 'AWS AERODROME WEATHER'

- wind direction in degrees magnetic and wind speed in knots
- altimeter setting (QNH)
- temperature in whole degrees Celsius
- cloud below 12 500 ft *
- visibility *
- dew point in whole degrees Celsius
- percentage relative humidity
- rainfall over the previous ten minutes

* Provided as guidance material only. Pilots should exercise caution when interpreting automated visibility and cloud information as data from these instruments may not be equivalent to human observations.

Information broadcast from the AWS and WATIR information 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'; e.g. '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 AWSs may be used in accordance with ENR 1.5 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, e.g. 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 and WATIR is contained in ERSA FAC and MET.

ON REQUEST SERVICE - FLIGHTWATCH

An on-request FIS is available to aircraft in all classes of airspace on ATC VHF or HF (Domestic and International) frequencies.

Pilots must prefix any request for FIS on ATC VHF frequencies with the call-sign of the appropriate ATC unit and the generic call-sign 'FLIGHTWATCH' e.g. 'MELBOURNE CENTRE FLIGHTWATCH REQUEST ACTUAL WEATHER (location)'.

Due to workload considerations, ATC may re-direct pilot requests for FIS to an alternative VHF frequency or Flightwatch HF.

When operating on Domestic HF (call-sign 'FLIGHTWATCH') and International HF (call-sign 'BRISBANE'), pilots must include the frequency on which they are calling, e.g. ('FLIGHTWATCH or BRISBANE), ROMEO JULIET DELTA, SIX FIVE FOUR ONE, REQUEST ACTUAL WEATHER (location)'.

Information will be provided in an abbreviated form, paraphrased into brief statements of significance. The full text of messages will be provided on request.

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; and
- 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;

e.g. 'ALL STATIONS HAZARD ALERT MELBOURNE. WEATHER OBSERVATION NOTIFIES UNEXPECTED DETERIORATION BELOW THE IFR ALTERNATE MINIMA'.

e.g. '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.

in-flight information

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.

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 has not been previously reported.

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	Type of flight	Separation Provided	Service Provided	Speed Limitation	Radio COM ROMNTS	SUBJ ATC CLR
A	IFR	All aircraft	ATC service	N/A	Continuous two-way	Yes
	VFR not permitted					
C	IFR	IFR from IFR, IFR from VFR IFR from Special VFR	ATC service	N/A except where specified in ERSa for a particular location	Continuous two-way	Yes
	VFR	VFR from IFR	1. ATC service for separation from IFR 2. VFR/VFR traffic INFO (and traffic avoidance advice on request)	250 kt IAS below 10 000 ft AMSL	Continuous two-way	Yes
	Special VFR	Special VFR from Special VFR, when VIS does not meet VMC	ATC service		Continuous two-way	Yes
D	IFR	IFR from IFR IFR from Special VFR	ATC service, traffic information about VFR flights	200 kt IAS at or below 2500 ft AAL within 4 nm of the primary Class D aerodrome (Note 2)	Continuous two-way	Yes
	VFR	Nil	ATC service, traffic INFO on all other flights	250 kt IAS - in the remaining Class D airspace	Continuous two-way	Yes
	Special VFR	Special VFR from Special VFR when visibility is less than VMC	ATC service		Continuous two-way	Yes

E	IFR	IFR from IFR	ATC service and traffic info on VFR flights as far as is practicable	250 kt below 10 000 ft AMSL*	Continuous two-way	Yes
	VFR	Nil	FIS RIS - flight following O/R, (ATC workload permit)	250 kt below 10 000 ft AMSL*	Continuous two-way	No
G	IFR	Nil	FIS	250 kt IAS below 10 000 ft AMSL*	Continuous two-way	No
	VFR	Nil	FIS RIS - flight following O/R, (ATC workload permit)	250 kt IAS below 10 000 ft AMSL*	VHF radio required for OPS above 5 000 ft AMSL and at aerodromes where carriage and use of radio is required	No
				250 kt IAS below 10 000 ft AMSL*	VHF radio required for OPS in reduced VMC	No
Note 1: Speed limitations are not applicable to military aircraft Note 2: If traffic conditions permit, ATC may approve a pilot's request to exceed the 200 kt speed limit to a maximum limit of 250 kt unless the pilot informs ATC a higher minimum speed is required.						

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.

altimeter setting rules

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 100 ft (110 ft at test sites above 3300 ft) to be accepted as serviceable by the pilot. If an aircraft fitted with two VFR altimeters continues to fly with one altimeter reading 100 ft (110 ft) 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.

GENERAL

Heights measured from a QNH or Area QNH datum must be expressed in full, e.g. 3000 ft as 'THREE THOUSAND' and 1800 ft as 'ONE THOUSAND EIGHT HUNDRED' adding, if necessary, 'ON... (QNH)'.

Expressions of height measured from the 1013.2 hPa 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 10 000 ft and the transition level of FL110 to separate aircraft using QNH from those using 1013.2 HPa as a datum.

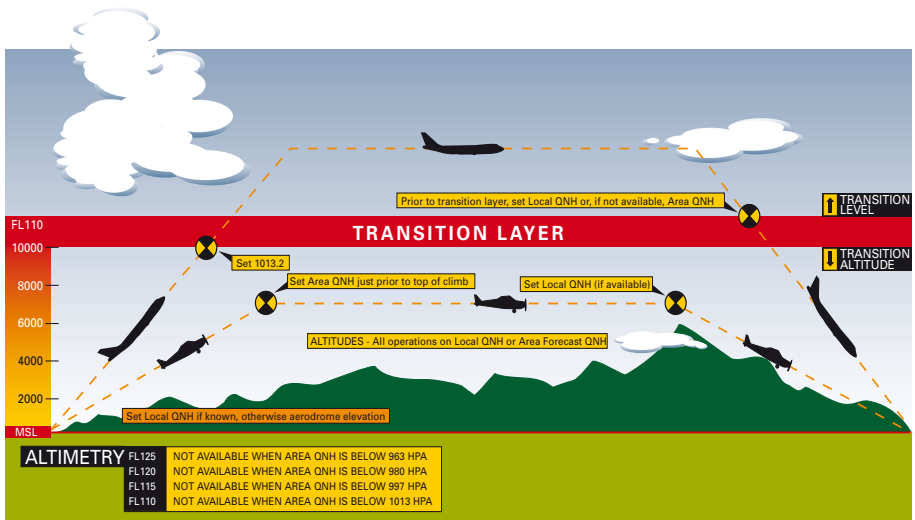
For all operations at or below the transition altitude, the altimeter reference will be:

- the current local QNH of a station along the route within 100 nm of the aircraft; or
- the current Area Forecast QNH if the current Local QNH is not known.

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 below.

QNH is available from a reporting station, the ATIS, TAF, AFOR, AERIS or from ATS. Cruising within the transition layer is not permitted.



NOTE: local QNH of a station along the route within 100 nm of the aircraft

visual flight rules

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 low-level point (below 1000 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 on page 215.

LIMITATIONS

To retain a minimum buffer of 1000 ft 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 980 HPa respectively.

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 2000 ft 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 5700 kg maximum take-off weight, helicopters, airships and balloons. Passenger carrying CHTR flights in single engine (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 800 m for helicopters or 1600 m for aeroplanes; or for balloons, not less than 100 m below 500 ft AGL and 3000 m at and above 500 ft 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 VFR is responsible for determining the visibility for the take-off and landing of the aircraft.

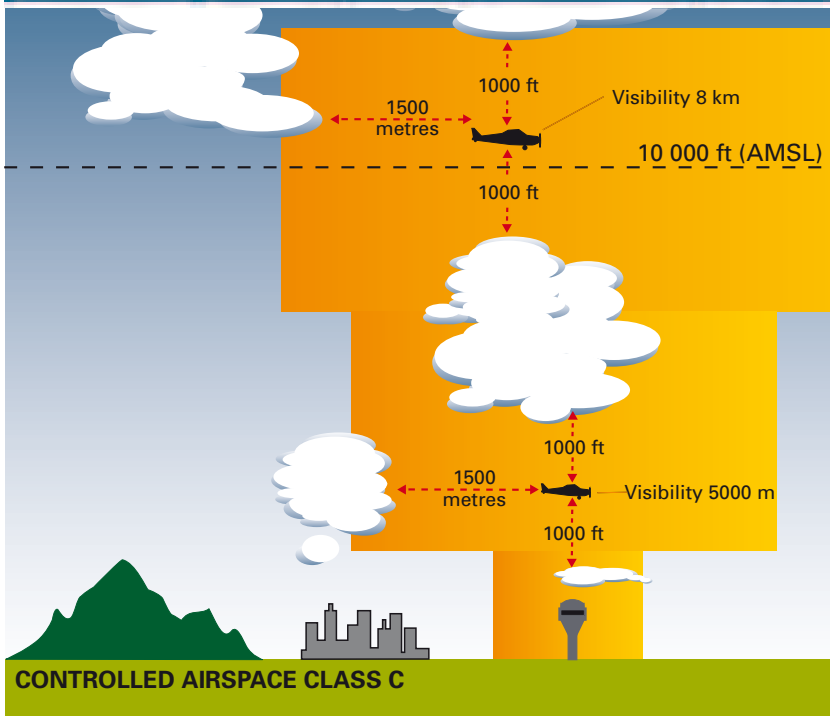
In determining visibility for the purposes of this regulation, the pilot in command shall take into account the meteorological conditions, sunglare and any other condition that may limit his or her effective vision through his or her windscreen.

VMC

VISUAL METEOROLOGICAL CONDITIONS (VMC) – TAKE-OFF, EN ROUTE, AND LANDING

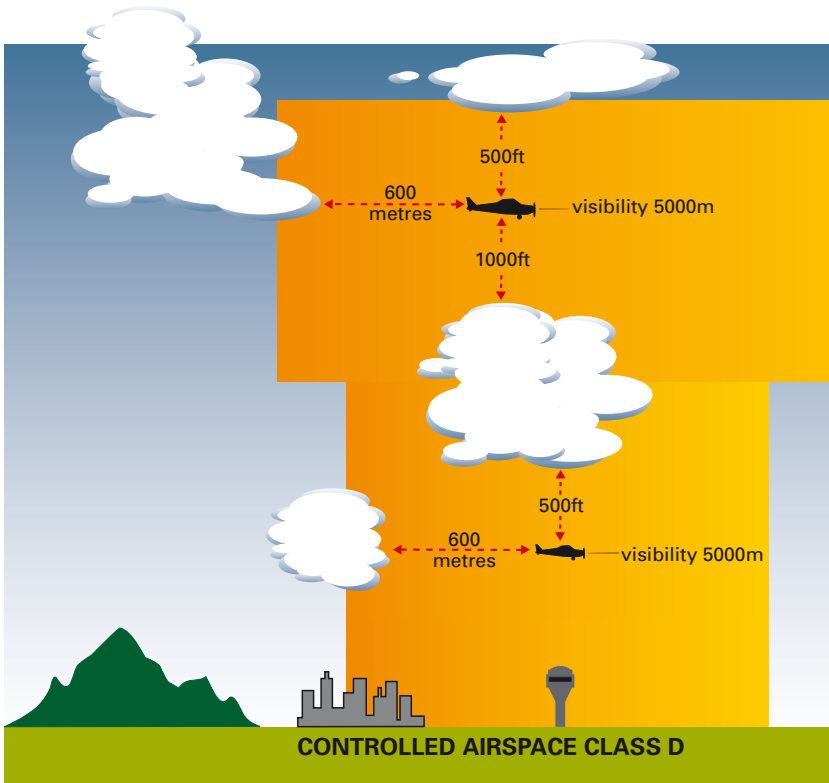
CONTROLLED AIRSPACE – CLASS C (AIP ENR 1.2)

Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes, Helicopters and Balloons	Above/above 10000 ft AMSL	0 km	1500 m - Horizontal 1000 ft - Vertical	ATC may permit operations in weather conditions that do not meet the criteria (Special VFR)
	Below 10000 ft AMSL	5000m		



CONTROLLED AIRSPACE – CLASS D (AIP ENR 1.2)

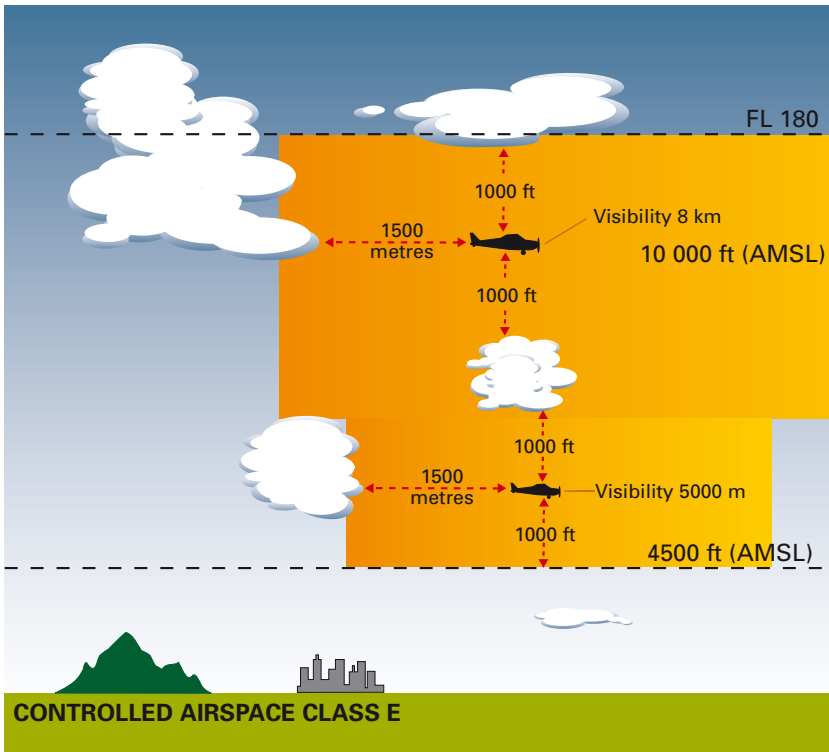
Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Airplanes Helicopters and Sailors	Within Class D	5000 m	600 m Horizontal / 1000 ft above / 500 ft below	A/C may permit operations in weather conditions that do not meet these criteria (Special VFR)



VMC

CONTROLLED AIRSPACE – CLASS E (AIP ENR 1.2)

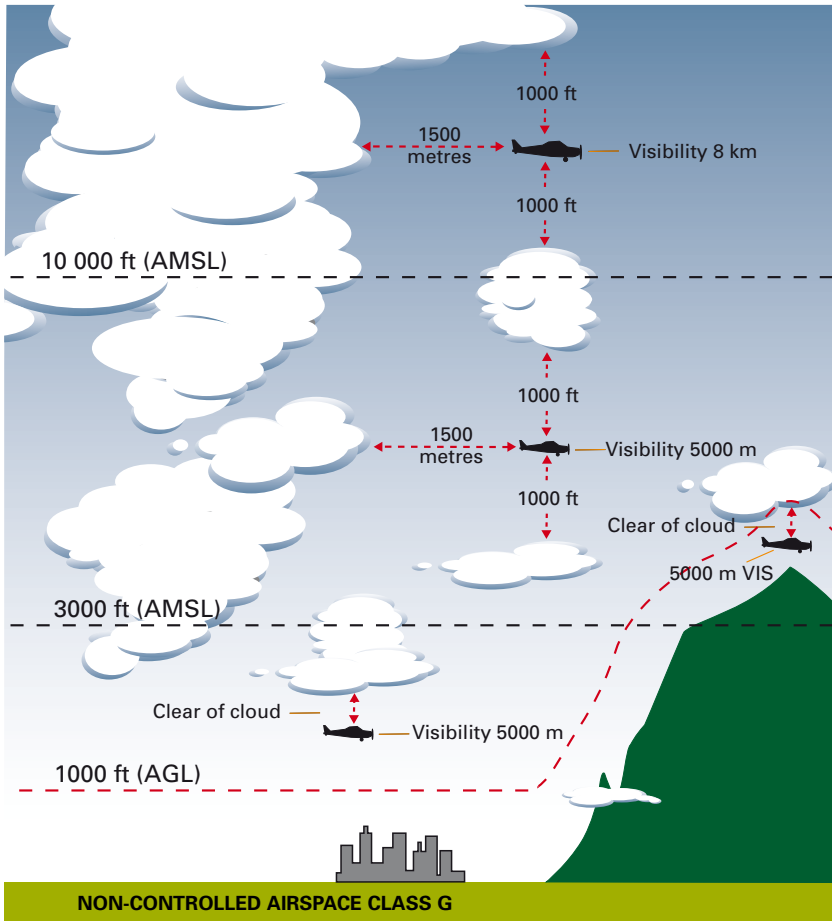
Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes, Helicopters and Balloons	At or above 10000 ft AMSL	8 km	1500 m horizontal / 1000 ft vertical	
Aeroplanes, Helicopters and Balloons	Below 10000 ft AMSL	5000 m		



NON-CONTROLLED AIRSPACE – CLASS G (AIP ENR 1.2)

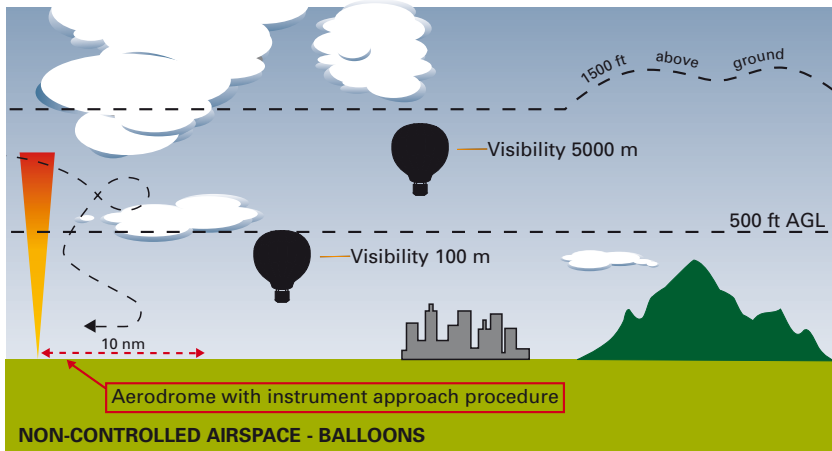
Type of Aircraft	Height	Minimum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical	Additional Conditions
Aeroplanes	At or above 10 000 ft ANGL	8 km	1500 m horizontal 1000 ft vertical	
	Below 10 000 ft ANGL	5000 m	1500 m horizontal 1000 ft vertical	
	At or Below 3000 ft ANGL, or 1000 ft ACL whichever is the higher	5000 m	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 appropriate frequency
Helicopters	All for aeroplanes except:			
	Below 700 ft above ground or water	500 m	Clear of Cloud	See note below
Additional Conditions				
<p>Note: This exception is only applicable if the helicopter is operated:</p> <ol style="list-style-type: none"> by day; 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 if less than 10 km from an aerodrome for which an instrument approach has been approved – in the following circumstances: <ol style="list-style-type: none"> the flight is conducted in accordance with the requirements relating to reporting procedures and maintaining a listening watch as set out in AIP; and maintain a separation (of at least 500 ft) vertically from any aircraft that is less than 10 km from the aerodrome and conducting an IFR operation. 				

VMC



NON-CONTROLLED AIRSPACE – BALLOONS

Type of Aircraft	Height	Maximum Flight Visibility	Minimum Distance from Cloud Horizontal/Vertical
Balloons	As for aeroplanes, and in addition:		
AGL	Below 1500 ft	5000 m	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 500 ft above ground or water and the balloon is at least 10 nm from an aerodrome for which an instrument approach is prescribed.			
Balloons	Above 500 ft AGL	100 m	Not Applicable
Additional Conditions			
Only day only, provided the balloon is at least 10 NM from an aerodrome for which an instrument approach is prescribed.			



ATS surveillance services

OPERATION OF TRANSPONDERS (AIP ENR 1.6)

Note: Background information on Transponders and TCAS is included on page 85.

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/ADS-B Information Service (RIS).

Unless otherwise advised by ATC, 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.

Pilots must ensure that transponders are activated and that altitude function is selected as:

- Primary radar coverage only exists within 50 nm of major airports and the remainder of the ATS surveillance system relies on SSR transponder and ADS-B transmitter information; and
- Relies on transponder information for its pilot alerting and collision avoidance functions.

OPERATING REQUIREMENTS FOR ADS-B TRANSMITTERS

Pilots of aircraft fitted with a serviceable ADS-B transmitter which has been confirmed suitable to receive ADS-B derived ATS surveillance services in Australia should activate the transmitter at all times during flight.

Note 1: Some ADS-B installations may share controls with the SSR transponder, meaning that independent operation of the two systems is not possible.

Note 2: If it is not possible to comply with a particular instruction the pilot must advise ATC and request alternative instructions.

Aircraft equipped with ADS-B having an aircraft identification feature shall transmit the aircraft identification as specified in the flight notification or, when no flight notification has been filed, the aircraft registration.

When operating in Australian airspace, transponder-equipped aircraft must select and use codes in accordance with the following criteria:

- Civil flights in Classes A, C and D airspace, or IFR flights in Class E airspace - the assigned temporary discrete code, otherwise 3000.
- Civil IFR flights in Class G, or VFR flights in Class E or G airspace participating in RIS - the assigned temporary discrete code.
- Civil IFR flights in Class G airspace not participating in RIS – 2000.
- Civil VFR flights in Class E or G airspace not participating in RIS – 1200.
- Civil flights not involved in special operations or SAR, operating in Class G airspace 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 immediately prior to making their RIS /clearance request.

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 practicable after landing.

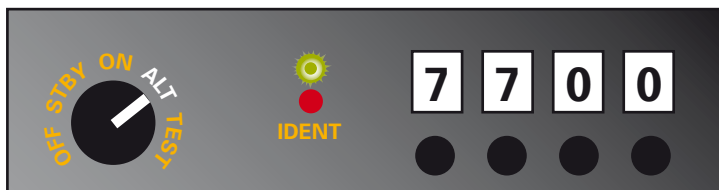
TRANSPONDER EMERGENCY CODES

The pilot of an aircraft encountering an emergency in flight, other than loss of two-way 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.

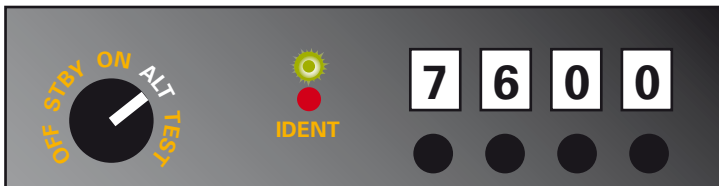
The pilot of an aircraft losing two-way communications must set the transponder to code 7600 on page 394.

ATS surveillance services

EMERGENCY



COMM FAILURE



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 on pages 390-394.

RADIO COMMUNICATIONS PROCEDURES

Pilots requesting ATS surveillance services should address their request to the ATS unit with which they are communicating.

IDENTIFICATION PROCEDURES

Before providing an ATS surveillance service there will be positive identification of the aircraft concerned. However, control services will not be provided until the aircraft is within controlled airspace.

RADAR VECTORING PROCEDURES

On receipt of 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.

ATC are not permitted to vector special VFR flights.

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 ATS surveillance system 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.

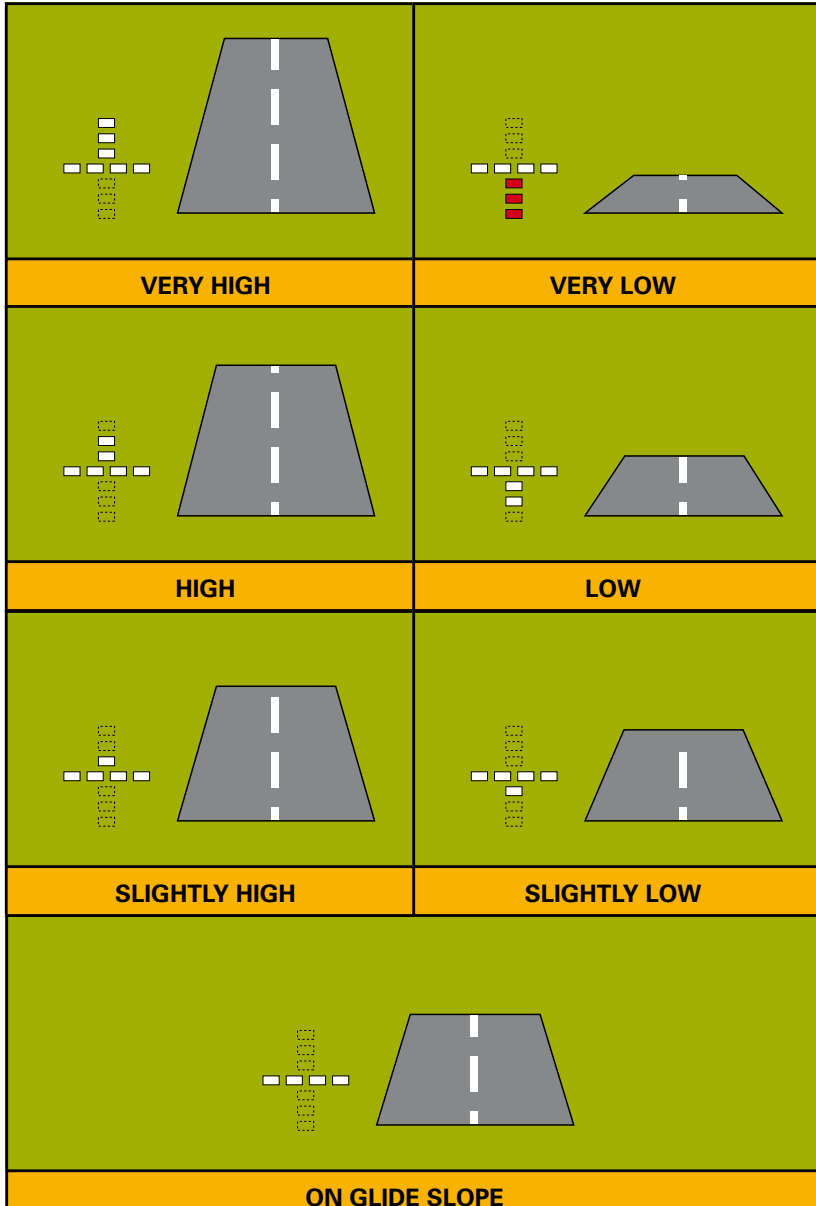
Before take-off, ATC may assign a heading for a departing aircraft to assume after take-off, followed by frequency change instructions if appropriate. Headings, other than those assigned for a standard radar (SID), will only be issued for a visual departure by day in VMC.

Arriving aircraft may be vectored to:

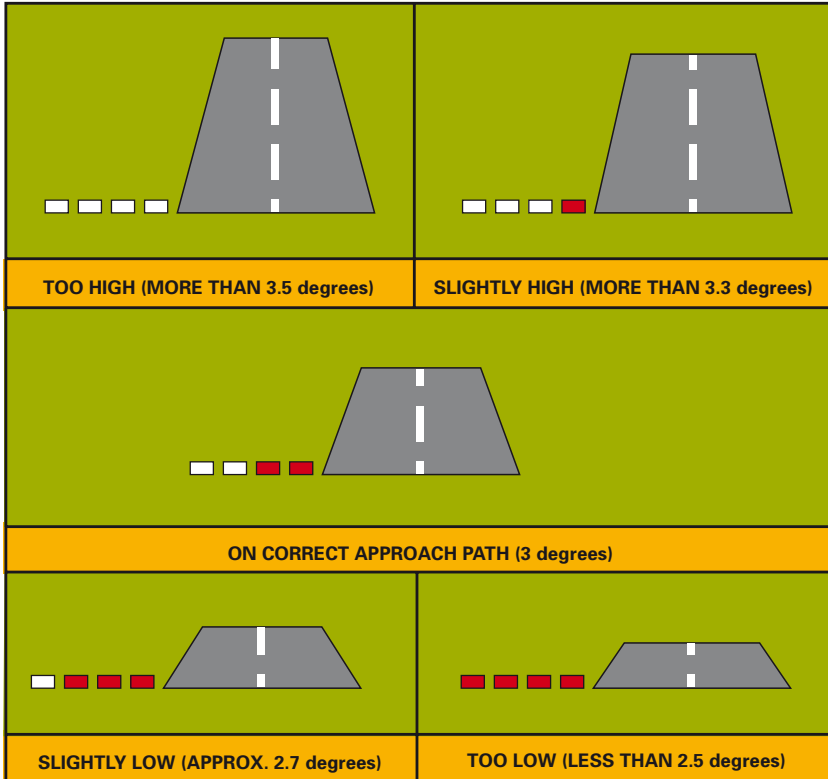
- establish for a radar or pilot-interpreted approach;
- a position from which a visual approach can be made;
- avoid areas of hazardous weather or severe turbulence; and
- expedite traffic flow or conform to noise abatement requirements.

T-VASIS

T-VASIS (AIP AD 1.1)



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-towered 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 CTAF 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 (CA/GRS) 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 Airservices or RAAF provided air traffic service.

The service is not a separation service.

The call-sign of the service is the aerodrome location followed by 'Radio'; e.g. '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, 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 conditions and operational information for the aerodrome. The information which may be advised includes:
 - runway favoured by wind or noise abatement;
 - wind direction and speed;
 - runway surface conditions;

communications – Class G

- aerodrome QNH;
- aerodrome surface temperature; and
- estimated cloud base, 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 will also be broadcast.

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 to enhance the value of information normally available about a non-towered 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 and Media Authority (ACMA). Detailed information regarding the licensing and use of equipment may be obtained by contacting the ACMA 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;
- general weather reports; and
- 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 callsign of the unit being addressed followed by the aircraft callsign e.g. '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-towered 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 e.g. 'Bathurst traffic Bathurst'. This is to emphasise the location in situations where more than one aerodrome may use the CTAF frequency.

communications – Class G

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)

The CTAF is the frequency on which pilots operating at a non-towered aerodrome should make positional radio broadcasts. If a discrete frequency is not listed use Multicom 126.7 MHz. These frequencies are not normally monitored by ATS.

To achieve the greatest degree of safety, CAR 166C requires pilots of aircraft carrying a serviceable radio which they are qualified to use, to make a broadcast whenever it is reasonably necessary to do so to avoid a collision, or the risk of a collision with another aircraft at a non-towered aerodrome. In certain circumstances carriage of radio and being qualified to use it are mandatory. Refer to the table on page 235 for report and broadcast requirements.

Pilots of higher performance aircraft, or pilots operating at busy aerodromes, are encouraged to monitor/broadcast on the CTAF earlier to allow sufficient time to gain situational awareness of the traffic.

The responsibility for collision avoidance, sequencing, and knowledge of local procedures lies solely with the pilot in command.

Aircraft overflying a non-towered aerodrome should avoid the circuit area, and the routes commonly flown by arriving and departing traffic.

Where a number of non-towered aerodromes are in close proximity, a single discrete CTAF may be allocated to those aerodromes. Where a discrete CTAF is prescribed, these frequencies are shown in ERSA and ERC Low charts. Where no specific frequency is prescribed the default CTAF is 126.7 MHz.

When a UNICOM service is provided at a non-towered aerodrome and the Unicom is the CTAF, ERSA identifies the frequency as CTAF/Unicom.

VFR OPERATIONS IN CLASS E & G AIRSPACE

SUMMARY OF REPORTS AND BROADCASTS – VFR AIRCRAFT IN CLASSES E & G AIRSPACE

Situation	FREQ to Use	Remarks
For clearance into controlled airspace	ATC	Report
Before and on completion of overwater stage (see ENR 1.1, Section 62)	ATS	Report (if requesting schedules)
* CAR 166C requires a pilot to make a broadcast whenever it is reasonably necessary to do so to avoid a collision, or the risk of a collision with another aircraft in the vicinity of the aerodrome (see Notes 1 and 2)	CTAF	Broadcast: (must include '(Location) Traffic (Aircraft Type) (Call-sign) (Position/Intentions) (Location)')
The pilot intends to depart from the aerodrome (See Notes 1 and 2)	CTAF	Broadcast - Immediately before, or during taxiing
The pilot intends to enter a runway (See Notes 1 and 2)	CTAF	Broadcast - Immediately before entering a runway
The pilot is inbound	CTAF	Broadcast 10 nm from the aerodrome, or earlier, commensurate with aeroplane performance and pilot workload, with an estimated time of arrival (ETA) for the aerodrome
The pilot is ready to join the circuit	CTAF	Broadcast - Immediately before joining the circuit
Pilot intends to make a Straight-in approach; or Base leg join	CTAF	Broadcast - on final approach at not less than 3 nm from the threshold (See Note 4) Prior to joining on base
The pilot intends to fly through the vicinity of, but not land at, a non-towered aerodrome	CTAF	Broadcast - When the aircraft enters the vicinity of the aerodrome (as defined) (See Note 3)

VFR operations

Situation (cont.)	FREQ to Use	Remarks
Instrument approach when, a. departing FAF or established on final approach segment inbound b. terminating the approach, commencing the missed approach	CTAF	Broadcast

Note 1: The general broadcast requirement annotated * in the above table is mandatory; all other broadcasts in the Table are recommended.

Note 2: Carriage of radio, and being qualified to use it, are mandatory at non-towered aerodromes depicted in ERSA as being certified, registered or military. However, CAR 166E allows, subject to compliance with specified procedures, for use of such aerodromes without servicable radio. See ENR 1.1 Para 20.2.5. and CAAP 166-1(0).

Note 3: An aircraft is in the vicinity of a non-towered aerodrome if it is in airspace other than controlled airspace, within 10 nm of the aerodrome and at a height above the aerodrome that could result in conflict with operations at the aerodrome.

Note 4: Some distances above refer to the runway threshold and others to the aerodrome reference point (ARP). Pilots should be aware that a GPS indication of 3 nm from an aerodrome may not be 3 nm to the runway threshold.

A non-towered aerodrome is an aerodrome where air traffic control is not provided. This can be either an aerodrome that is always in Class G airspace, an aerodrome with a control tower where no air traffic control service is currently provided or an aerodrome which would normally have an air traffic control service but the service is presently unavailable.

Non-towered aerodromes where the carriage of radio is required includes all certified, registered and military aerodromes as published in ERSA. CASA may designate other aerodromes on a case by case basis, as published in ERSA or by NOTAM. CAR 243 details the requirements for pilots when an aircraft is fitted with a radio to maintain a listening watch at all times.

NOTE: Pilots are reminded that non-towered aerodromes include those aerodromes with Class C or D ATC services during the times when such services are unavailable. Pilots should always consult the ERSA and latest NOTAMs for operating times of ATC services at those aerodromes.

Operations at non-towered aerodromes can present many challenges to pilots who operate into, out of, or in the vicinity of these aerodromes. These can include:

- complying with standard operating procedures;
- fitting into the circuit traffic; and
- dealing with threats and hazards that may be encountered.

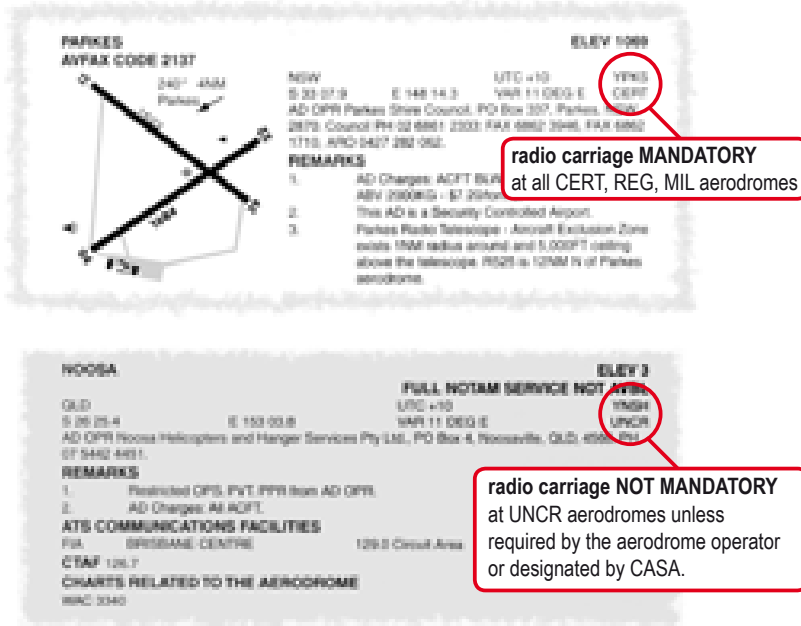
Non-towered aerodromes can have a mix of passenger-carrying aircraft, IFR/VFR, smaller general aviation aircraft, VFR agricultural aircraft, and various VFR sport and recreational aircraft at any one time.

At aerodromes where the carriage of radio is not mandatory, good airmanship dictates that pilots of radio-equipped aircraft would also monitor their radios and broadcast their intentions in accordance with the minimum required calls. Pilots should also observe local and published noise abatement procedures and curfews.

non-towered aerodromes

HOW TO DETERMINE WHERE RADIO CARRIAGE IS REQUIRED

Sample extract from ERSA aerodrome chart for Parkes and Noosa



FOR ILLUSTRATIVE PURPOSES ONLY

Figure 1: How mandatory radio carriage is depicted in ERSA

AIRMANSHIP

The use of 'standard' aerodrome traffic circuit procedures and radio broadcast procedures for all radio-equipped aircraft as described in the AIP is strongly recommended at all non-towered aerodromes.

Pilots are encouraged to turn on external lights, where fitted, when in the vicinity of a non-towered aerodrome, and until the aircraft has landed and is clear of all runways.

Transponders can be detected by aircraft equipped with Airborne Collision Avoidance System (ACAS) or Traffic Collision Avoidance System (TCAS), allowing them to 'see' other aircraft and take evasive action. Pilots of transponder-equipped aircraft should at all times ensure their transponder is switched to ON/ALT (Mode C), including when operating in the vicinity of a non-towered aerodrome. In the event of a radio failure, it is important that pilots select code 7600 and Mode C on their transponders and continue squawking.

So as not to impede commercial aviation, pilots flying recreational or sport aircraft for their own enjoyment, or pilots flying general aviation (GA) aircraft for their own leisure, should consider giving way to aircraft being used for 'commerce' provided that the inconvenience to their own operation is not great and it can be done safely. Operators of commercial aircraft should never expect a give way offer to be assumed or automatic. Any offer to give way must be explicit and its acceptance acknowledged.

circuit procedures

CIRCUIT PROCEDURES

Standard Circuit. The standard aerodrome traffic circuit facilitates the orderly flow of traffic, and is normally a left circuit pattern with all turns to the left. When arriving at an aerodrome to land, the standard circuit will normally be joined on the upwind, crosswind or downwind legs, at or before mid-downwind. Landings and take-offs should be accomplished on an operational runway most closely aligned into the wind (the active runway).

If a secondary runway is being used, pilots using a secondary runway should avoid impeding the flow of traffic that is using the active runway.

circuit procedures

Aerodromes that have right-hand circuit requirements are listed in ERSA.

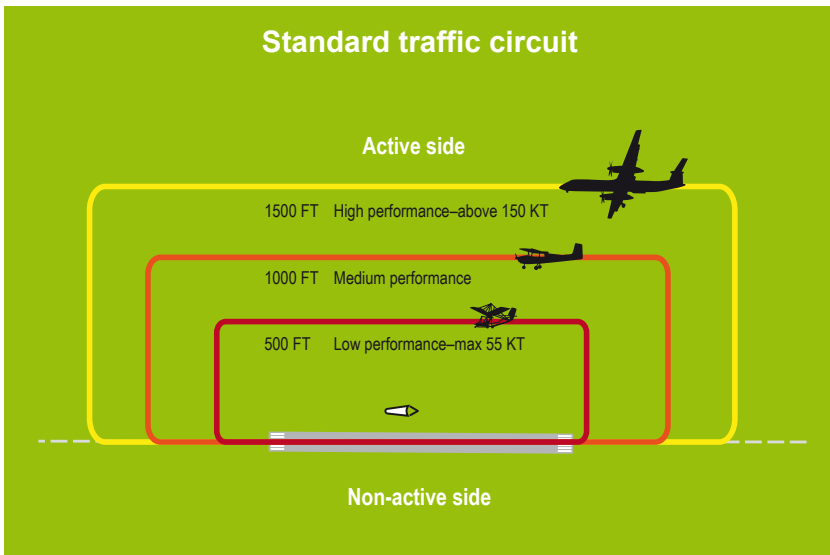
Note: At many aerodromes at night, circuit directions are different to those applicable during the day. Generally, the differences are because of terrain or obstructions or noise abatement procedures.

Maximum speed. Aircraft should be flown in the circuit at an indicated airspeed (IAS) not above 200 kt.

Circuit heights.

Type of aircraft	Standard circuit speed range	Standard circuit height
High performance (includes jets and many turboprops)	Above approximately 150 kt	1500 ft above aerodrome elevation
Medium performance (includes most piston engine aircraft)	Between approximately 55 and 150 kt	1000 ft above aerodrome elevation
Low performance	Approximately 55 kt maximum	500 ft above aerodrome elevation

Table 1: Standard circuit heights depend on aircraft performance



During initial climbout, the turn onto crosswind should be made appropriate to the performance of the aircraft, but in any case not less than 500 ft above terrain so as to be at circuit height when turning onto downwind.

Pilots may vary the size of the circuit depending on:

- the performance of the aircraft;
- safety reasons; or
- in accordance with the AFM/Pilot Operating Handbook (POH) requirements or company SOPs.

Departing the circuit area. When departing from the aerodrome circuit area, aircraft should depart by extending one of the standard circuit legs. However, an aircraft should not execute a turn opposite to the circuit direction unless the aircraft is well outside the circuit area and no traffic conflict exists. This will normally be at least 3 nm from the departure end of the runway. The distance may be less for aircraft with high climb performance. The distance should be based on pilots being aware of traffic and the ability of the aircraft to climb above and clear of the circuit area.

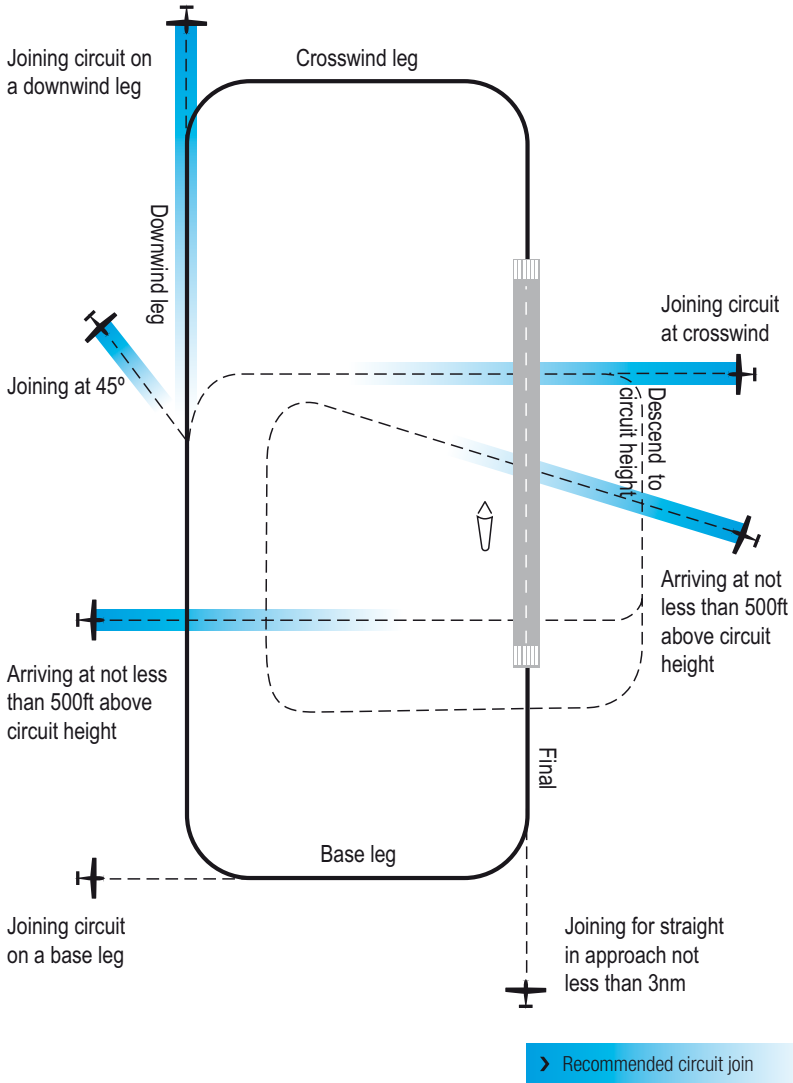
Note: Pilots of departing aircraft should be aware of traffic intending to join the circuit by the recommended overfly procedure as they can be 2000 ft or higher above aerodrome elevation.

Final approach. The turn onto final approach should be completed by a distance and height that is common to the operations at the particular aerodrome and commensurate with the speed flown in the circuit for the aircraft type. In any case, the turn onto final should be completed by not less than 500 ft above aerodrome elevation. This should allow sufficient time for pilots to ensure the runway is clear for landing. It will also allow for the majority of aircraft to be stabilised for the approach and landing.

arrival and departures

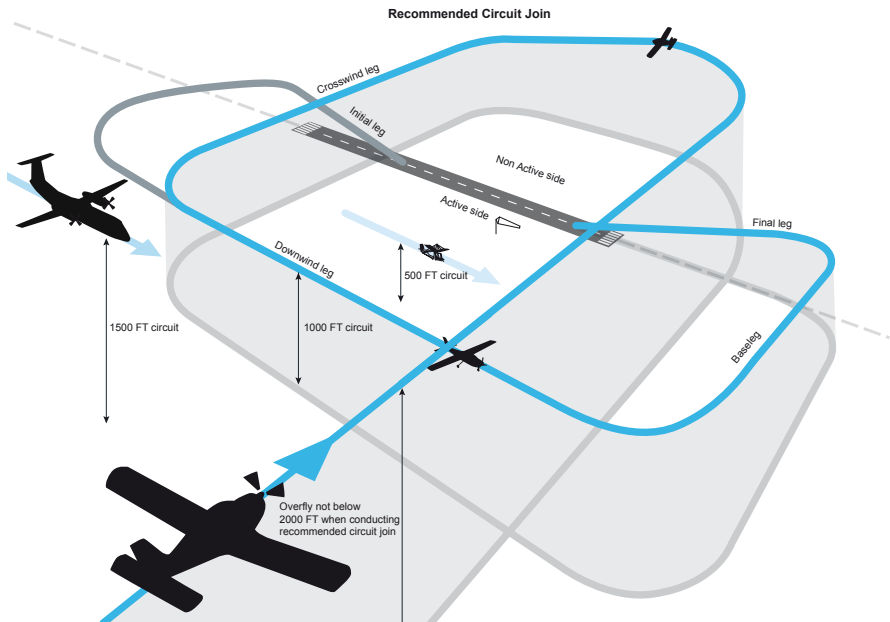
ARRIVAL AND DEPARTURE PROCEDURES

Aerodrome traffic circuit



It is expected that pilots departing and arriving at non-towered aerodromes where the carriage of radio is mandatory will monitor their radios and broadcast their intentions. Pilots should also make additional broadcasts when considered necessary to minimise any risk of collision.

Where a pilot is unfamiliar with the aerodrome layout, or when its serviceability, wind direction, wind speed, or circuit direction cannot be ascertained prior to arrival, the overfly procedure should be used. The pilot should overfly or circle the aerodrome at least 500 ft above the circuit altitude, usually 2000 ft or more above the aerodrome elevation. When the circuit direction has been determined, the pilot should position the aircraft to a point well clear (normally the non-active side of the circuit) before descending to the circuit altitude that equates to the aircraft's performance. Pilots should not descend into the active side of the traffic circuit from directly above the aerodrome.



arrival and departures

For low performance ultralight aircraft and rotorcraft with a maximum speed of approximately 55 kt it is recommended that the aircraft overfly midfield at 500 ft above aerodrome elevation. This will minimise the risk of conflict with higher or faster traffic.

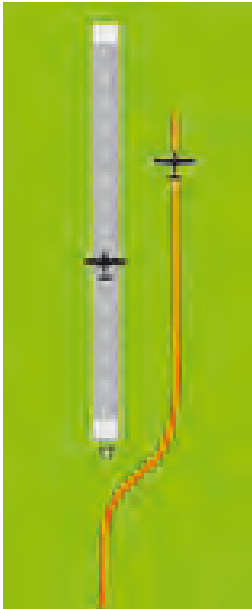
When arriving and intending to join the circuit from overhead, the aircraft should descend on the non-active side of the circuit and be established at its circuit altitude as it crosses the runway centreline on crosswind, between midfield and the departure end of the runway.

When arriving on the live side, the recommended method is to arrive at the circuit altitude entering midfield at approximately 45 degrees to the downwind leg while giving way to the aircraft already established in the circuit.

On downwind, the applicable circuit altitude should be maintained until commencement of the base leg turn. The base leg position is normally when the aircraft is approximately 45 degrees from the reciprocal of the final approach path, measured from the runway threshold. Along the base leg, continue to lookout and maintain traffic separation.

When on the final leg, confirm that the runway is clear for the landing.

Go arounds. Suggested go around manoeuvre



A pilot who elects to abort a landing should manoeuvre to keep other traffic in sight. Maintain a safe distance from all aircraft and rejoin the circuit when it is safe to do so.

Straight-in approaches. Straight-in approaches, whilst not prohibited, are not a recommended standard procedure. Pilots who choose to adopt a straight-in approach should only do so when it does not disrupt or conflict with the flow of circuit traffic. The pilot, when conducting a straight-in approach, must give way to any other aircraft established and flying in the circuit pattern at the aerodrome.

Before conducting a straight-in approach, pilots must determine the wind direction and speed and the runway in use at the aerodrome. There are several ways to determine the wind direction, speed and runway in use:

- Automatic Weather Station (AWS), Aerodrome Weather Information Service (AWIS), Automatic Aerodrome Information Service (AAIS), CA/GRS or UNICOM;
- radio contact with a ground-based radio communication service, company agent, approved observer [CAR 120], or aircraft currently operating at the aerodrome; or
- visual indications if the information cannot be determined by the above means.

When conducting a straight-in approach, the aircraft must be established on final at not less than 3 nm from the landing runway's threshold. Pilots should include their intention to conduct a straight-in approach with their inbound broadcast. A further broadcast of intentions when not less than 3 nm from the runway threshold should also be made.

Pilots conducting a straight-in approach should observe the following:

- Pilots should not commence a straight-in approach to a runway when the reciprocal runway is being used by aircraft already established in the circuit;
- Within 3 nm minor corrections such as normal speed and track adjustments that are necessary to maintain a stable approach are all that should be required on final approach. Pilots conforming to the circuit pattern – particularly when on base – should optimise their visual scan for traffic along the final approach path;

arrival and departures

- The aircraft's transponder should be squawking, and its external lights (where fitted) should be illuminated, when on final approach. They should remain on until the aircraft has landed and clear of all runways; and
- An aircraft established on the base or final leg for any runway has priority over an aircraft carrying out a straight-in approach.

Joining on base leg. Joining on base leg, whilst not prohibited, is not a recommended standard procedure, i.e. CASA recommends pilots join the circuit on either the crosswind or downwind leg. However, pilots who choose to join on base leg should only do so if they:

- have determined the wind direction and speed;
- have determined the runway in use;
- give way to other circuit traffic and ensure the aircraft can safely (no traffic conflict likely) join the base leg applicable to the circuit direction in use at the standard height; and
- broadcast their intentions.

Note: Base leg joins must be conducted in accordance with the circuit directions as published in the ERSA.

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.

TRANSITING FLIGHTS

When transiting in the vicinity of a non-towered aerodrome, pilots should monitor the designated CTAF. Pilots should respond to other traffic broadcasts and advise their position and intention so as to avoid traffic conflict.

Pilots should avoid flying over the aerodrome at an altitude that could conflict with operations in the vicinity of the aerodrome.

RADIO UNSERVICEABILITY

At non-towered aerodromes where the carriage of radio is required, continuation of a 'no radio' arrival or departure is permitted in certain circumstances.

If a radio failure occurs either en-route to or in the circuit of the aerodrome, the pilot may continue to land at that aerodrome provided:

- where equipped—the aircraft's landing and anti-collision lights, and its transponder, are turned on; and
- if en-route—the pilot uses the overfly joining procedure.

A pilot may depart the aerodrome with an unserviceable aircraft radio and fly to another aerodrome for repairs, provided that the aircraft, where equipped, displays its landing and anti-collision lights, and has its transponder turned on.

A pilot should avoid planning to arrive at or depart from an aerodrome for radio repairs during the known hours of scheduled RPT operations. For aerodromes where there is a UNICOM or CA/GRS, pilots should by non-radio means where possible make contact and advise their intentions before conducting operations.

NON RADIO-QUALIFIED PILOT OR NON RADIO-EQUIPPED AIRCRAFT

In exceptional circumstances, the regulations make provision for a pilot who is not qualified to use an aircraft radio, or where the aircraft is not equipped with a radio, to operate in the vicinity of a non-towered certified, registered, military or designated aerodrome.

The aircraft must be operated:

- in visual meteorological conditions (VMC) by day; and
- to arrive or depart in the company of another aircraft that is radio-equipped and flown by a radio-qualified pilot which will allow the latter to make radio calls on behalf of both aircraft. The radio-equipped aircraft should be manoeuvred to keep the no-radio aircraft at a safe distance [CAR 163] and in sight at all times in order to accurately report its position.

night circuits

NIGHT CIRCUITS

For both IFR and night VFR (NVFR) flights, night circuits are generally more demanding than daytime circuit operations and require increased vigilance. Night circuits for training shall not be conducted at a height less than 1000 ft above aerodrome elevation.

- refer to CAO 29.2: Air Services Operations - night flying training
- NVFR pilots refer to CAAP 5.13-2(0) Night Visual Flight Rating

traffic mix

THE TRAFFIC MIX

At non-towered aerodromes, there may be regular public transport and passenger charter, gliders, parachutists, helicopters, gyroplanes, ultralights, balloons, general aviation aircraft, and agricultural aircraft operations.

Regular public transport aircraft operations. At certain non-towered aerodromes, there can be regular public transport operations that may include large turboprop or jet aircraft. These aircraft have different operating parameters/criteria to those of many general aviation aircraft. They operate under the instrument flight rules and will be operating to their particular company standard operating procedures. It is often more difficult for pilots of large aircraft to see smaller aircraft because of their high nose attitude at slower speeds. This is especially an issue when they are making an approach. It is essential that even though the smaller aircraft pilot may have seen the large aircraft, they should continue to make broadcasts and respond to broadcasts and not just assume that the larger aircraft is aware of their position.

General aviation pilots should be aware that, in certain circumstances, passenger transport aircraft may not be able to use the active runway. Passenger transport aircraft are required to operate under more stringent regulations, in particular aircraft performance regulations. For example, where an aircraft departs downwind and the take-off distance is increased, it could be because of a performance limitation or increased safety margin whereby terrain clearance is taken into consideration during the initial climb out after take-off. Similarly, landing into wind may not always be possible when various performance limitations are taken into account.

Glider operations. Glider operations can be conducted from normal runways associated with an aerodrome or from prepared sites within the confines of an aerodrome. Gliders can be launched using a variety of methods including aero-tow, vehicle tow or winch launch. In all cases, vehicles and people might be operating on or in the vicinity of the runways in use. Winch operations can occur at all aerodromes and pilots should check and review ERSA and the latest NOTAMs for specific information.

Where gliders are operating from the active runway, they may not be able to give way to other aircraft when landing.

A double white cross displayed adjacent to the wind direction indicator at aerodromes indicates gliding operations are in progress. Aeronautical charts also use the double cross to indicate glider operations. Pilots should consult the latest NOTAMs for any additional information.

Parachuting operations. In Australia, in certain circumstances, parachuting operations are permitted through cloud and so can take place on overcast days. Pilots flying parachuting aircraft will broadcast on all of the associated frequencies. For example, if the jump commences in Class G airspace and will land at a non-towered aerodrome, advisory calls will be made on both the Class G airspace frequency and the frequency in use for the aerodrome.

Where parachute operations occur, parachute symbols are sometimes depicted on aeronautical charts. ERSA also details the aerodromes where parachute operations are conducted. Pilots should consult the latest NOTAMs for any additional information.

Parachutists in free fall are almost impossible to see, so avoid overflying an aerodrome with an active drop zone. Communication with the parachuting aircraft is essential to avoid flying into a drop zone area.

Helicopters and gyroplanes operations. Helicopters can arrive and depart aerodromes from various directions. Pilots of helicopters can choose to operate in the circuit and fly a circuit similar to a fixed wing aircraft but may be at a height not below 500 ft above the aerodrome elevation and closer to the runway. Check ERSA for any noise abatement procedures.

Helicopters can also operate contra-direction circuits on the opposite side of the runway at 500ft above aerodrome elevation. Check ERSA for circuit direction requirements. Pilots of helicopters approaching to land at a marked helipad or suitable clear area should avoid the flow of fixed wing aircraft.

traffic mix

Other pilots should be aware that, for some helicopter operations, the only suitable landing area is the runway.

Helicopters and gyroplanes can fly slower than fixed wing aircraft and approach at steeper angles. Both helicopters and gyroplanes can be expected to practise power-off landings (autorotations) which involve a very steep approach and high rates of descent.

As helicopter and gyroplane operations can be varied and flexible, pilots need to ensure they monitor and advise other aircraft of their position and intentions by radio where applicable.

Ultralight operations. The term 'ultralight' applies to many small recreational aircraft that include trikes, powered parachutes, and other small fixed wing aircraft that cruise at maximum speeds of up to about 55 kt. Pilots of these aircraft should conduct their standard circuit at 500 ft above aerodrome elevation.

Entry to the circuit should be at 500 ft above aerodrome elevation as it is normally impractical to overfly the field above all other circuit traffic. Joining the circuit at 500 ft above aerodrome elevation will provide separation from higher and faster traffic.

Ultralight aircraft pilots who choose to use the overfly join procedure above the circuit altitude should be aware that:

- faster larger aircraft may not be able to see you easily;
- faster larger aircraft create significant wake turbulence;
- faster larger aircraft will not be able to slow to the speeds of an ultralight aircraft and follow; and
- faster larger aircraft—prior to arriving in the circuit and when below 10 000 ft—can be at speeds up to 250 kt. Therefore, although aircraft should be at 200 kt maximum in the circuit, an aircraft reporting at 20 nm from the aerodrome could be in the vicinity of the circuit within 5 minutes.

Ultralight pilots should consult AIP, ERSA, relevant charts, and the latest NOTAMs for the most up-to-date information and procedures.

Note 1: Helicopters may also be operating in the circuit at 500ft above aerodrome elevation.

Fixed wing and rotary wing agricultural aircraft operations. Pilots should be aware there are non-towered aerodromes from where 'aerial application' operations are conducted.

Agricultural aircraft are permitted to conduct aerial application operations which involve low level manoeuvring after take-off and prior to landing. These low level manoeuvres are not required to conform to the standard traffic circuit. However, pilots of other aircraft can expect aerial application (agricultural) aircraft to:

- maintain a listening watch and broadcast their intentions on the CTAF; and
- give priority to other traffic.

radio broadcasts

RADIO BROADCASTS

CAR 166C requires a pilot to make a broadcast whenever it is reasonably necessary to do so to avoid a collision, or the risk of a collision, with another aircraft. A broadcast must include:

- the name of the aerodrome;
- the aircraft's type and call-sign; and
- the position of the aircraft and the pilot's intentions.

Effective radio communication involves using standard aviation phraseology and pilots are expected to maintain a listening watch and respond appropriately to applicable transmissions.

Broadcast requirements. When operating in the vicinity of a non-towered aerodrome, it is expected that all pilots would make the following minimum positional broadcasts from aircraft that carry a VHF airband radio:

radio broadcasts

Item	Circumstance (non-towered aerodromes)	Pilot radio broadcasts
1	The pilot intends to take-off	Immediately before, or during, taxiing
2	The pilot intends to enter a runway	Immediately before entering a runway
3	The pilot is inbound	10 nm or earlier from the aerodrome, commensurate with aircraft performance and pilot workload, with an estimates time of arrival (ETA) for the aerodrome
4	The pilot is ready to join the circuit	Immediately before joining the circuit
5	<ul style="list-style-type: none"> • The pilot intends to carry out a straight-in approach; or • join on base leg 	On final approach at not less than 3 nm from the threshold Prior to joining on base
6	The pilot intends to fly through the vicinity of, but not land at, a non-towered aerodrome	When the aircraft enters the vicinity of the aerodrome (ad defined)

Table 2: Circumstances/Broadcasts in the vicinity of non-towered aerodromes

Note 1: Some distances above refer to the runway threshold and others to the aerodrome reference point (ARP). Pilots should be aware that a global positioning system (GPS) indication of 3 nm from an aerodrome may not be 3 nm to the runway threshold.

In addition:

- Listening to other pilot broadcasts increases situational awareness and assists the sighting and avoidance of other aircraft;
- Where it is determined there is a potential for traffic conflict, radio broadcasts should be made as necessary to avoid the risk of a collision or an airprox event. A pilot should not be hesitant to call and clarify the other aircraft's position and intentions if there is any uncertainty; and
- It is essential to maintain a diligent lookout because other traffic may not be able to communicate on the radio for various reasons—they might be tuned to the wrong frequency, selected the wrong radio, have a microphone failure, or have the volume turned down.

The standard broadcast format for low and medium performance aircraft is as per the following example:

- | | |
|---------------------------|--|
| • (Location) Traffic | Parkes Traffic |
| • (Aircraft Type) | Cessna 172 |
| • (Call-sign) | Zulu Foxtrot Romeo |
| • (Position / Intentions) | One-zero miles north inbound, on descent through four-thousand two-hundred, estimating the circuit at three-six. |
| • (Location) | Parkes |

Pilots should be aware that a variety of radio call-signs are in use. For example:

- Passenger transport: 'Q-link 2719'
- Recreational: 'Jabiru 5234'
- Military: 'Stallion 22'
- Law enforcement: 'Polair 5'
- Foreign-registered: 'November 1 5 Yankey'
- VH-ZFR: 'Zulu Foxtrot Romeo'

Radio use. Calls should be made as clearly and concisely as possible using the standard phraseology. Speak at a normal pace, as rapid speech can make transmissions difficult to understand by other pilots. Be careful not to 'clip' your transmission when stating your location as confusion can arise at aerodromes that are close together sharing the same CTAF.

Ideally pilots should make circuit broadcasts prior to making a turn because banking aircraft are easier to see.

A simple strategy to remember when flying in the circuit is 'Look', 'Talk' and 'Turn'.

Broadcast calls should be made briefly and clearly. Think about what to say before transmitting. Positional and other broadcasts necessary to minimise traffic conflict should be made using standard phraseology—for example: joining circuit, base, and vacating the runway. Effective communication and increased traffic awareness will help prevent a collision or an approx event.

radio broadcasts

Avoid the use of local terminology in position reports, e.g. use 'Bundaberg' instead of 'Bundy'.

When an AFRU is in operation, be careful not to momentarily break your transmission as the AFRU will automatically over-transmit your subsequent broadcast.

hazards

HAZARDS

Aircraft size and performance. General aviation pilots should be aware that aerodromes with runways of 1400 m or more in length may have operations using jet or large turboprop aircraft. For aerodromes that have high performance traffic in the circuit, the minimum overfly height should be no lower than 2000 ft above aerodrome elevation. Runway lengths are published in ERSA.

Downwind take-offs and landings. Take-off or landing downwind is not recommended as a standard procedure. Pilots wherever possible should use the runway most closely aligned into wind (the active runway). Pilots must operate within the limitations prescribed in the Aircraft Flight Manual.

Pilots should consider the following hazards if planning to take-off or land downwind:

- **Wind strength** — just above ground level may be significantly stronger than as indicated by the windsock;
- **For a take-off** with wind gradient or windshear—higher groundspeed at lift off; a longer take-off distance required; a shallower angle of climb; degraded obstacle clearance; and in the event of an emergency, landing straight ahead touchdown will be at a higher groundspeed; and
- **For landing** with wind gradient or windshear—higher groundspeed at touchdown; a longer landing distance required.

Wake turbulence and windshear. Wake turbulence is produced by all aircraft and, if encountered, can be extremely hazardous. Smaller aircraft should be aware that large aircraft produce strong/severe wake turbulence, with large jet aircraft producing extreme wake turbulence.

In calm conditions, wake turbulence may not dissipate for several minutes. Aircraft should position within the traffic circuit with sufficient spacing to avoid encountering wake turbulence.

On take-off, smaller aircraft will normally require increased separation time before departing behind a larger aircraft.

Helicopters of all sizes, in forward flight, produce vortices similar to those produced by fixed wing aircraft. A hovering or slow air-taxing helicopter creates a rotor downwash which can be a hazard to all aircraft in its vicinity. Pilots of small aircraft should avoid operating close to helicopters. Helicopter pilots should operate at a safe distance from parked or taxiing aircraft.

Windshear can occur anywhere in the circuit but is most dangerous when close to terrain. For example, dust devils ('willy willies') are visible windshear and can be common at outback aerodromes. Pilots encountering a windshear event should immediately consider a maximum performance climb to fly out of the situation.

TAKE-OFF AND LANDING SEPARATION

Take-off. When waiting to take off behind another aircraft, pilots should be aware of the separation standards published in AIP, i.e:

- Wait until the departing aircraft has crossed the upwind end of the runway or has commenced a turn;
- If the runway is longer than 1800 m, then wait until the departing aircraft has become airborne and is at least 1800 m ahead; or
- If both aircraft have a maximum take-off weight (MTOW) less than 2000 kg, wait until the departing aircraft has become airborne and is at least 600 m ahead.

Landing. For a landing aircraft, the approach should not be continued beyond the runway threshold until:

- a preceding departing aircraft 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 a missed approach; or
- a previous landing aircraft has vacated the runway.

hazards

Pilots should be vigilant when using another runway that is not the active runway and ensure that they do not create a hazard to aircraft that are using the active runway. Conversely, pilots using the active runway should ensure that aircraft operating on the non-active runway have held short or crossed the active runway before commencing a take-off or continuing to land.

COLLISION AVOIDANCE (MAINTAINING COLLISION AVOIDANCE IN THE CIRCUIT)

The most hazardous area is within 5 nm of an aerodrome and up to 3000 ft above aerodrome elevation. It is important for all pilots to maintain a good situational awareness. Inbound pilots should have the cockpit and their mind clear of distractions. Passengers should be briefed not to distract the pilot. However, if a passenger becomes aware of imminent danger, then he/she should inform the pilot.

Pilots should be familiar with the aerodrome layout and have radio frequencies set so their attention can be directed outside the aircraft. Pilots should be alert, looking for other traffic, maintaining a listening watch and responding appropriately to applicable transmissions.

Pilots should broadcast their intentions by making the standard positional broadcasts and other broadcasts as necessary in the interest of safety.

Most collisions occur on downwind or on final approach. There are many distractions that include configuring the aircraft, completing checklists, setting equipment and communicating, however, this is precisely the time to be looking outside. Early completion of checklists will help to avoid distractions. Good height and speed control to maintain separation (including use of flaps) is essential. If a pilot determines that adequate separation cannot be maintained during any part of the approach, a go around should be initiated sooner rather than later.

Pilots should have a sound understanding of the rules of giving way, approaching head on, and overtaking in the circuit.

Increased collision risks exist for both IFR and VFR traffic when instrument approaches are conducted at a non-towered aerodrome where there is cloud, or visibility is reduced due to haze or smoke but VFR conditions exist below the low visibility layer.

When these situations exist, it is possible for a pilot flying an instrument approach in cloud to become visual and suddenly encounter a VFR aircraft

in the circuit. Diligent radio broadcasts and continuous visual scanning are essential in avoiding an airprox situation.

It would be expected that VFR pilots, on hearing an IFR pilot broadcast his/her intention to make an instrument approach, would establish contact to provide situational awareness to the IFR pilot. Information which would be useful to the IFR pilot includes aircraft type, position in the circuit or vicinity, with intentions.

Pilots operating under the VFR must remain clear of cloud and have in-flight visibility in accordance with VMC criteria.

Practice instrument approaches. Pilots who wish to conduct practice instrument approaches in VMC should be particularly alert for other aircraft in the circuit so as to avoid impeding the flow of traffic. IFR pilots should give position reports in plain English to be easily understood by VFR pilots who generally have no knowledge of IFR approach points or procedures, e.g. positions should include altitudes and distance and direction from the aerodrome. Providing position reports to VFR pilots that contain outbound/inbound legs of the approach or area navigation (RNAV) fixes will generally be of little assistance to establish traffic separation.

Note 1: At all times, in a training situation, one of the pilots in the aircraft should have an unrestricted view outside. Therefore instrument simulation should only be by a 'hood' or 'foggles', i.e. not by covering any part of the windscreen.

Note 2: For an aeroplane with a single pilot conducting practice instrument approaches, it would be unacceptable to conduct an approach without a safety pilot if the pilot intended to solely refer to the aircraft instruments i.e. under a 'hood' or with 'foggles'.

sarwatch and sartime

SARWATCH

CANCELLATION OF SARWATCH OTHER THAN SARTIME

Pilots wishing to cancel SARWATCH may do so by reporting to ATS.

When cancelling SARWATCH, pilots must include:

- the aircraft radio call-sign;
- 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'.

CANCELLATION OF 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 read back of the place of arrival, if appropriate, and the words 'SARTIME CANCELLED'.

The preferred method to cancel SARTIME is via telephone to CENSAR on 1800 814 931. When telephone facilities are not available you may use ATS frequencies.

For SARTIME flights, pilots of single VHF radio-equipped aircraft must cancel SARTIME before changing to CTAF, or after landing.

SARTIME FOR DEPARTURE

When submitting flight notification, a pilot may nominate a SARTIME for departure for the initial departure aerodrome. For intermediate departure, it may be nominated by telephone after landing, or as part of the arrival report associated with that aerodrome. Only one SARTIME may be current at any time.

The nomination of a SARTIME for departure does not absolve the pilot from complying with the requirements for the carriage of serviceable radio equipment, nor from making the prescribed reports.

Pilots of other than IFR RPT flights, wishing to extend the SARWATCH for the period of landing and subsequent take-off, may nominate a SARTIME for departure when arriving at an aerodrome where radio or ground communication cannot reasonably be assured. SAR alerting action will be initiated if a taxiing or departure report is not received by the nominated SARTIME.

An IFR departure report is not sufficient to cancel a SARTIME for Departure. Pilots who have nominated a SARTIME for Departure must use the phrase 'CANCEL SARTIME' with the departure report.

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' (e.g. aerial refuelling, en route formation flights). 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 AIP aeronautical 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 the controlling authority (see ERSA PRD) in the same manner that clearance to enter controlled airspace is requested. Clearances be withheld when activities hazardous to the aircraft are taking place, or when these 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.

selection of levels

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.

FLIGHT WITHIN DANGER AREAS

Approval for flight within a danger area outside controlled airspace is not required. However, it is the responsibility of the pilot in command to be aware of the dangerous activity and take appropriate precautions.

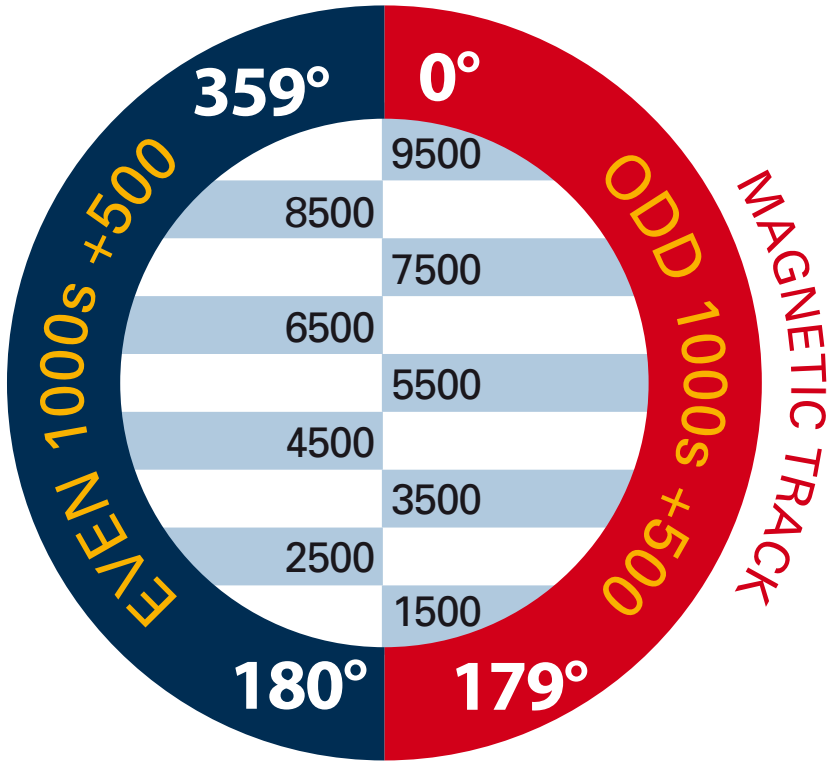
LANES OF ENTRY

Lanes of entry are established to permit passage to and from specified Class D 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.

CRUISING LEVELS



CRUISING LEVEL TO BE APPROPRIATE TO MAGNETIC TRACK (CAR173)

- When a VFR flight is conducted at a height of 5000 ft 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 VFR flight is conducted at a height less than 5000 ft 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.
- Unless CASA otherwise approves, a VFR flight shall not be conducted at a height above FL200.

navigation position fixing

VFR BELOW 5000FT IN CLASS G AIRSPACE

Aircraft may maintain a listening watch on other than the area VHF for operations below 5000 ft in Class G airspace such as parachuting, gliding, agricultural operations and circuit training or local flights at non-controlled aerodromes.

Gliders are encouraged, but not required, to monitor the Area VHF when operating above 5000 ft in Classes E and G airspace.

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 in Class G airspace may, due to stress of weather, operate above 5000 ft 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 5000 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 5000 ft within the confines of a published Danger Area which is promulgated specifically for no-radio operations, or identified as permitting no-radio operations. 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, 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.

For operations at non-towered aerodromes refer to the non-towered aerodrome section of this publication.

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 2000 ft 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.
- 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 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 in AIP ENR 1.1.

navigation position fixing

- 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.

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 $\pm 9^\circ$ 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)

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 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.

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 Localiser, 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:

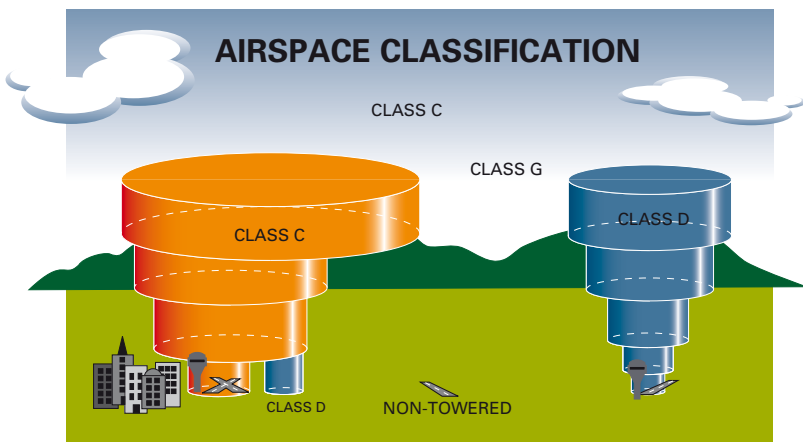
- a NDB; or
- a VOR station; or
- a DME; or
- is one determined by GPS meeting the equipment and pilot requirements; or
- is one determined by the intersection of two or more position lines which intersect with angles of not less than 45 degrees and which are obtained from NDBs, VORs, Localizers or DMEs 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 30 nm from each of the NDBs.

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 including airspace designated as Class D or Class E.
Class D	VFR and VFR flights are permitted, and all flights are subject to ATIS clearance. VFR flights are separated from other VFR flights. VFR 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 (landing) need not be applied between VFR and VFR aircraft.
Class E	VFR and VFR flights are permitted. VFR flights are subject to ATIS clearance. VFR flights are separated from other VFR flights. VFR flights receive traffic information in respect of VFR flights as far as practicable.
Class G	VFR and VFR flights are permitted, and receive flight information service if requested. Not controlled airspace.

AIR TRAFFIC CLEARANCES AND INSTRUCTIONS

Except in an emergency, a clearance is required for all flights in Classes A, C, and D airspace, Restricted areas and for IFR flights in Class E airspace.

Clearance is not required for VFR flights in Class E airspace.

Special requirements apply to Parachute jumping Operations in Class E Airspace.

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 500 ft above the lower limit of the CTA steps.

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.

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;
- frequency requirements; and
- 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

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 advise ATC when he/she is unable to maintain, or has lost, sight of the other aircraft;

separation in controlled airspace

- where an aircraft has been instructed to maintain separation from, or pass behind, 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; and
- 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

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 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; and
- 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— ± 5 degrees or more from the specified bearing;
- where the track guidance is provided by DME— ± 2 nm or more from the required arc;
- where the track guidance is provided by an RNAV system—an indicated crosstrack deviation of ± 2 nm or more;
- and when navigating by visual reference to the ground or water—more than 1 nm from the cleared track.

The values given above must not be interpreted as defining a sector within which the pilot is permitted to navigate.

DEVIATIONS FROM TRACK

In controlled airspace, any deviation 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 deviations from track without clearance are permitted.

DEVIATIONS 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 deviation is necessary, a PAN call specifying the details of the deviation must be broadcast on the appropriate frequencies.

'PAN PAN, PAN PAN, PAN PAN, ZULU FOXTROT ROMEO, 15 NAUTICAL MILES SOUTH OF NORMANTON, 8500, IS DESCENDING IMMEDIATELY TO 500 FEET 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 500 ft per minute, except that the last 1000 ft to an assigned level must be made at 500 ft 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.

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 non-standard flight levels.

ENGINE START 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.

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.

The taxi clearance regulates movement on the manoeuvring area. 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).

An aircraft taxiing on the manoeuvring area must stop and hold at all lighted stop bars and may only proceed further when a clearance to enter or cross the runway has been received and the stop bar lights have been switched off.

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.

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; and
- 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 8 kt for single-engined aircraft or 12 kt for multi-engined aircraft;
- the downwind component, if the operation is downwind;
- aerodrome surface conditions significant to the operation;
- known weather information; and
- 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 prescribed, the provisions of DAP NAP will be applied. ATC shall not nominate a particular runway for use if an alternative runway is available, when:

- for runways that are completely dry:
 - the crosswind component, including gusts, exceeds 20 kt;
 - the downwind component, including gusts, exceeds 5 kt.
- for runways that are not completely dry:
 - the crosswind component, including gusts, exceeds 20 kt;
 - there is a downwind component.



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; and
- 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; or
- backtrack

has been received, or a clearance to enter for other purposes has been received from ATC and the stop bar lights, where fitted, have been switched off.

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; or
 - commenced a turn; or
 - if the runway is longer than 1800 m, become airborne and is at least 1800 m ahead of the following aircraft; or
 - if the preceding aircraft has an MTOW of 7000 kg or less and the following aircraft has an MTOW below 2000 kg and is slower, the preceding aircraft is airborne and is at least 600 m ahead of the following aircraft; or
 - if both aircraft have an MTOW below 2000 kg, the preceding aircraft is airborne and is at least 600 m 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.

Note: 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 – CLASS C CONTROL ZONES**

In Class C control zones, on first contact with departures control a pilot must report:

- the direction of turn;
- the initial heading;
- the altitude passing, to nearest 100 ft; and
- the last assigned level.

DEPARTURE REPORT – CLASS D CONTROL ZONES

In Class D control zones (where a procedural service is provided), the pilot of an IFR flight must report after take-off:

- 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:

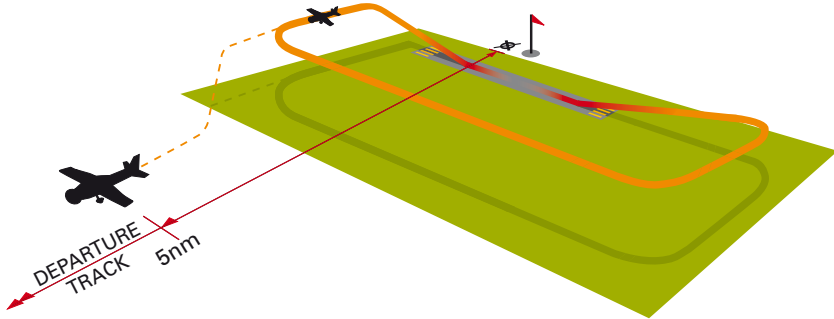
- current time minus an adjustment for the distance from the aerodrome; or
- when over or abeam the aerodrome.

Tracking information must confirm the track established with reference to the appropriate navigation aid or, if tracking via a SID, confirm the SID identifier.

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 1 nm 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 2000 ft and should, when advised, effect the change as soon as possible.

When contacting Area Control, pilots must advise the last assigned level and, if not maintaining the assigned level, the level maintaining or last vacated level.

EN ROUTE

In non-ATS surveillance CTA, pilots must report maintaining an assigned level. After any frequency change, pilots must advise the last assigned level and, if not maintaining the assigned level, the level maintaining or last vacated level.

VFR FLIGHTS ENTERING CLASS C AIRSPACE

Before reaching the boundary of Class C airspace, the pilot must establish two-way 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 call-sign 'INBOUND/TRANSIT DETAILS' (wait for ATC to respond with your call-sign) 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 landing at an aerodrome where ATIS is provided, the pilot should obtain the ATIS before the first contact on the approach 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 NON-TOWERED 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 30 nm 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 5 nm of the aerodrome; or
 - by night for a VFR flight, within 3 nm 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.

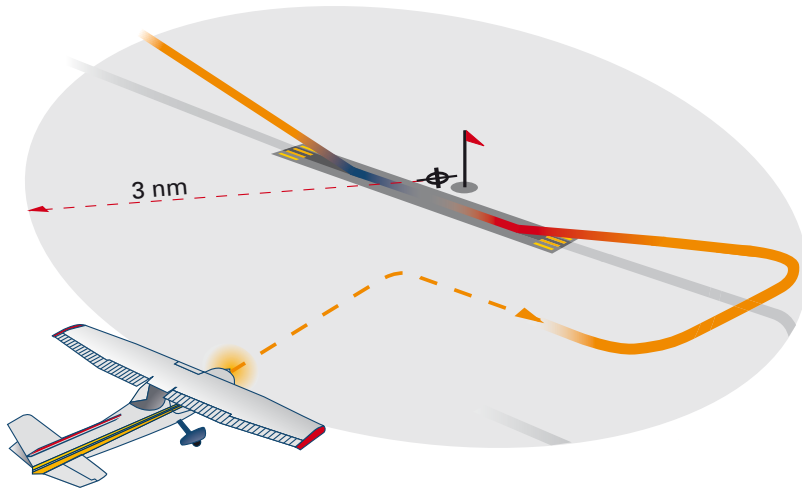
MINIMUM ALTITUDE REQUIREMENTS

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 3 nm 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, advise ATC immediately.



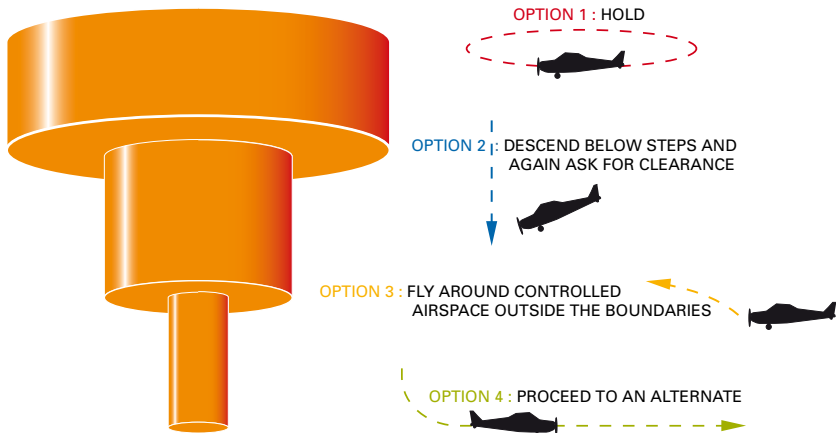
holding

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:

- an expected landing time, where an ATS surveillance service is provided; or
- an expected approach time, when a procedural service is provided.

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 than 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 or 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 8 kt 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; and
- 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 loss of priority provided that it is made:

- before reaching 80 nm (120 nm for jets) from a capital city aerodrome (including Essendon) or 30 nm 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

LANDING CLEARANCES

Pilot in command must not land unless the specific clearance 'CLEARED TO LAND' has been received.

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 1000 m 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 an MTOW of 7000 kg or less; and
 - the landing aircraft is performance Category A and has an MTOW below 3000 kg.
- a preceding landing aircraft using the same runway:
 - has vacated it and is taxiing away from the runway; or
 - has landed and has passed a point at least 1000 m from the threshold of the runway and will vacate the runway without backtracking, and
 - in the opinion of the tower controller, no collision risk exists; and
 - the preceding aircraft has an MTOW of 7000 kg or less; and
 - the following landing aircraft is performance Category A and has an MTOW below 3000 kg; or
 - has landed and has passed a point 600 m from the threshold of the runway, is in motion and will vacate the runway without backtracking; and
 - the preceding landing aircraft has an MTOW of less than 7000 kg, and
 - the following landing aircraft has an MTOW of 2000 kg or less, or

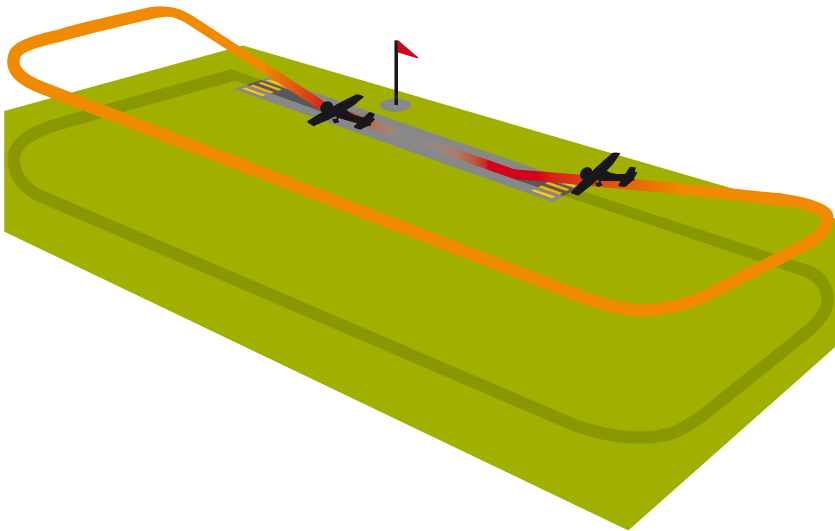
- a preceding aircraft, using a different runway, has crossed or stopped short for the landing aircraft's runway.

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.



landing

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.

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 comply 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;
- Taxi to the destination via the most direct taxiway(s) available; and
- Where an apron service is provided 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)'.

The taxi clearance regulates movement on the manoeuvring area. The separation of aircraft taxiing on the manoeuvring area is a joint pilot and controller responsibility. Taxi clearance shall contain concise instructions and adequate information so as to assist flight crew to follow the correct taxi routes, to avoid collision with other aircraft and objects and to minimise the potential for the aircraft inadvertently entering an active runway.

A taxi clearance 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.



general

Class D airspace is controlled airspace where an air traffic control service is provided to aerodrome traffic. The service is a procedural-based service.

The procedures outlined in this chapter should be read in conjunction with the procedures for controlled airspace. There are some minor differences to procedures in Class D airspace.

An air traffic control service will be provided.

Except in an emergency, a clearance is required for all flights in Class D airspace.

When Class C and D airspace adjoin laterally, flights at the common boundary will be given services applicable to Class D airspace.

Consult ERSA, NOTAM and the Visual Pilot Guide for procedures specific to a Class D aerodrome.

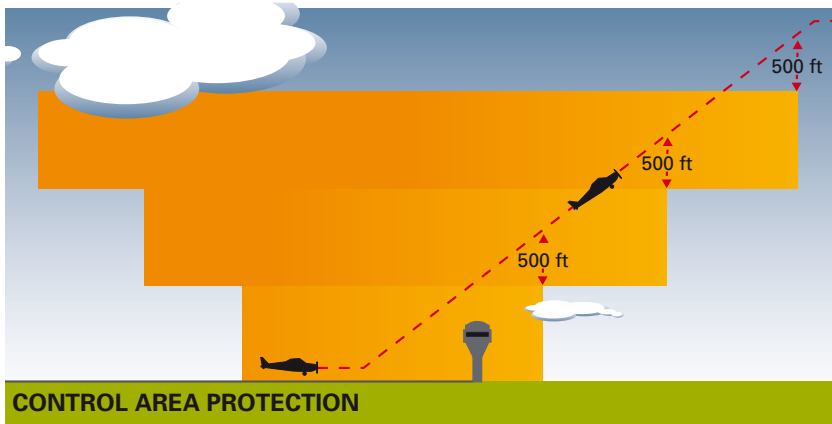
Class D aerodromes have a high traffic density that includes a wide variety of aircraft types and performance capabilities. Typical users of these aerodromes include CHTR, PVT, AWK and RPT aircraft, with a mix of circuit training in addition to arrivals and departures. Pilots should ensure they maintain a good lookout while flying in, and prior to reaching, Class D airspace. Pilots should also maintain a good listening watch on the relevant radio frequency to ensure they receive aircraft and ATC communication, to obtain situational awareness of other traffic.

CLASS D AIRSPACE

Map Depiction. The lateral limits of Class D control area steps are depicted with blue lines and a blue tint. The vertical limits of Class D are shown with blue labels. The control zones have defined dimensions, and associated control area steps, with an upper limit of 4500 ft.

Radio Requirements. Pilots must maintain two-way communications with the relevant ATC control tower whenever operating in Class D airspace.

Control Area Protection. A pilot, desiring to retain a vertical buffer with aircraft in Class G airspace (control area protection) during climb or descent in Class C or Class D airspace, should maintain at least 500 ft above the lower limit of the CTA steps.



Operating Requirements for Transponders. Pilots of aircraft fitted with a serviceable Mode 3A transponder must have the transponder on Code 3000 or any assigned discrete code at all times during flight in Class D airspace. If the transponder is Mode 3C capable, that mode must also be operated continuously.

Traffic Information in Controlled Airspace. In controlled airspace, 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, for example:

general

- type;
- altitude;
- position, either by clock reference, bearing and distance, relation to a geographical point or reported position and estimate; and
- intentions or direction of flight.

Separation. In Class D airspace:

- IFR flights are separated from other IFR and Special VFR flights;
- IFR flights receive traffic information in respect of VFR flights;
- VFR flights receive traffic information in respect of all other flights; and
- Special VFR flights are separated from other Special VFR flights when visibility is less than VMC.

Speed limitations. Aircraft operating in Class D airspace are not to exceed:

- 200 kt at or below 2500 ft above the aerodrome level within 4 nm of the primary Class D aerodrome.
- 250 kt when operating in other parts of Class D airspace.

VMC TAKE-OFF, EN ROUTE AND LANDING - CLASS D

TYPE OF AIRCRAFT	HEIGHT	DISTANCE FROM CLOUD HORIZONTAL / VERTICAL	ADDITIONAL CONDITIONS
All aircraft	Within Class D airspace	600 m Horizontal 1000 ft Above 500 ft Below	ATC may permit operations in weather conditions that do not meet these criteria (Special VFR)

Special VFR. When operating under a Special VFR clearance, pilots are responsible for ensuring that:

- the flight is conducted clear of cloud;
- the visibility is not less than:
 - for aeroplanes, 1600 m;
 - for helicopters, 800 m; or

- for balloons, 100 m below 500 ft AGL and 3000 m at and above 500 ft AGL;
- a helicopter is operated at such a speed that the pilot has adequate opportunity to observe any obstructions or other traffic in sufficient time to avoid a collision; and
- the flight is conducted in accordance with the requirements of CAR 157 with regard to low flying.

EN ROUTE

All levels flown in Class D airspace must be assigned by ATC.

Except when identified, position reports are required for all aircraft in Class D airspace.

INBOUND

Aeronautical Ground Lights - En Route. Aeronautical ground lights may indicate visual lanes of entry at some Class D aerodromes. If present, these lights are identified on Visual Terminal Charts (VTCs).

Lanes of Entry. Lanes of entry are established to permit passage to and from specified Class D CTR without entering an adjacent Class C or military CTR. The vertical limits provide separation from overlying control or restricted areas.

general

ATIS. If landing at an aerodrome where ATIS is provided, the pilot should obtain the ATIS before first contact on the tower frequency. On first contact advise ATIS received (e.g. 'received information echo').

ATIS

ATIS frequency or

Terminal information

Runway Wind Crosswind

TEMPORARY Clouds

ATIS

ATIS frequency or

Terminal information

Runway Wind Crosswind

TEMPORARY Clouds

pilot responsibilities

Clearance to Enter Class D Airspace. For entry into Class D airspace, establishment of two-way communications between the aircraft and ATC constitutes a clearance to enter the Class D airspace (AIP ENR 1.1 Section 12.5).

Before entering Class D airspace, the pilot in command of an aircraft must establish two-way radio communication with the Tower on the frequency notified on the chart, in ERSA, or AIP Supplement or NOTAM.

Thereafter, the pilot must maintain those communications while in the Class D airspace.

All flights operating in Classes E and G airspace requesting a clearance to operate in Class D airspace must advise call-sign, type, position, altitude and intentions (tracking details etc) when making first contact with ATC.

In establishing two-way communications, ATC may issue specific instructions that differ from altitude and intentions advised by the pilot. The pilot must comply with any such instructions issued by ATC.

A pilot may be assigned the responsibility to follow another 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 avoidance. If the other aircraft sighting is subsequently lost, advise ATC immediately.

Initiating two-way communications. In initiating two-way communications, the pilot must advise call sign and aircraft type, current position, altitude, intention, relevant information such as ATIS received and any request(s).

Note 1. Radio contact should be initiated far enough from the Class D airspace boundary to preclude entering the Class D airspace before two-way radio communications are established.

Note 2. If the controller responds to a radio call with, ‘...(aircraft callsign) [... (instructions)]’ radio communications have been established and the pilot may enter the Class D airspace.

Note 3. If workload or traffic conditions prevent immediate entry in to Class D airspace, the controller will inform the pilot to remain outside the Class D airspace until conditions permit entry. Example: ‘...(aircraft call-sign) REMAIN OUTSIDE CLASS D AIRSPACE’.

Note 4. It is important to understand that if the controller responds to the initial radio call without using the aircraft call-sign, radio communications have not been established and the pilot may not enter the Class D airspace. Examples: ‘AIRCRAFT CALLING ARCHER TOWER, STANDBY.’ ‘AIRCRAFT CALLING ROCKY TOWER, SAY AGAIN.’

pilot responsibilities

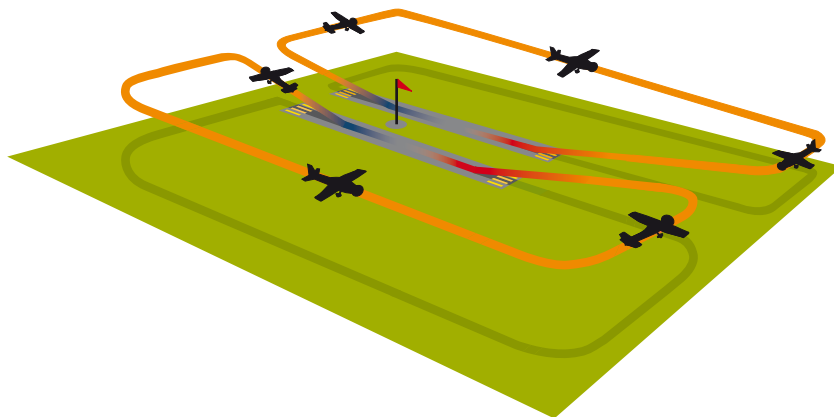
The pilot-in-command must not deviate from the track, level and intentions stated during the establishment of 2-way communications or the instructions issued by ATC (if these instructions modify the stated track, level and intentions), unless authorised by ATC.

Unless ATC specifically instructs otherwise, establishment of two-way communications permits a pilot, intending to land at an aerodrome within Class D airspace, to descend as necessary to join the aerodrome traffic circuit.

Cancelling IFR to Expedite Arrival. If operating IFR and experiencing delay in gaining clearance to enter Class D airspace from Class G airspace, a pilot can choose to cancel IFR (provided the weather conditions permit VFR), and arrive VFR.

Note: By cancelling IFR, ATC will not be required to provide you IFR/IFR separation; which may be the reason for the delay.

Parallel Runway Operations at Class D Aerodromes. Where a Class D aerodrome is equipped with parallel runways, ATC may sequence aircraft for simultaneous contra-direction circuits and may conduct these operations using separate tower frequencies for each runway. Operations will be regulated independently in each circuit, with an ATC clearance required to enter the opposite circuit or airspace.

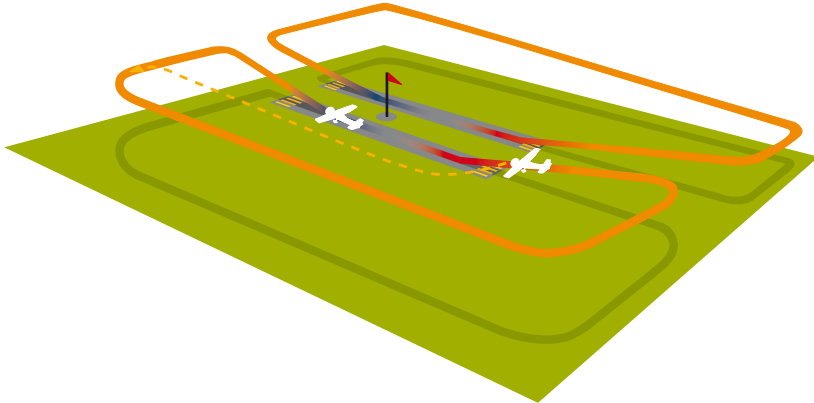


Clearances. A pilot in command must not land unless the specific clearance 'CLEARED TO LAND' (or CLEARED TOUCH and GO or CLEARED for the OPTION) has been received.

Note: ATC approval must be obtained if asymmetric training is to be carried out within 5 nm of a controlled aerodrome.

Go Around. At Class D aerodromes with parallel runways where contra-rotating circuit operations are in progress, if ATC instructs an aircraft to go round, or a missed approach is initiated, the pilot must:

- commence climb to circuit altitude;
- position the aircraft on the active side and parallel to the nominated duty runway, while maintaining separation from other aircraft; and
- follow ATC instructions or re-enter the circuit from upwind.



After Landing. After landing, unless specified otherwise by ATC, an aircraft must comply with the following:

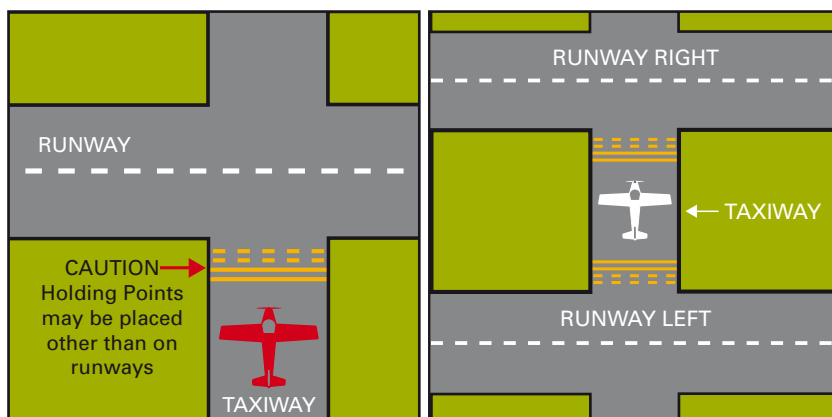
- Promptly vacate the runway without backtracking.
- Change from the Tower frequency to the Ground frequency (where established) when vacating the runway strip, and obtain an ATC taxi instruction.
- Not cross any runway that intersects the taxi route unless in receipt of a taxi instruction and a 'CROSS RUNWAY (number)' instruction from ATC.
- Taxi to the destination via the most direct taxiway(s) available.

pilot responsibilities

- Where an apron service is provided 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)'.



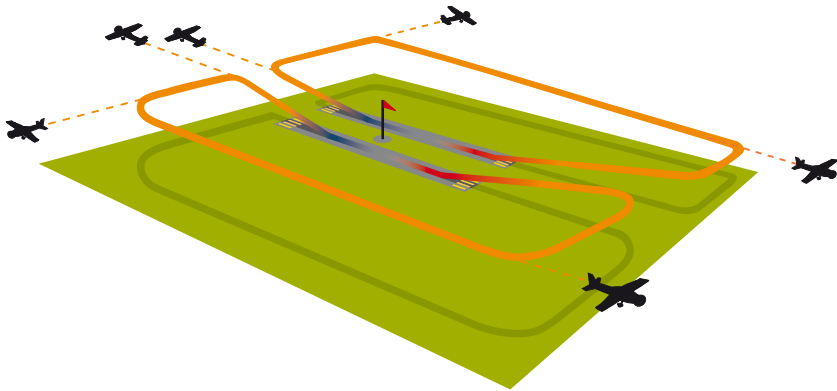
Aircraft required to hold short of a runway must hold at the appropriate holding point for that runway, or the runway strip edge at the intersection of a crossing runway.

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 Ground frequency on vacating the runway strip, and then transmit the aircraft call-sign and, if applicable, parking bay number. A pilot in command may 'REQUEST DETAILED TAXI INSTRUCTIONS TO (location)'.

Radio watch must be maintained on the Ground or Tower frequency (where no Ground frequency is provided) until parked.

TAXIING AND MANOEUVRING

The separation of aircraft taxiing on the manoeuvring area is the joint responsibility of the pilot and the controller. A taxi clearance from ATC is required prior to operating on the manoeuvring area (taxiways and runways of any controlled aerodrome). When ATC issue a taxi instruction which includes a holding point, pilots must read back the words "HOLDING POINT [and the holding point designator]. Specific clearance is required to taxi, enter, cross or back-track on a runway.



VFR flights wishing to depart without submitting flight notification must provide the following information on first contact with ATC:

- aircraft call-sign and 'DETAILS' (wait for a response from ATC);
- destination and first tracking point;
- preferred level; and
- identification of ATIS code received.

These details may be given with the request for taxi clearance.

Within a Class D CTR, a clearance to take-off is a clearance to operate within the CTR.

Change to Tower Frequency. 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.

At Class D aerodromes at which parallel runway operations are in progress, pilots must identify the departure runway when reporting ready. For example: '...(call-sign) READY, RUNWAY RIGHT'.

A pilot in command must not hold on the runway in use unless ATC has authorised.

Departure Report - Class D Control Zones. In Class D control zones (where a procedural service is provided), the pilot of an IFR flight must report after take off:

- departure time (if applicable);
- tracking information;
- the last assigned altitude; and
- the estimate for the first en route reporting point.

SUMMARY OF REPORTS - ALL AIRCRAFT IN CLASS D AIRSPACE		
Situation	Frequency to Use	Remarks
Ready to Taxi	ATC	Report
IFR departure in Class D CTR	ATC	Report
VFR departure in Class D airspace, unless departing CTR directly in to Class G airspace	ATC	Report
Position report at prescribed points	ATC	Report
Arrival	ATC	Report (if cancelling SARWATCH)

source AIP

Pilots of VFR flights wishing to operate in other than classes C or D airspace, and who wish to nominate a SARTIME, may submit details in the NAIPS SARTIME flight notification format (via the internet). If submitting the flight notification by facsimile or via telephone, the only form available is the Australian Domestic Flight Notification form.

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
- VFR flights receive a Radar/ADS-B Information Service (RIS), where available on request.

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;
- monitor the appropriate Class E frequency and announce if in potential conflict; and
- take appropriate action to avoid potential conflict.

Pilots of VFR flights should avoid IFR holding patterns.

ADDITIONAL ATC SERVICES - CLASS E AIRSPACE

Unless impracticable to do so, ATC will provide some additional ATS surveillance system 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 ATS surveillance system coverage, traffic information, navigation or position information service may be provided to VFR flights. Pilots wishing to use ATS surveillance system 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 ATS surveillance system observed traffic. However, due to the nature and type of coverage, not all aircraft will be observed. 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 'SURVEILLANCE 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 'IDENTIFICATION 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.

radar information service

RADAR/ADS-B INFORMATION SERVICE (RIS) TO VFR FLIGHTS IN CLASS E AND CLASS G AIRSPACE

RIS is available, on request, to VFR flights in Classes E and G airspace within ATS surveillance system coverage, subject to ATC workload. The RIS is available to improve situational awareness and assist pilots in avoiding collisions with other aircraft.

Pilots wishing to receive a RIS must be in direct VHF communications with ATC and equipped with a serviceable SSR transponder for a radar based service or serviceable ADS-B transmitter for an ADS-B based service.

VFR pilots receiving a RIS will be provided with traffic information and, upon request, position or navigation information.

Note: All information is advisory in nature, and the pilot remains responsible for the safe operation of the aircraft. Terrain clearance, aircraft-to-aircraft separation, and obtaining clearances into controlled airspace remain pilot responsibilities.

Pilots of VFR flights receiving a RIS will be provided with information about ATS surveillance system observed traffic.

However, due to the nature and type of ATS surveillance system coverage, not all aircraft will be detected, and not all aircraft are equipped with a SSR transponder or ADS-B transmitter. Consequently, traffic information provided by ATC may be incomplete. Pilots must comply with the see-and-avoid requirements of CAR163A.

ATC will provide an alerting service for flights receiving a RIS.

On initial contact with ATC, the pilot must advise the ATS surveillance service required and, if an ongoing service is requested, include the phrase 'REQUEST FLIGHT FOLLOWING'.

When ATC respond to this request, the pilot must advise position, level, and intentions.

The RIS commences on ATC notification of identification, and ATC may also assign a specific transponder code prior to, or during, the provision of the RIS.

If ATC are unable to provide a RIS, the pilot will be advised 'SURVEILLANCE SERVICE NOT AVAILABLE'. Requests for emergency assistance should be prefixed by 'MAYDAY' (three times) or 'PAN PAN' (three times), and will receive priority.

Note: Many factors, such as the limitations of radar and ADS-B, volume of traffic, ATC workload and frequency congestion may prevent ATC from providing a surveillance service. The reason for not providing or continuing to provide the service in a particular case is not subject to question, nor need it be communicated to the pilot.

If, following a request for a RIS, a request for flight following is not made and the requested information has been provided to the pilot, ATC will advise 'IDENTIFICATION TERMINATED' to indicate that the surveillance service is terminated.

Note: When ATS surveillance services to VFR flights are terminated, pilots should monitor the ATS frequency appropriate to their area of operation.

If the pilot has requested flight following, the RIS will be provided on an ongoing basis, and generally limited to within the controller's area of responsibility. However, the RIS may be terminated at any time by the controller, or by pilot advice.

Whilst receiving a RIS, the pilot must:

- maintain a continuous listening watch with ATC and advise prior to leaving the frequency; and
- advise ATC prior to any changes to track or level.

Approaching the boundary of the controller's area of responsibility, the pilot will generally be advised 'IDENTIFICATION TERMINATED, FREQUENCY CHANGE APPROVED'. If a continued service is requested, the pilot must advise 'REQUEST HAND-OFF FOR FLIGHT FOLLOWING' and, subject to the approval of the adjacent ATC unit, the pilot will be instructed to change frequency for continuation of the RIS.

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 wind direction indicator. Pilots should also establish whether the gliders are being launched by wire 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 2000 ft AGL is not advised, nor is landing without first ascertaining that the cable is on the ground and not across the landing path. Aerotow and winch launching are possible up to 4000 ft AGL, but launches to 1500 ft or 2000 ft AGL are normal.

Except for operations in controlled airspace, gliding operations may be conducted no-radio, or may be on frequencies 122.5 MHz, 122.7 MHz or 122.9 MHz, which have been allocated for use by gliders. Unless otherwise authorised, gliding operations in controlled airspace must be conducted using the appropriate ATC frequency. Radio equipped gliders at non-towered aerodromes will use the CTAF. Except when operationally required to maintain communications on a discrete frequency listed above, glider pilots are expected to listen out on the area VHF and announce if in potential conflict.

GLIDING OPERATIONS AT REGISTERED/CERTIFIED 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 gliding 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 5700 kg MTOW may be conducted independently in VMC by day. Aircraft must not operate within the opposing circuit area below 1500 ft AGL. Pilots should ascertain the runway direction in use as early as possible and conform to that circuit.

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 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 non-standard pattern, including use of the opposite circuit direction in extreme cases.

At non-towered aerodromes a listening watch on the CTAF is maintained during aero-tow launching by the tug pilot, and during wire launching by the winch or tow-vehicle 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 or associated vehicle, whenever the cable is deployed.

Gliders are not permitted to perform aerobatics, including spin training, within 2 nm of a licensed aerodrome below 2000 ft 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 all 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 a 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; and
- two serviceable VHF comms must be carried to communicate with ATC and to monitor and advise air traffic outside the controlled airspace.

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 A, C, D and E 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.

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.

parachuting operations

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 AT CERTIFIED, REGISTERED OR MILITARY AERODROMES

Aircraft supporting parachute descents within the vicinity of an airport designated CTAF must be equipped with two VHF radio transceivers in order to monitor traffic in the vicinity of the aerodrome, and in the surrounding area (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 of the aerodrome.

Parachutists must not be dropped onto a licenced/registered/certified aerodrome unless:

- the aerodrome operator has approved parachute descents onto the aerodrome;
- regular or locally-based users of the aerodrome airspace have been advised of the intended descents; and
- the target for parachutists is separated clear of movement areas by the distance equal to the minimum drop zone radius for the parachutists using it.

Parachutists must not be dropped so as to conflict with any traffic:

- on 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 five minutes.

Refer to CAAP 166(1) for additional information.



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 certificate 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 2000 ft above aerodrome level within 3 nm of a licensed aerodrome, or
- below 1000 ft 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 1000 ft 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 m 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 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 a non-towered 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 1.1. whilst they are operating:

- within the vicinity of a non-towered aerodrome where radio carriage and use is required;
- at or above 5000 ft above mean sea level;
- within 10 nm 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 on 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 3 nm should do so at a height greater than 1500 ft above the aerodrome. In the case of a private balloon flight which is not specifically authorised by CASA, overflight must be conducted more than 2000 ft above the aerodrome.

The pilot of a balloon which is taking off within 3 nm 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.

ballooning

METEOROLOGICAL CONDITIONS FOR BALLOONS.

ENR 1.2 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 SSR transponder must be carried unless ATC has advised otherwise.

In the event of a radio failure or other emergency, the relevant procedures as listed in AIP 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

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 15 nm east of...) or, if the departure point is within 100 nm 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 100 nm 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 10 nm 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 - ± 10 nm from track;
- over oceanic areas - ± 20 nm 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 2 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 1000 ft or 300 m;
- if strictly necessary for identification, move closer while maintaining a generally parallel course, but never closer than 200 m;
- 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 the page;
- 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 121.5 MHz and repeating this call on the emergency UHF frequency 243.0 MHz, if practicable, giving the identity and position of the aircraft and nature of the flight;

procedures for defence zone

- if equipped with SSR transponder, select code 7700, unless otherwise instructed by the appropriate ATS unit;
- if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, 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

Symbol	Intercepting aircraft response	Intercepted aircraft response	Intercepting aircraft response	Intercepted aircraft response
1	<p>DAY - Banking wings from a constant height above and ahead of, into normally to the left of the intercepted aircraft and, after acknowledgement, a near level turn, normally to the left, or to the normal heading.</p> <p>NIGHT - Same as above and, in addition, flashing navigation lights of regular pattern.</p> <p>Form:</p> <p>1. Manoeuvring conditions of large size require the intercepting aircraft to take up a position slightly ahead and above of, and to the left of the intercepted aircraft, and to make the subsequent turn to the right.</p> <p>2. If the intercepted aircraft is too close or being seen with the intercepting aircraft, the latter is manoeuvred to the centre of the track, upwards and to port to bring itself into a position the intercepted aircraft.</p>	<p>The intercepted aircraft:</p> <p>acknowledges.</p>	<p>ACKNOWLEDGE (DAY or NIGHT) - Banking wings and following.</p>	<p>Understands and complies.</p>
2	<p>DAY or NIGHT - An abrupt bank level manoeuvre from the intercepted aircraft consisting of a pitching turn of 90° or more without crossing the line of sight of the intercepted aircraft.</p>	<p>The intercepted aircraft:</p> <p>is not alerted.</p>	<p>ACKNOWLEDGE (DAY or NIGHT) - Banking wings.</p> <p>HELICOPTERS (DAY or NIGHT) - Banking aircraft.</p>	<p>Understands and complies.</p>
3	<p>DAY - Crossing aerobically, banking heading port and modifying heading in direction of landing, i.e. if the intercepted aircraft is a helicopter, modifying the helicopter landing area.</p> <p>NIGHT - Same as above and, in addition, showing steady landing lights.</p>	<p>Landing in the aerobically.</p>	<p>ACKNOWLEDGE (DAY or NIGHT) - Following the intercepting aircraft and proceeding to land following a steady landing light of normal.</p>	<p>Understands and complies.</p>
4	<p>ACKNOWLEDGE (DAY or NIGHT) - Flashes landing gear when primary gear landing (unless a 4th light is visible) DAY or NIGHT and not exceeding 2000 (2000) above the aerobically level, and continuing to flash the aerobically.</p> <p>ACKNOWLEDGE (DAY or NIGHT) - Flashes landing gear while primary gear landing (unless a 4th light is visible) DAY or NIGHT and not exceeding 2000 (2000) above the aerobically level, and continuing to show the aerobically. If possible to flash landing lights flash are shown lights aerobically.</p>	<p>Responds, the flash aerobically is:</p> <p>acknowledges.</p>	<p>DAY or NIGHT - If requirements to that the intercepted aircraft follow the intercepting aircraft to an aerobically conditions, the intercepting aircraft must be landing gear and use the flash 1 lights prescribed for intercepting aircraft.</p> <p>2 (unless to be above the intercepted aircraft, the intercepting aircraft give the flash 1 lights prescribed for intercepting aircraft).</p>	<p>Understands and complies.</p>
5	<p>ACKNOWLEDGE (DAY or NIGHT) - Regular switching on and off of all aerobically lights, but in port in accordance with the flash from flashing table.</p>	<p>General classes:</p>	<p>DAY or NIGHT - One flash 1 lights prescribed for intercepting aircraft.</p>	<p>Understands.</p>
6	<p>ACKNOWLEDGE (DAY or NIGHT) - Irregular flashing of all aerobically lights.</p> <p>HELICOPTERS (DAY or NIGHT) - Irregular flashing of all aerobically lights.</p>	<p>No answer.</p>	<p>DAY or NIGHT - One flash 1 lights prescribed for intercepting aircraft.</p>	<p>Understands.</p>

NOTES:

1. Flash 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, attention must be made to convey intentions, acknowledge and receive and forward information by using the following phrases and transmitting truth always before:



RADIO COMMUNICATIONS DURING INTERCEPTION			
1	2	3	4
PHRASE	MEANING	PHRASE	MEANING
CALL-SIGN	What is your call-sign?	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 call-sign 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 call-sign required is that used with ATS and corresponding to the aircraft identification in the flight notification.


checklist

1 1 Flight of at least 1 hr at night in 12 months **NO**  Or do 1 hr dual **PAGE 331**
YES

2 1 take-off and landing in 6 months **NO**  Or do 1 T/O and L dual **PAGE 331**
YES

3 Carrying passengers **NO** Go to 5 **PAGE 333**
YES

4 3 take-offs and landings at night in preceding 90 days **NO**  Or do 3 T/O and L at night Solo or Dual **PAGE 333**
YES

5 LSALT: determined by TAC / ERC / WAC **NO**  **PAGE 336**
± 10NM EITHER SIDE OF TRACK YES AIP GEN 3.3 ± 15° NOAID
± 10.3° NAVAID
± 5 nm BUFFER

6 Weather Forecast with NOTAMS AIP ENR 1.10 **NO** Get One! **PAGE 89**
YES

7 Cloud: More than SCT below the LSALT plus 1000 ft on the ARFOR **YES**  Not advisable due to inability to remain in VMC **PAGE 331**

8 TAFs AIP ENR 1.1
 CLOUD: More than SCT below 1500 ft or;
 VIZ: Less than 8 km or;
 X/Wind: Greater than maximum for the aircraft or a percentage probability of any of above
YES Plan for an alternate
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

INTER: 30 min holding
 TEMPO: 60 min holding

9 NAVAIDS AIP ENR 1.1 Aerodrome served by a NAVAID + Aircraft equipped with the NAVAID **PAGE 348**
NO Plan for an alternate within 1 hr and have NAVAID
YES
 Go to 10

10 LIGHTING AIP ENR 1.1

PAGE
348

- 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 + 30 min holding

11 Aircraft Instruments CAO 20.18 Appendix IV

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Does your aircraft have:

Airspeed indicator, Altimeter, Compass, Clock, Turn and 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

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343

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

PAGE
333

Is your aircraft equipped with:

1x VHF radio
1x Navaid NDB, VOR or certified GPS
SSR Transponder if operating in CTA/RADAR

YES

Go to 14

NO



14 SARTIME AIP ENR 1.10 - 7

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If travelling over 120 nm 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 VFR agricultural rating has been endorsed; or
 - in the case of any other flight—the holder of a licence on which a night VFR 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 VFR; shall not fly an aircraft at night under the VFR.
- 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 VFR:
 - 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 1000 ft above the highest obstacle located within 10 nm 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 1000 ft above the highest obstacle within 10 nm 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 1500 ft 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 VFR 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 VFR 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 VFR 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

general

- 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 VFR 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 VFR 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 take-offs 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 take-offs 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. REQ'TS	REMARKS
RVFR	CTA and Class G	VHF	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 DHTB	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 100NM from the aerodrome of departure	SARTIME or FLIGHTNOTE
VFR	AWK and PVT	All Other Operations	SARTIME, FLIGHT NOTE or NO NOTIFICATION

Submission of flight details at least 30 minutes before ETD is recommended.

radio navigation systems

TYPE OF OPERATION	SYSTEMS		CONDITIONS
	NO	TYPE	
CHTR/AWK 5700 kg or less MTOW and PVT in CTA	2	ADF, or VOR, or DME, or GPS	Applicable to operations in controlled airspace. Any combination that includes at least 1 ADF or VOR. Note 1.
	or 1	TSO-C145a or TSO-C146a GNSS	Notes 2 and 3.
CHTR/AWK 5700 kg or less MTOW and PVT in non-CTA	1	ADF or VOR or TSO C145a or C146a GNSS	Applicable to operations in non-controlled airspace. Notes 2 and 3.
NGT VFR	1	ADF, VOR or GPS	Note 1.

[Source: AIP GEN 1.5-5]

Note 1: In this table GPS refers to GNSS equipment certified to TSO-C129, C129a, C145a, C146a or equivalent as determined by CASA.

Note 2: CASA may approve equivalent equipment to GPS receivers certified to TSO C129, C129a, C145a, or C146a.

Note 3: GNSS receivers must be fitted in accordance with AC 21-36 or other equivalent advisory information applicable at the time of fitment.

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 25 nm:

- NDB (published in ERSA);
- VOR and DME:

Aircraft Altitude (ft)	Range (nm)
Below 5000	60
5000 to below 10000	90
10000 to below 15000	120
15000 to below 20000	150
20000 and above	180

- Localiser:

Aircraft Altitude (ft)	Range (nm)
Above 2000 AGL	within
±10° of course line	25
Below 5000	30
5000 and above	50

lowest safe altitude

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 360 ft may exist in navigation tolerance areas. Therefore, LSALT is calculated by adding:

- 1000 ft to the highest obstacle, where the highest obstacle is more than 360 ft above the height determined for terrain, or
- 1360 ft to the height determined for terrain where the highest charted obstacle is less than 360 ft above the height determined for terrain.

The minimum LSALT published is 1500 ft due to lack of data concerning terrain near sea level.

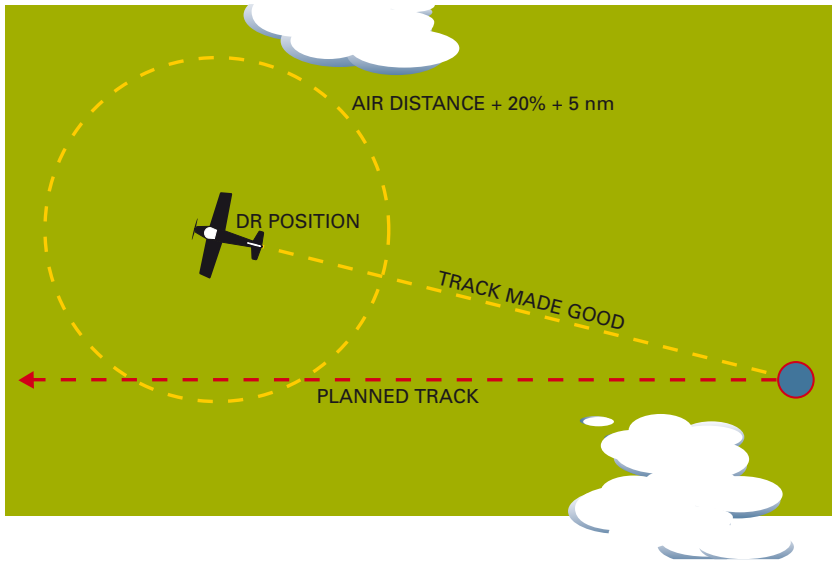
LSALT details for RNAV routes are shown in each grid square formed by the parallels and meridians. On the ERCs-H, the grid is at 4° intervals, and at 1° intervals on the ERC-L and TACs (See also AIP GEN 3.3 para 4.2).

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 1000 ft above the highest terrain or obstacle within a circle, centred on the DR position, with a radius of 5 nm plus 20% of the air distance flown from the last positive fix.

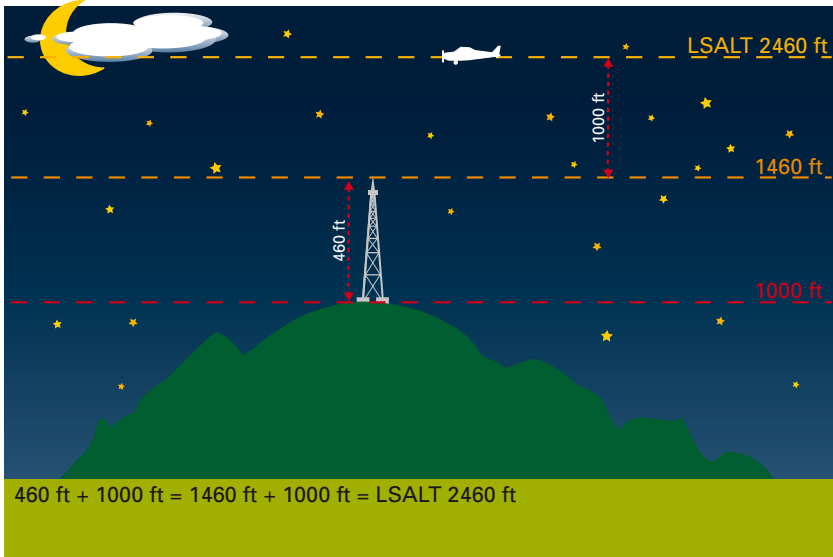
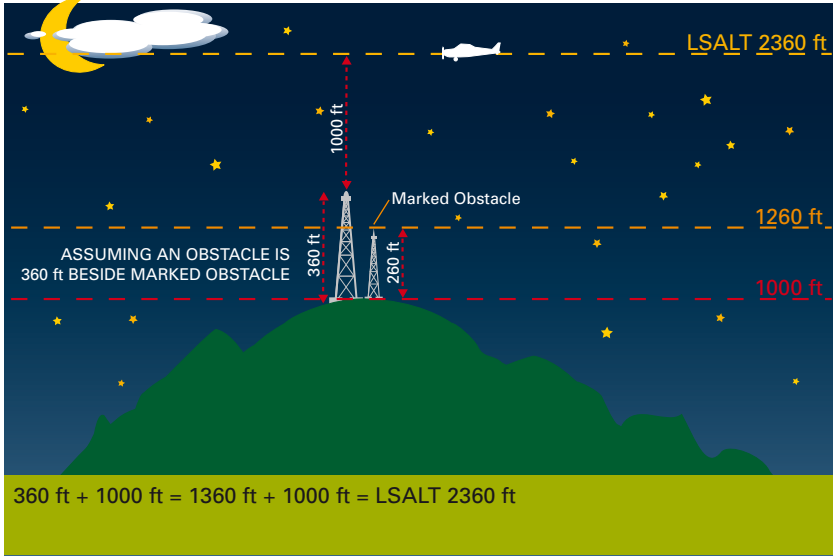


For routes and route segments not shown on AIP aeronautical charts, the lowest safe altitude must not be less than that calculated in accordance with the paragraph below within an area defined by whether the aircraft is being navigated with reference to navigation aids, GPS, or flown at night under the VFR. These areas are illustrated in the next five pages.

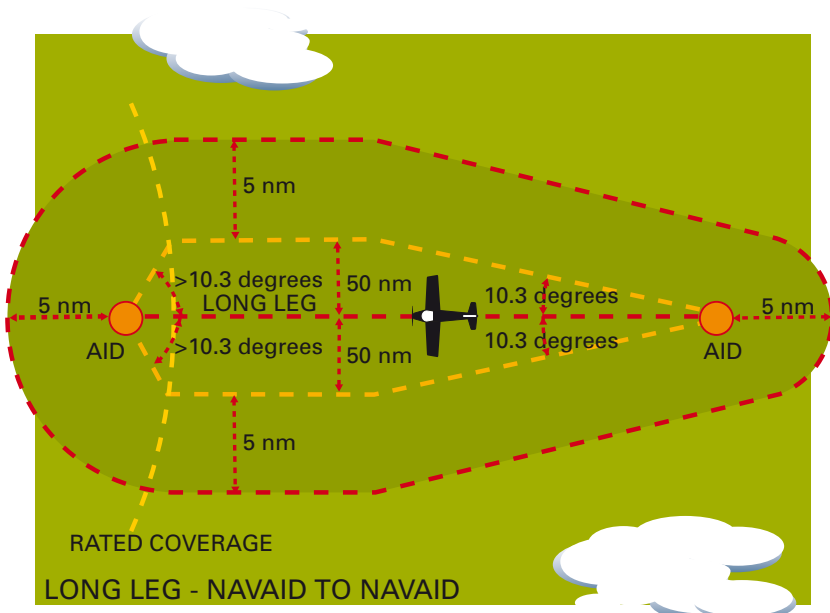
The LSALT must be calculated using the following method:

- where the highest obstacle is more than 360 ft above the height determined for terrain, the LSALT must be 1000 ft above the highest obstacle; or
- where the highest obstacle is less than 360 ft above the terrain, or there is no charted obstacle, the LSALT must be 1360 ft above the elevation determined for terrain; except
- where the elevation of the highest terrain or obstacle in the tolerance area is not above 500 ft, the LSALT must not be less than 1500 ft.

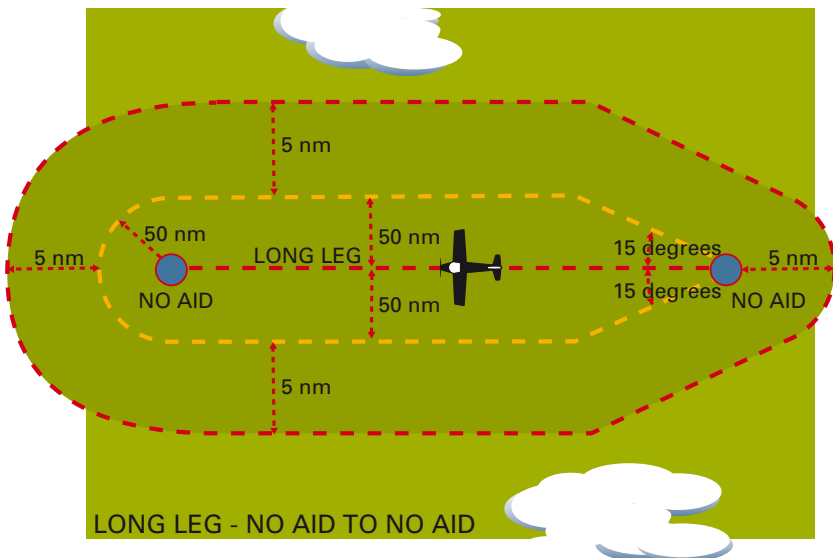
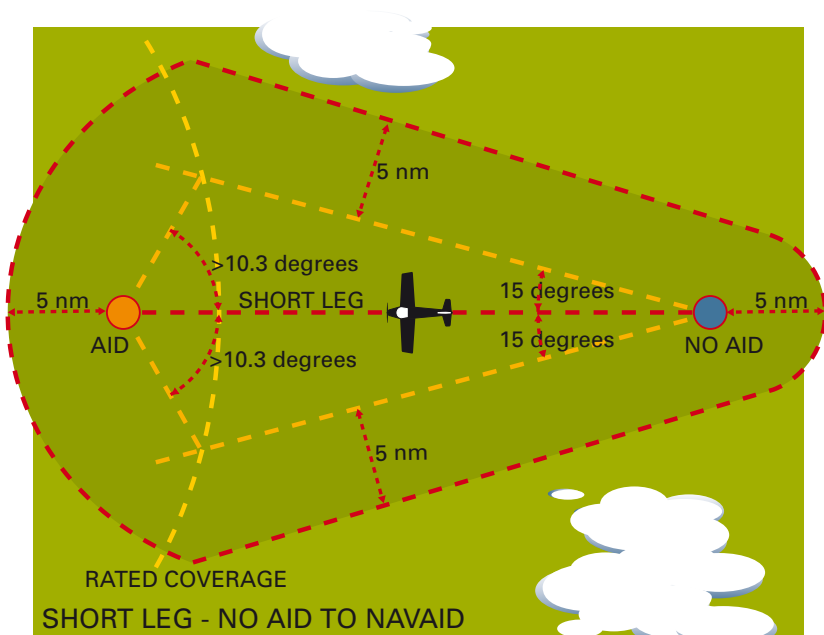
lowest safe altitude

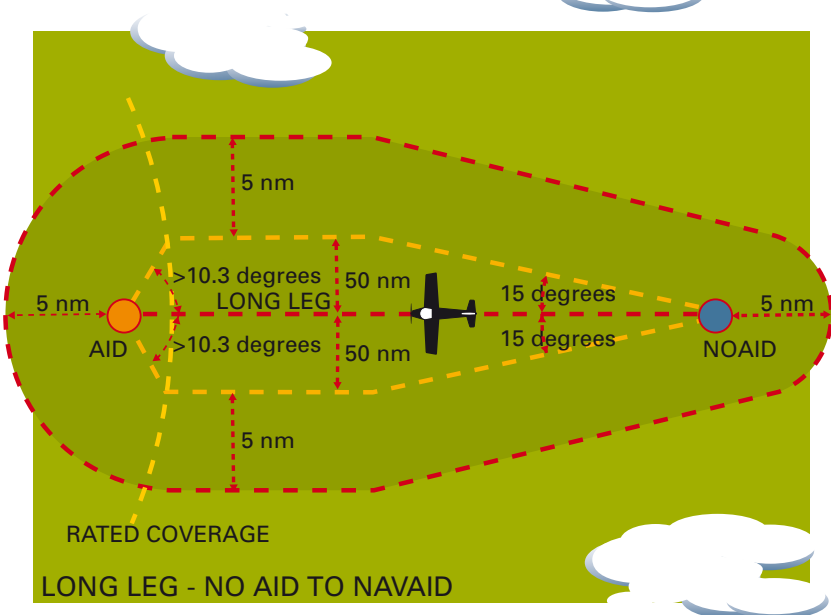
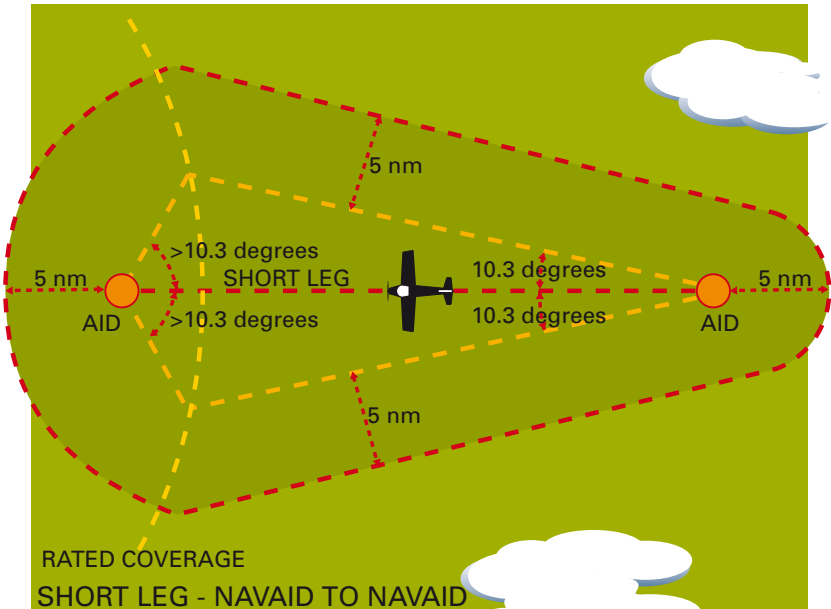


For routes defined by radio navigation aids or to be navigated by DR: the area to be considered must be within an area of 5 nm surrounding and including an area defined by lines drawn from the departure point or en route radio aid, 10.3° each side of the nominated track (where the track guidance is provided by a radio navigation aid), or 15° each side of the nominal track (where no track guidance is provided) to a limit of 50 nm each side of the track, thence parallelling track to abeam the destination and then converging by a semicircle of 50 nm radius centred on the destination. On shorter routes, where these lines are displaced by less than 50 nm 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.

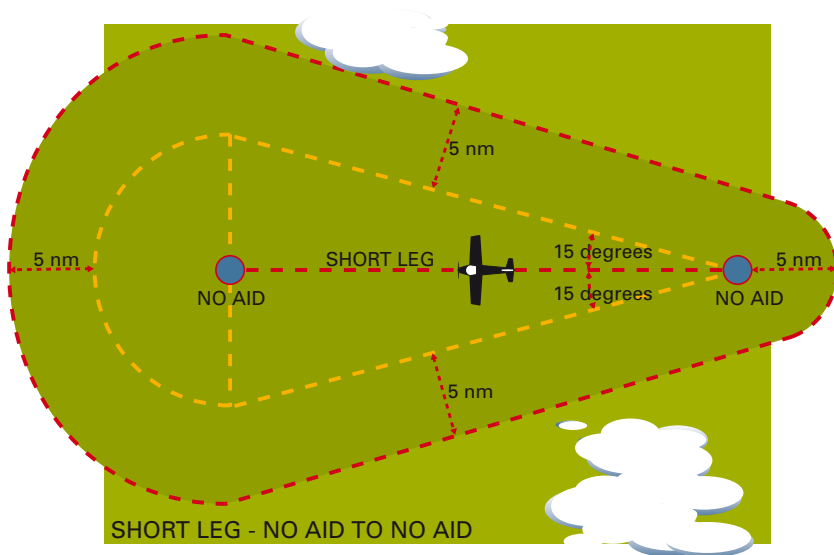


lowest safe altitude





lowest safe altitude



FOR AIRCRAFT FLOWN AT NIGHT UNDER THE VFR

The area to be considered must be:

- the area specified for aircraft being navigated by means of a radio navigation system; or
- within radius of 10 nm from any point along the aircraft's nominal track.

However, an aircraft which has positively determined by visual fix that a critical 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 3 nm 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 and 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.
- intensity 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.

aircraft equipment for night VFR

- emergency lighting:
 - Emergency exit lighting as specified in CASR 1998; 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 degrees port;
- an unobstructed green light projected above and below the horizontal plane through an angle from dead ahead to 110 degrees starboard; and
- an unobstructed white light projecting above and below the horizontal plane rearward through an angle of 140 degrees, equally distributed on the port and starboard sides.

Unless CASA otherwise directs, navigation lights shall be steady lights.

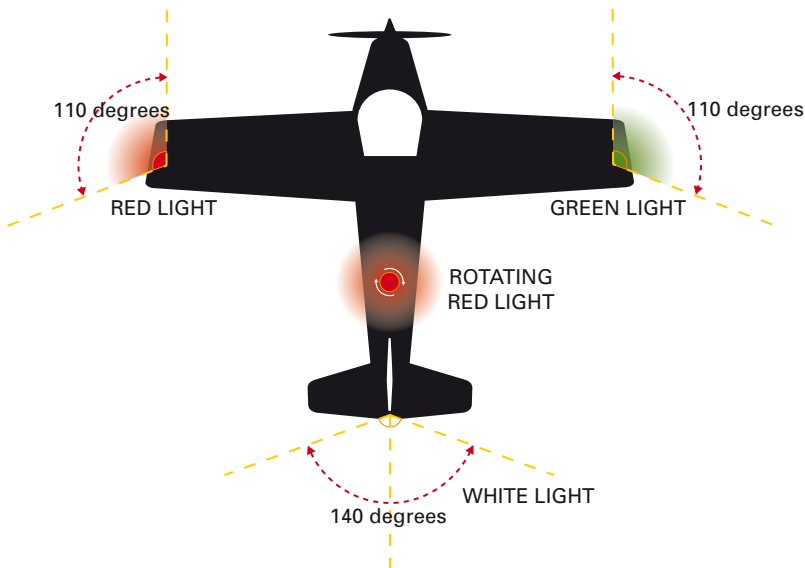
Unless CASA otherwise directs, an aeroplane in flight or operating on the manoeuvring area of a land aerodrome shall display, in addition to the navigation lights, an anti-collision light consisting of a flashing red light visible in all directions within 30 degrees above and 30 degrees below the horizontal 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;

aircraft equipment for night VFR

- 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.

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.

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;
- 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.



alternates

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 flight permitted to operate under the VFR at night must provide an alternate aerodrome within one (1) hour 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 requirements of GEN 1.5.

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 Aerodrome Lighting - Times of Activation, 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 Aerodrome Lighting - Times of Activation, 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 Activated 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 a 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 PVT, AWK and CHTR 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.

alternates

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 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-TOWERED AERODROMES - LIGHTING

Aerodrome lighting at non-towered aerodromes should be arranged direct with the aerodrome operator, or by using PAL facilities, if available.

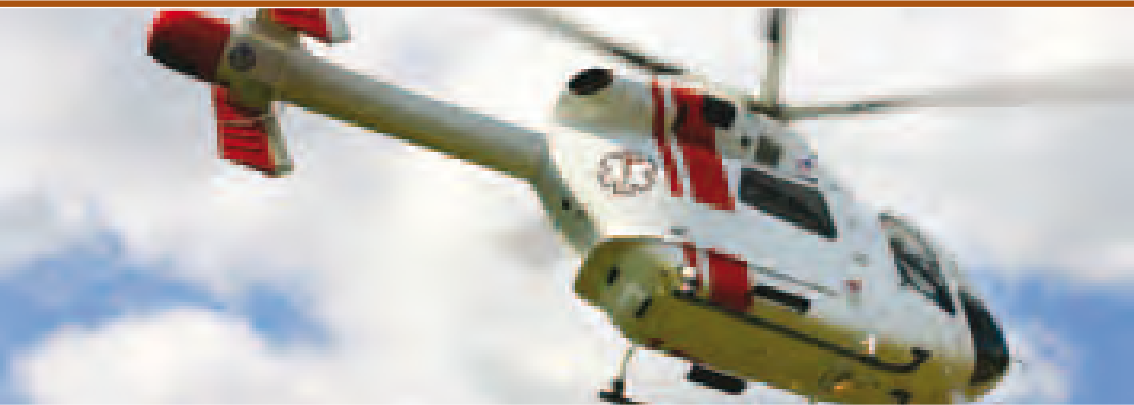
ERSA identifies locations where selected runway lighting is routinely left switched on during the hours of darkness.

CAAP 5.13 night visual flight rules

CAAP 5.13-2(0) - NIGHT VISUAL FLIGHT RULES

A comprehensive Civil Aviation Advisory Publication (CAAP) on the subject of NVFR has been published and can be viewed at www.casa.gov.au.

section 4 – 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 a 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) and 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;
- 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, an air transport pilot licence or a multi-crew pilot (aeroplane) 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.

hot refuelling

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;
- the procedures to be followed during hot refuelling;
- 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 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 800 m (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:

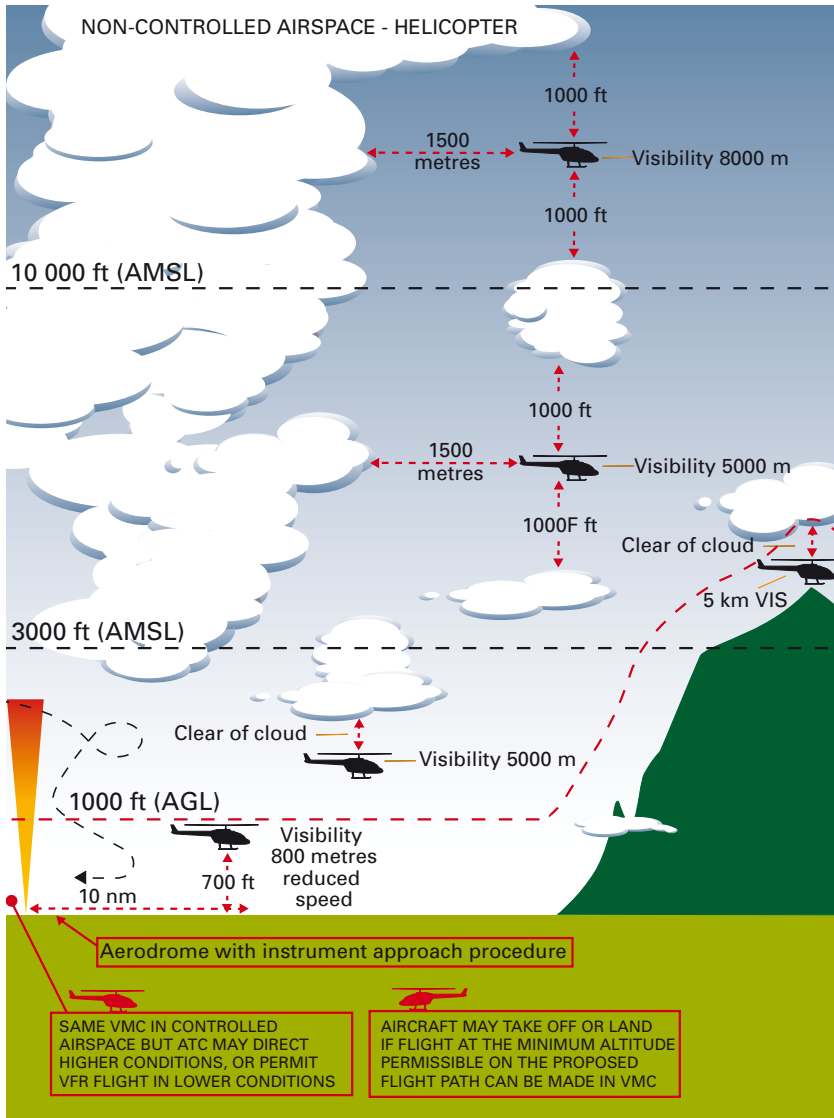
- cloud - more than SCT below 1000 ft; or
- visibility - less than 3000 m

For helicopters operating under the VFR at night, the alternate minima are a ceiling of 1500 ft and a visibility of 8 km.

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: non-controlled airspace



aerodromes

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 (registered or certified 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 500 ft AGL or as depicted in CAAP 166 1-(0). Circuit heights for aerodromes which have specific requirements are published in ERSA.

GENERAL

The procedures 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 CARs 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(1).

TAKE-OFF/ DEPARTURE

At locations within controlled airspace, 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 or departing must proceed in accordance with ATC instructions. Subject to clearance, a turn after take-off may be 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.

aerodromes

At night a helicopter should not take-off from 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(1), is considered to meet the requirements of CAAP 92-2(1).

At a non-towered 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 500 ft 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 120 kt;
- helicopters must operate under VFR, usually not below 500 ft above the surface by day subject to flight over populous areas restrictions and 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;

- a traffic advisory service is available in access corridors;
- an ATS surveillance system 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 confined 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 ± 100 ft;
- a helicopter not confining 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 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. 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 5 kt.

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 92-2.

aerodromes

CIRCUIT PROCEDURES

At controlled aerodromes any 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 500 ft 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 500 ft above the aerodrome elevation.

At non-towered 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 500 ft 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 above, is not practicable the helicopter circuit patterns should be flown inside and parallel to the aeroplane traffic and at lower altitudes, but not below 500 ft 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 flight 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 ft; or
- any other area at a height lower than 500 ft.

A height specified above is the height above the highest point of the terrain, and any object on it, within a radius of 300 m; from a point on the terrain vertically below the aircraft.

Paragraph 1 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 by, or 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 one engine-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.

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 700 ft above water by day, the flight visibility must not be less than 5000 m and the helicopter must be flown at a distance equal to or greater than 600 m horizontally and 500 ft vertically from cloud, unless track guidance is provided by an approved operating radio navigation aid and the helicopter is equipped with a complimentary radio navigation system.

section 5 – emergency procedures



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 AMSA, 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 AMSA 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 nm either side of your planned route.

Other things which you can do to help yourself and the AMSA 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 (e.g. 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, VTCs and VNCs. Note which aerodromes lie close to your track and which may be suitable for a 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 location 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.

EMERGENCY LOCATOR BEACONS REQUIREMENTS FOR AVIATION

Unless the aircraft is exempt, Civil Aviation Regulation (CAR) 252A requires the pilot in command of an Australian aircraft to carry an emergency locator transmitter (ELT) in the aircraft when operating more than 50 nm from its departure aerodrome.

Aircraft that are exempt from the regulation are single seat aircraft, balloons, airships' and gliders'. CASA has also made provision under CAR 252A for a pilot to operate an aircraft with out an ELT under certain circumstances. These circumstances include positioning the aircraft for installation or repair of an ELT. A pilot may also operate an aircraft that is fitted with an ELT without the ELT where it has been removed for repair modification or replacement provided an entry has been made to the maintenance release in accordance with CAR 252A subregulation (3)

Where an aircraft is not fitted with an ELT the regulation makes provision for the use of an approved portable ELT or a personal locator beacon in accordance with the requirements detailed in CAR 252A.

OPERATIONAL USE OF COSPAS-SARSAT BY SEARCH AND RESCUE (SAR) AGENCIES

Operational use of COSPAS-SARSAT by SAR agencies started with the crash of a light aircraft in Canada, in which three people were rescued (September 10, 1982). Since then, the System has been used for thousands of SAR events and has been instrumental in the rescue of over 24,000 lives worldwide.

The basic COSPAS-SARSAT concept is illustrated in the adjacent figure. The System is composed of:

- distress beacons (ELTs for aviation use, EPIRBs for maritime use, and PLBs for personal use) which transmit signals during distress situations;
- instruments on board satellites in geostationary and low-altitude Earth orbits which detect the signals transmitted by distress beacons;

operations

- ground receiving stations, referred to as Local Users Terminals (LUTs), which receive and process the satellite downlink signal to generate distress alerts; and
- Mission Control Centers (MCCs) which receive alerts produced by LUTs and forward them to Rescue Coordination Centers (RCCs), Search and Rescue Points Of Contacts (SPOCs) or other MCCs.

The COSPAS-SARSAT System includes two types of satellites:

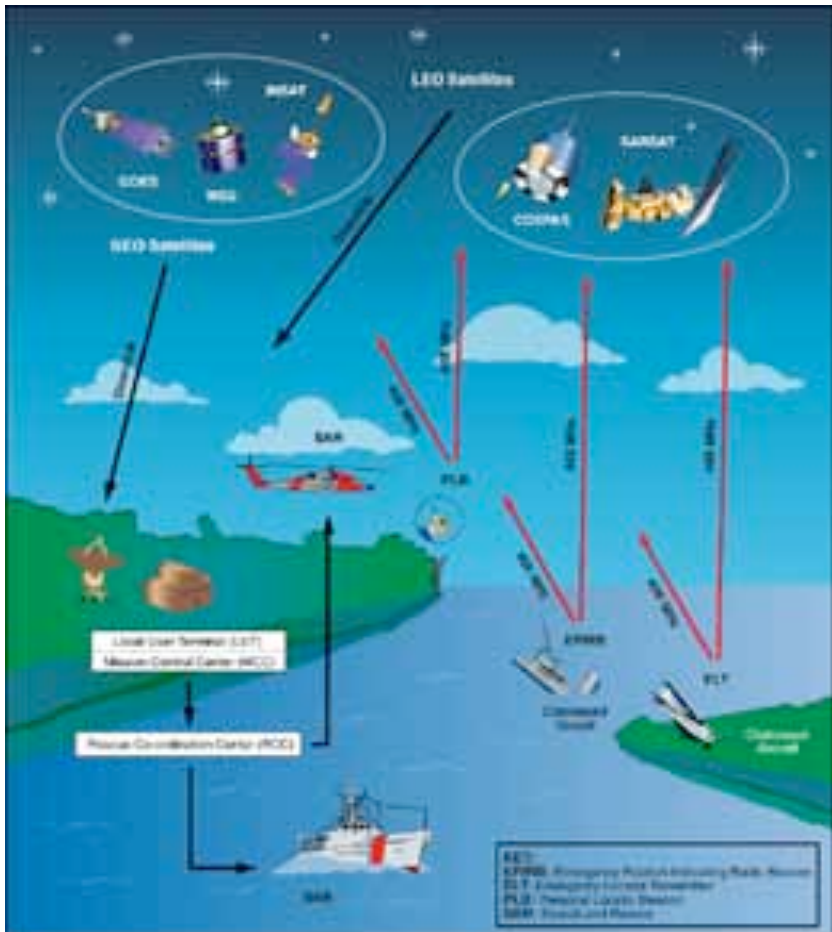
- satellites in low-altitude Earth orbit (LEO) which form the LEOSAR System
- satellites in geostationary Earth orbit (GEO) which form the GEOSAR System

COSPAS-SARSAT has demonstrated that the GEOSAR and LEOSAR system capabilities are complementary. For example the GEOSAR system can provide almost immediate alerting in the footprint of the GEOSAR satellite, whereas the LEOSAR system:

- provides coverage of the polar regions (which are beyond the coverage of geostationary satellites);
- can calculate the location of distress events using Doppler processing techniques; and
- is less susceptible to obstructions which may block a beacon signal in a given direction because the satellite is continuously moving with respect to the beacon.

CONCEPT OF OPERATIONS

The COSPAS-SARSAT System can detect and locate distress beacons that operate at 406 MHz. **Satellite processing of old analogue technology beacons that transmit at 121.5 MHz ended on 1 February 2009.** Over-flying aircraft are the only means of detecting activate analogue beacons. In some areas within the Australian search and rescue region this could amount to days rather than hours before a 121.5 MHz beacon could be heard. In some circumstances, the 121.5 MHz beacon may not be detected at all. Not all aircraft 'listen' to the 121.5 MHz frequency and those that do are generally very high flyers. As a consequence, the search area resulting from these detections could be very large and it would take rescue authorities considerable time and resources to localise the distress signal. This would also apply to distress beacons activated directly under a well used flight path.



In the Australian region there are three LUTs located at Albany (WA), Bundaberg (QLD) and Wellington (NZ) that are controlled by the MCC located with RCC-Australia in Canberra.

Alerts from 406 MHz distress beacons may be received and processed by geo-stationary satellites and passed to RCC-Australia within minutes. If the beacon has GPS capability then a very accurate position may be transmitted with the alert. Non-GPS beacons require detection by a Polar-orbiting satellite before a position can be obtained.

TYPES OF EMERGENCY LOCATOR TRANSMITTERS (ELT)

Approved **Emergency Locator Transmitters (ELT)** used in aircraft; and Approved portable **Emergency Locator Transmitters (ELT)** for use in aircraft.

Portable Locator Beacon (PLB) for personal use by bushwalkers, four-wheelers, other adventurers on land, employees working in remote areas, crew in boats and aircrew.

Emergency Position Indicating Radio Beacons (EPIRB) normally used in ships and boats but also used in life rafts.

ELTs are usually fixed in the aircraft and are designed to activate on impact. ELTs are required to operate continuously for 24 hours once activated. Civil Aviation Safety Authority (CASA) regulations require most aircraft to carry an ELT. CASA regulations allow for portable approved ELTs or EPIRBs to be carried in General Aviation aircraft as an alternative to an ELT.

Refer to CAR 252A sub regulations (5) and (6) for the technical standards.

An approved portable ELT means an eligible ELT that meets the requirements set out in CAR 252A sub regulation (6). These are the following two types;

- **PLBs** which can be used in an aircraft must meet the standards detailed in CAR 252A subregulation (6) They are also designed for personal use in both the land and marine environment. This type of beacon is becoming a multi-environment beacon. PLBs are required to operate for a minimum of 24 hours once activated. These 406 MHz beacons come in two basic types: those that provide an encoded (GPS) location and those that do not. The satellite system can calculate a beacon's location, but locating a distress site is usually much faster if the beacon signal provides a GPS location. Refer CAR 252A subregulation (6)
- **EPIRBs** are designed to float in the water to optimise the signal to the satellite. An EPIRB is required to operate for a minimum of 48 hours continuously once activated. An EPIRB has a lanyard that is used to secure it to something that is not going to sink so that it can float free. If the vessel such as a life raft continues to float then the EPIRB can be manually deployed where a distress situation exists.

ACTIVATION

A distress beacon with an encoded (GPS) location is usually detected by the RCC and located within minutes. Distress beacons that do not have the capability to provide an encoded position also provide an initial alert to the RCC within minutes, but there will be no associated position. If emergency contacts are aware of trip details or trip details have been submitted online, search operations can be commenced much sooner. If the RCC has to rely on Polar-orbiting satellites to determine the location of a beacon, the time to gain an accurate position may take longer thereby delaying search operations.

ACCIDENTAL ACTIVATION

The most important thing to do is to switch off the beacon and notify RCC-Australia as soon as possible by calling 1800 641 792 to ensure a search and rescue operation is not commenced. There is no penalty for inadvertent activations.

REGISTRATION

It is crucial that 406 MHz distress beacons be registered in recognized beacon registration databases which will be accessible to search and rescue authorities at all times. The information contained in these databases concerning the beacon, its owner, and the vehicle/vessel on which the beacon is mounted is vital for the effective use of Search and Rescue resources. The proper registration of a beacon could make the difference between success and failure of a search and rescue mission [examples of how the registration information may be used to enable the proper SAR response].

Registration is free and can result in a more efficient search and rescue effort. As stated, digital 406 MHz distress beacons transmit a unique code that identifies a particular beacon when it is activated.

A registered 406 MHz beacon will allow the Australian Maritime Safety Authority's (AMSA) Rescue Coordination Centre to access the registration database and find contact details; details of registered vessels, aircraft or vehicles; and details of up to three nominated emergency contacts who may be contacted if a beacon is activated and contact cannot be made.

These emergency contacts may be able to provide valuable information to the RCC that can assist with a more expedient rescue. Beacon registration is valid for two years and renewal can be done online or by contacting

1800 406 406.

registration

You can now register your beacon online here: www.beacons.amsa.gov.au

Beacon owners have protected access to their accounts and are able to update their details anytime, including changes to:

- ownership and emergency contact details;
- boat, aircraft or vehicle details;
- registered address details; or
- indicate the disposal of a beacon.

There is also the facility for owners to note trip itineraries, so when a beacon is activated the RCC will have access to your current movements and be better placed to organise the most suitable response.

This does not replace advising a responsible person of your trip details. In addition to online access, registration forms and changes to details can also be provided to AMSA by fax, email or post.

Owners are asked to notify AMSA if they sell their distress beacon or it is lost, stolen or destroyed. If AMSA is not notified and the new owner activates the beacon any rescue will be delayed as the last known registered owner will be contacted. Notification of sold, lost, stolen or destroyed distress beacons can be made online at:

www.amsa.gov.au/beacons, or by fax, phone, post or email.

USAGE

Distress beacons should only be used when there is a threat of grave and imminent danger. In the event of an emergency, communication should first be attempted with others close by using radios, phones and other signalling devices. Mobile phones can be used but should not be relied upon as they can be out of range, have low batteries or become water-damaged.

TESTING

All COSPAS-SARSAT type approved 406 MHz beacons include a self-test mode of operation.

All 406 MHz distress beacons can be tested at any time using the self-test functions without any notification to RCC Australia.

The self-test function performs an internal check and indicates that RF power is being emitted at 406 MHz and at 121.5 MHz, if applicable. The beacon will provide an indication of the success or failure of a GNSS self-test.

The self-test mode signal is not processed by the satellite equipment.

Aircraft cockpit remote activation switches and operational testing by aircraft maintenance facilities.

Whilst a functional test of a beacon can be performed via the beacon's self-test capability the use of the remote aircraft cockpit activation switches results in an operational activation of the ELT. Remote cockpit activations are performed on initial installation and during ongoing maintenance of the ELT.

In order to comply with these ELT maintenance requirements, operational testing of a 406 MHz ELT from the cockpit of an aircraft may be undertaken by maintenance facilities, provided the test duration is no longer than 5 seconds and is undertaken within the first 5 minutes of the hour. RCC Australia (**Telephone 1800 641 792**) and the Air Traffic Services (ATS) Centre for the location of the test must be advised of this operational test.

The test duration must be restricted to 5 seconds so that there is no potential for an operationally coded 406 MHz digital burst transmitting and thus generating a false alert. The duration of the 121.5/243 MHz homing transmission, which will also be activated as part of this test, must also be restricted so as not to generate false alerts via ATS.

emergency activation

Where an ELT is permanently installed, and you are unable to confirm that it has activated automatically, activate the ELT in situ by switching to the "on" or "active" position.

- Where a portable distress beacon 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 distress beacon with rocks, sticks, tape, etc so that the aerial remains vertical.
- Remain clear of the beacon. Obstacles near it may distort the radiation pattern.
- A beacon which is damaged or under wreckage can still transmit some signal so always activate it.
- To avoid confusing direction finding equipment on search aircraft, avoid activating two or more beacons within 1 nm 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. Prior to using the radio 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 ELT of any variant, is a useful search aid should you be forced down and require assistance. However, to obtain maximum benefit from your distress beacon and to assist the search aircraft, it is necessary to observe a few guidelines for activating your distress beacon.

If you are in the WATER, and your distress beacon is certified for water operation, 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. Keep the distress beacon vertical with the antenna pointing skyward.

In situations where you are forced to use a distress beacon that is not certified for use in water, ensure that the beacon is kept dry. The beacon should operate successfully from inside a plastic bag.

For operations over LAND you will get the best performance from a distress 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 120 cm square. It is suggested that, if you carry a distress beacon you make a foil earth mat, fold it and tape it to your distress beacon. 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 distress beacon and place in the centre of the earth mat, alternatively place the distress beacon on wing of aircraft.

IN MANY CASES, USING AN EARTH MAT WILL INCREASE THE EFFECTIVE RANGE OF YOUR DISTRESS BEACON.

TRANSMISSION OF SIGNALS

- The pilot in command of an aircraft shall transmit or display the signals specified 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 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; and
 - a gun or other explosive signal fired at intervals of approximately one minute.

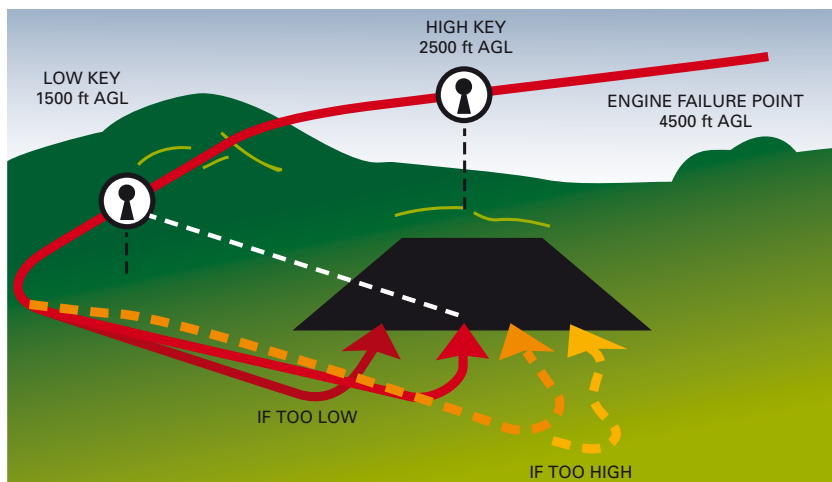
URGENCY SIGNALS

- 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	Apply 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	
Obstructions	Check proximity if possible

FMDST CHECK

Fuel	Consents, pump on, primer locked
Mixture	Up and down levers, leave rich
Oil	Temp and pressure green/amber
Mags switch	Left then right back, to both
Throttle	Up and down levers, then close

INITIAL ACTION AT ENGINE FAILURE

Master Mixture - Stop
Engine Failure
 (this case of forced landing landing is preferred)
 Any other useful information such as number of passengers etc.

FINAL ACTIONS

Fuel	Off
Mixture	Close
Mags	Off
Harness	Tight
Door	As required
Master switch	Off
	If failure mechanically controlled

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, 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 388.

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 you 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, e.g. 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 8 degrees C 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.

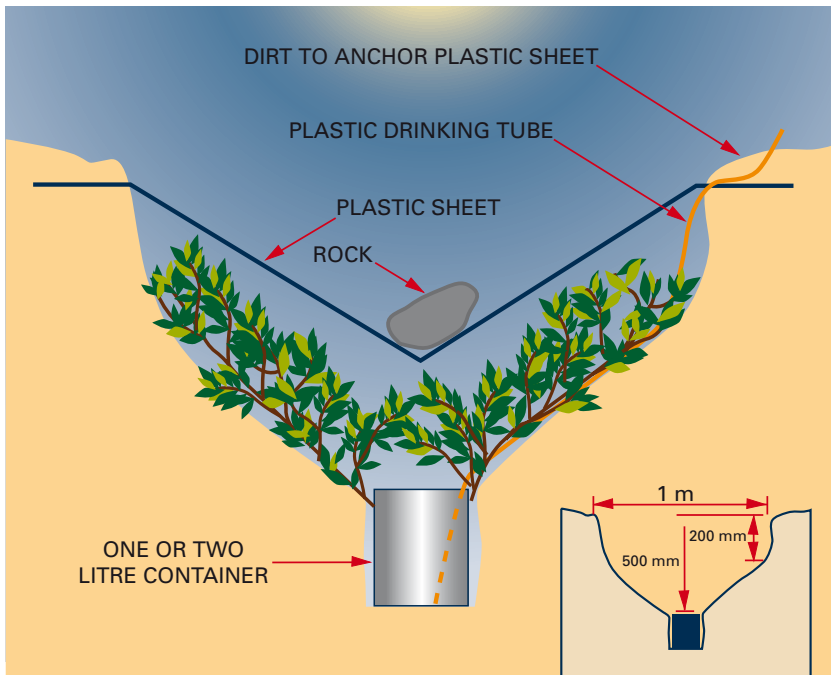
DO NOT DRINK SALT WATER



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 100 μm 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.



hints

GROUND - AIR VISUAL SIGNAL CODE FOR USE BY SURVIVORS		
No	Message	Code Signal
1	Requires Assistance	V
2	Requires 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	Requires Fuel	FF
2	Requires 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 373)'.

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. 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 fuel-impregnated 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 IN CLASS G AIRSPACE**STAY IN VMC**

- BROADCAST INTENTIONS (assume transmitter is operating and prefix calls with 'TRANSMITTING BLIND')
- REMAIN VFR IN CLASS G AND LAND AT THE NEAREST SUITABLE Non-towered AERODROME. REPORT ARRIVAL TO ATS IF ON SARTIME OR REPORTING SCHEDULES. THE SEARCH AND RESCUE TELEPHONE NUMBER is 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. 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.

procedures

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 latest ATC clearance acknowledged.

DESTINATION PROCEDURES

Track to the destination in accordance with the flight plan (amended by the latest ATC clearance acknowledged, if applicable).

Commence descent in accordance with standard operating procedures or flight plan.

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.

LIGHT SIGNALS

ON GROUND

Authorised to **TAKE-OFF** if pilot is satisfied that no collision risk exists

Authorised to **TAXI** if pilot is satisfied that no collision risk exists

TAXI CLEAR OF LANDING AREA in use

Return to starting point on aerodrome

STEADY



FLASHES



STEADY



FLASHES



FLASHES



IN FLIGHT

Authorised to **LAND** if pilot is satisfied that no collision risk exists

RETURN for landing

GIVE WAY to other aircraft
CONTINUE CIRCLING

DO NOT LAND
Aerodrome unsafe

procedures

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 IN CLASS G AIRSPACE

STAY IN VMC. BROADCAST INTENTIONS (assume transmitter is operating and prefix calls with 'TRANSMITTING BLIND'). REMAIN VFR IN CLASS G AND LAND AT THE NEAREST SUITABLE 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 (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. 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 | • INTENTION OF PERSON IN COMMAND |
| • TRANSMIT: PANPAN, PANPAN, PANPAN | • PRESENT POSITION FLIGHT LEVEL OR ALTITUDE AND HEADING |
| • AGENCY BEING CALLED | • ANY OTHER USEFUL INFORMATION |
| • AIRCRAFT IDENTIFICATION | |
| • NATURE OF URGENCY PROBLEM | |

A flight may be declared a mercy flight when:

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 (FFR). 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 places;
- 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 aerodromes;
- 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 flight and, in medical cases, the name of the patient.

section 6 – index



definitions

ADS-C AGREEMENT: A reporting plan which establishes the conditions of ADS-C data reporting (i.e. data required by the air traffic services unit and frequency of ADS-C reports which have to be agreed to prior to the provision of air traffic services).

AERODROME: A defined area of land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and movement of aircraft.

AERODROME BEACON: An aeronautical beacon, 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 useability of an aerodrome either for take-off or landing.

AERODROME PROPRIETOR: Any Owner, Licensee, Authority, Corporation, or any other body which has a legal responsibility for a particular aerodrome.

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, entering, or leaving the traffic circuit.

AERODROME TRAFFIC CIRCUIT: The specified path to be flown by aircraft flying in, entering, or leaving the traffic circuit.

AERONAUTICAL BEACON: An aeronautical ground light visible at all azimuths, either continuously or intermittently, to designate a particular point on the surface of the earth.

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 CLASSIFICATION NUMBER (ACN): A number expressing the relative effect of an aircraft on a pavement for a specific standard sub-grade category.

AIRCRAFT PARKING POSITION TAXILANE: A portion of an apron designated as a taxiway and intended to provide access to aircraft parking positions only.

AIR-GROUND COMMUNICATIONS: Two-way communications between aircraft and stations on the surface of the earth.

AIR-REPORT (AIREP): A report from an aircraft in flight 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 TAXIING: Movement of a helicopter / VTOL above the surface of an aerodrome, normally in ground effect and at a speed normally less than 20 kt.

AIR TRAFFIC CONTROL CLEARANCE: Authorisation for aircraft to proceed under conditions specified by an Air Traffic Control unit.
 Note: For convenience, the term 'Air Traffic Control Clearance' is normally abbreviated to 'Clearance' when used in appropriate context.

AIR TRAFFIC CONTROL INSTRUCTIONS: Directives issued by air traffic control for the purpose of requiring a pilot to take a specific action.

definitions

AIR TRAFFIC CONTROL SERVICE: A service provided for the purpose of:

- preventing collisions:
 - between aircraft; and
 - on the manoeuvring area between aircraft and obstructions; and
 - expediting and maintaining an orderly flow of air traffic.
-

AIR TRAFFIC SERVICE (ATS): A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service, or aerodrome control service).

AIR TRANSIT: 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 100 ft above the surface; and
 - at speeds greater than those used in air taxiing.
-

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.

ALERTED SEE-AND-AVOID: A procedure where flight crew, having been alerted to the existence and approximate location of other traffic in their immediate vicinity, seek to sight and avoid colliding with those known aircraft.

ALERTING POST: An agency designated to serve as an intermediary between a person reporting an aircraft in distress and a rescue coordination centre.

ALERTING SERVICE: A service provided to notify appropriate organisations regarding aircraft in need of search and rescue aid, and to assist such organisations as required.

ALTERNATE AERODROME: An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

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.

ALTIMETER SETTING REGION: Airspace 10 000 ft and below where the sub-scale of a pressure sensitive altimeter is set to QNH or Area QNH.

ALTITUDE: The vertical distance of a level, a point or an object, considered as a point, measured from mean sea level.

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, mail, cargo, fuelling, parking or maintenance.

APRON SERVICE: A traffic regulatory and information service provided to aircraft using the apron area of an aerodrome.

APRON TAXIWAY: A portion of a taxiway system located on an apron and intended to provide a through taxi route across the apron.

AREA CONTROL SERVICE: Air traffic control service for controlled flights in control areas.

AREA NAVIGATION (RNAV): A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground or space-based navigation aids, or within the limits of the capability of self-contained aids, or a combination of these.

AREA NAVIGATION (RNAV) ROUTE: An ATS route established for the use of aircraft capable of employing area navigation.

AREA QNH: A forecast altimeter setting which is representative of the QNH of any location within a particular area.

ATS ROUTE: A specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services.

ATS SURVEILLANCE SERVICE: Term used to indicate an air traffic service provided directly by means of an ATS surveillance system.

definitions

ATS SURVEILLANCE SYSTEM: A generic term meaning variously, ADS-B, PSR, SSR or any comparable ground-based system that enables the identification of aircraft.

Note: A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to, or better than, monopulse SSR.

AUTOMATIC DEPENDENT SURVEILLANCE - BROADCAST (ADS-B): A means by which aircraft, aerodrome vehicles and other objects can automatically transmit or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link.

AUTOMATIC DEPENDENT SURVEILLANCE - CONTRACT (ADS-C): A means by which the terms of an ADS-C agreement will be exchanged between the ground system and the aircraft, via a data link, specifying under what conditions ADS-C reports would be initiated, and what data would be contained in the reports.

AUTOMATIC EN ROUTE INFORMATION SERVICE (AERIS): The provision of operational information en route 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.

AVIATION REFERENCE NUMBER (ARN): A unique six-digit number used to identify a client who conducts business with CASA. When CASA receives an application for a new licence, certificate, or other service, an ARN is established and all subsequent transactions for the client are recorded against that ARN. In addition to being a client number, the ARN may also be the licence or certificate number. The ARN should be quoted in all correspondence with CASA or with Airservices Publications Unit.

BASE TURN (INSTRUMENT APPROACH): A turn executed by the aircraft during the initial approach between the end of the outbound track and the beginning of the intermediate or final approach track. The tracks are not reciprocal.

Note: Base turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual procedure.

BLIND TRANSMISSION: A transmission from one station to another station in circumstances where two-way communication cannot be established, but where it is believed that the called station is able to receive the transmission.

BLOCKLEVEL: A section of airspace with specified upper and lower limits on a specific track, in which cleared aircraft are permitted to manoeuvre.

BREAK-OUT PROCEDURE: A procedure initiated on instruction from a Precision Runway Monitor (PRM) controller upon which a pilot is required to discontinue an ILS approach and immediately commence a turn of approximately 90 degrees from the ILS course, climbing (or descending) as instructed by ATC, in response to an aircraft deviating from the adjacent ILS course.

BRIEFING: The act of giving in advance, specific pre-flight instructions or information to aircrew.

BROADCAST: A transmission of information relating to air navigation for which an acknowledgement is not expected.

CEILING: The height above the ground or water of the base of the lowest layer of cloud below 20 000 ft covering more than one-half of the sky.

CENSAR: An automated centralised SARTIME database software package used by ATS to manage SARTIMES.

CENTRE: A generic call-sign used in the en route and area environment which can include Air Traffic Control, Advisory, Flight Information and Alerting services, depending on the classification of airspace in which the service is provided.

CIRCLING APPROACH: An extension of an instrument approach procedure which provides for visual circling of the aerodrome prior to landing.

CLEARANCE LIMIT: The point to which an aircraft is granted an air traffic control clearance.

definitions

CLEARANCE EXPIRY TIME: A time specified by an air traffic control unit at which a clearance ceases to be valid.

CLEARWAY: A defined rectangular area on the ground or water under the control of the appropriate authority, selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to a specified height.

COLLOCATED (NAVIGATION) AIDS: En route way-points or navigation aids that are within 600 m of each other.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF): A designated frequency on which pilots make positional broadcasts when operating in the vicinity of a non-towered aerodrome.

COMMUNICABLE DISEASES: Communicable diseases include cholera, typhus (epidemic), smallpox, yellow fever, plague, and such other diseases as the contracting States shall, from time to time, decide to designate.

COMPANY OPERATIONS REPRESENTATIVE: The representative of an operating agency who is authorised to act in the capacity of liaison officer between ATC and the operating agency in respect of the control of an aircraft of that agency.

CONTROL AREA (CTA): A controlled airspace extending upwards from a specified limit above the earth.

CONTROLLED AERODROME: An aerodrome at which air traffic control service is provided to aerodrome traffic.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification.

CONTROLLER: An air traffic controller, operating within an organisation approved under CASR Part 172 and qualified in accordance with CASR Part 65.

CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC): A means of communication between controller and pilot using data link for ATC communications.

CONTROL ZONE (CTR): A controlled airspace extending upwards from the surface of the earth to a specified upper limit.

CRUISE CLIMB: An aeroplane cruising technique resulting in a nett increase in altitude as the aeroplane weight decreases.

CRUISING LEVEL: A level maintained during a significant portion of a flight.

DANGER AREA: An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

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.

DECISION ALTITUDE/HEIGHT (DA/H): A specified altitude or height in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

Note 1: 'Decision altitude (DA)' is referenced to mean sea level (MSL) and 'decision height (DH)' is referenced to the threshold elevation.

Note 2: The 'required visual reference' means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

DENSITY HEIGHT: An atmospheric density expressed in terms of height which corresponds to that density in the Standard Atmosphere.

DEPENDENT PARALLEL APPROACHES: Simultaneous approaches to parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre-lines are prescribed.

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.

definitions

DOMESTIC FLIGHT: A flight between two points within the Australian FIR.

ELEVATION: 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:

- **Uncertainty Phase:** A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.
 - **Alert Phase:** A situation where in 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.
-

EQUIVALENT SINGLE ISOLATED WHEEL LOAD: The equivalent load that would be imposed on a pavement by a single wheel if any wheel group on an aircraft were replaced by a single wheel using the same tyre pressure.

ESSENTIAL RADIO NAVIGATION SERVICE: A radio navigation service whose disruption has a significant impact on operations in the affected airspace or aerodrome.

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 (EET): The estimated time required to proceed from one significant point to another.

ESTIMATED OFF BLOCK TIME: The estimated time at which the aircraft will commence movement associated with departure.

ESTIMATED TIME OF ARRIVAL (ETA): For IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For VFR flights, the time at which it is estimated that the aircraft will arrive over the aerodrome.

EXPECTED APPROACH TIME (EAT): The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding fix to complete its approach for a landing.

Note: The holding fix referred to in the EAT is that shown on the instrument approach chart from which the instrument approach is prescribed to commence.

FINAL APPROACH: That part of an instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified:

- at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or
 - at the point of interception of the last track specified in the approach procedure; and
 - ends at a point in the vicinity of an aerodrome from which alighting can be made, or a missed approach is initiated.
-

FINAL APPROACH ALTITUDE: The specified altitude at which final approach is commenced.

FINAL APPROACH FIX (FAF): A specified point on a non-precision instrument approach which identifies the commencement of the final segment.

FINAL APPROACH POINT (FAP): A specified point on the glide path of a precision instrument approach which identifies the commencement of the final segment.

Note: The FAP is co-incident with the FAF of a localiser based non-precision approach.

FINAL APPROACH SEGMENT: That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

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 FOLLOWING: The provision of an ongoing Radar/ADS-B Information Service (RIS).

definitions

FLIGHT IDENTIFICATION (FLT ID): An identification of up to 7 alphanumeric characters entered by the pilot via a cockpit interface. Where possible, the Flight Identification must match the Aircraft Identification entered into Item 7 of the Flight Notification.

FLIGHT INFORMATION: Information useful for the safe and efficient conduct of flight, including information on air traffic, meteorological conditions, aerodrome conditions and airways facilities.

FLIGHT INFORMATION AREA (FIA): An airspace of defined dimensions, excluding controlled airspace, within which flight information and SAR alerting services are provided by an ATS unit.

Note: FIAs 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 (FIC): A unit established to provide flight information service and SAR alerting service.

FLIGHT INFORMATION REGION (FIR): An airspace of defined dimensions within which flight information service and SAR 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.

FLIGHT LEVEL (FL): A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 hPa, and is separated from other such surfaces by specific pressure intervals.

FLIGHT NOTE: Details of the route and timing of a proposed flight provided by the pilot-in-command of an aircraft, which is other than notification submitted to 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 NOTIFICATION (WITHIN AUSTRALIAN FIR): Specified information provided to air traffic services units, relative to the intended flight or portion of flight of an aircraft.

FLIGHT PATH MONITORING: The use of ATS surveillance systems for the purpose of providing aircraft with information and advice relative to

significant deviations from nominal flight path including deviations from the terms of their air traffic control clearances.

Note: Some applications may require a specific technology e.g. radar, to support the function of flight path monitoring.

FLIGHT VISIBILITY: The visibility forward from the cockpit of an aircraft in flight.

FORECAST: A statement of expected meteorological conditions for a specified period, and for a specified area or portion of airspace.

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 to 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.

GLIDE PATH (GP): A descent profile determined for vertical guidance during a final approach.

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS): A satellite-based radio navigation system that uses signals from orbiting satellites to determine precise position and time.

GLOBAL POSITIONING SYSTEM (GPS): A GNSS constellation operated by the United States Government.

GROSS WEIGHT: The weight of the aircraft together with the weight of all persons and goods (including fuel) on board the aircraft at that time.

GROUND BASED NAVIGATION AID: means NDB, VOR, DME.

GROUND TAXIING: The movement of a helicopter under its own power and on its undercarriage wheels.

GROUND VISIBILITY: The visibility at an aerodrome, as reported by an accredited observer.

definitions

HAZARDOUS CONDITIONS: Meteorological conditions which may endanger aircraft or adversely affect their safe operation, particularly those phenomena associated with volcanic ash cloud and thunderstorms - icing, hail and turbulence.

HEADING (HDG): 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.

HEIGHT ABOVE AERODROME (NON-PRECISION APPROACH OR CIRCLING) (HAA): The height of the Minimum Descent Altitude above the published aerodrome elevation.

HEIGHT ABOVE THRESHOLD (PRECISION APPROACH) (HAT): The height of the Decision Altitude above the threshold elevation.

HELICOPTER ACCESS CORRIDOR: A corridor wholly within controlled airspace designed for the exclusive use of helicopters in VMC. The extent and alignment of the corridor is related to and delineated by prominent geographical / topographical features.

HELICOPTER LANDING SITE (HLS): A place that is used as an aerodrome for the purposes of the landing and taking-off of helicopters.

HELICOPTER LANE: A lane, outside controlled airspace, designed for use by helicopters to facilitate traffic flow.

HELICOPTER MOVEMENT AREA: The movement area for helicopters is that part of an aerodrome that can safely be used for the hovering, taxiing, take-off and landing of helicopters and consists of the manoeuvring area and aprons, but excluding those areas reserved for unrestricted use by the general public.

HIGH CAPACITY AIRCRAFT: An aircraft that is certified as having a maximum seating capacity exceeding 38 seats or a maximum payload exceeding 4200 kg.

HOLD SHORT LINE/LIGHTS: A line marked across a runway, with associated lights, in accordance with the requirements of AIP AD 1.1, at which landing aircraft must stop when required during Land and Hold Short Operations (LAHSO).

HOLDING BAY: A defined area where aircraft can be held, or bypassed, to facilitate efficient surface movement of aircraft.

HOLDING FIX: 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.

HOLDING PROCEDURE: A predetermined manoeuvre which keeps an aircraft within a specified airspace whilst awaiting further clearance.

HOSPITAL AIRCRAFT: A priority category for use by international aircraft when medical priority is required (see also Medical).

HOT SPOT: A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary.

ICAO 24 BIT AIRCRAFT ADDRESS (24 BIT CODE): A unique identification code which is programmed into each specific aircraft's transponder or ADS-B transmitter during installation. This code, expressed as six alphanumeric characters, provides a digital identification of the aircraft and is used by the air traffic system to link information contained in a flight notification to aircraft position information received via ADS-B.

IFR PICK-UP: A pilot procedure whereby a flight operating to the IFR in Class G airspace changes to VFR upon entering Class E airspace whilst awaiting an airways clearance. IFR Pick-up is limited to FL180 and below.

IDENTIFICATION: The situation which exists when the position indication of a particular aircraft is seen on a situation display and positively identified by ATC.

INDEPENDENT PARALLEL APPROACHES: Simultaneous approaches to parallel or near-parallel instrument runways where radar separation minima between aircraft on adjacent extended runway centre-lines are not prescribed. The two types of independent approaches are:

- Independent Visual Approaches - during which a pilot is responsible for separation from the aircraft on the other approach; and
 - ILS PRM Approaches - during which separation between aircraft on adjacent ILS courses is maintained using PRM.
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definitions

INDEPENDENT PARALLEL DEPARTURES: Simultaneous departures in the same direction from parallel or near-parallel instrument runways.

INERTIAL NAVIGATION / REFERENCE SYSTEM (INS/IRS): A self-contained navigation system that continually measures the accelerations acting upon the vehicle of which it is part. Suitably integrated, these forces provide velocity and thence position information.

INSTRUMENT APPROACH AND LANDING OPERATIONS: Instrument approach and landing operations are classified as follows:

- Non-precision Approach and Landing Operations: Instrument approaches and landings which do not utilise electronic glide path guidance.
- Precision Approach and Landing Operations: Instrument approaches and landings using precision azimuth and glide path guidance with minima as determined by the category of operation.

Categories of Precision Approach and Landing Operations are:

- Category I (CAT I) operation. A precision instrument approach and landing with a decision height not lower than 200 ft and a visibility not less than 800 m, or a RVR not less than 550 m.
 - Category II (CAT II) operation: A precision instrument approach and landing with a decision height lower than 200 ft but not lower than 100 ft, and a runway visual range not less than 350 m.
 - Category IIIA (CAT IIIA) operation: A precision instrument approach and landing with a decision height lower than 100 ft, or no decision height and a runway visual range not less than 200 m.
 - Category IIIB (CAT IIIB) operation: A precision instrument approach and landing with either, a decision height lower than 50 ft, or with no decision height and a runway visual range less than 200 m but not less than 50 m.
 - Category IIIC (CAT IIIC) operation: A precision instrument approach and landing with no decision height and no runway visual range limitations.
-

INSTRUMENT APPROACH PROCEDURE: A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix or where applicable, from the beginning of a defined arrival route to a point from which a landing

can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.

INTERMEDIATE FIX (IF): A fix on an RNAV approach that marks the end of an initial segment and the beginning of the intermediate segment.

IN THE VICINITY: An aircraft is in the vicinity of a non-towered aerodrome if it is within a horizontal distance of 10 miles; and within a height above the aerodrome reference point that could result in conflict with operations at the aerodrome.

INITIAL APPROACH FIX (IAF): The fix at the commencement of an instrument approach.

INITIAL APPROACH SEGMENT: That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components: VHF Localiser, UHF Glideslope, VHF Marker Beacons.

INSTRUMENT RUNWAY: One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

- Non-precision approach runway. An instrument runway served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach.
- Precision approach runway, CAT I. An instrument runway served by ILS and visual aids intended for operations with a decision height not lower than 200 ft and either a visibility not less than 800 m, or a RVR not less than 550 m.
- Precision approach runway, CAT II. An instrument runway served by ILS and visual aids intended for operations with a decision height lower than 200 ft, but not lower than 100 ft and a RVR not less than 350 m.
- Precision approach runway, CAT III. An instrument runway served by ILS to and along the surface of the runway and:
 - for CAT IIIA - intended for operations with a decision height lower than 100 ft, or no decision height and a RVR not less than 200 m;
 - for CAT IIIB - intended for operations with a decision height lower than 50 ft, or no decision height and a RVR less than 200 m, but not less than 50 m;

definitions

- for CAT IIIC - intended for operations with no decision height and no RVR limitations.

INTEGRATED AERONAUTICAL INFORMATION PACKAGE: A package which consists of the following elements: AIP, including amendment service; supplements to the AIP; NOTAM and Preflight Information Bulletins (PIBs); AIC; and checklists and summaries.

INTEGRITY: That quality which relates to the trust which can be placed in the correctness of information supplied by a system. It includes the ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT: That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of the reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

LAND AND HOLD SHORT OPERATIONS (LAHSO): 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.

LAND RESCUE UNIT: A land party equipped to undertake a search for an aircraft within the region of its responsibility.

LEVEL: A generic term relating to the vertical position of an aircraft in flight and meaning variously, height, altitude or flight level.

LICENSED AERODROME: A place that is licensed as an aerodrome under the Civil Aviation 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.

LOCALISER (LOC): The component of an ILS which provides azimuth guidance to a runway. It may be used as part of an ILS or independently.

LONG RANGE NAVIGATION SYSTEM (LRNS): Area navigation systems limited to INS / IRS or GPS.

LOW JET ROUTE (LJR): A route, or part of a route, at or below 5000 ft AGL used by MLJ aircraft for low level, high speed navigation and/or terrain following exercises.

LOWEST SAFE ALTITUDE (LSALT): The lowest altitude which will provide safe terrain clearance at a given place.

MANOEUVRING AREA: That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

MARKER: An object displayed above ground level in order to indicate an obstacle or delineate a boundary.

MARKER BEACON: A type of radio beacon, the emissions of which radiate in a vertical pattern.

MARKINGS: A symbol or group of symbols displayed on the surface of the movement area 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 FLIGHT: A flight providing transport of medical patients, personnel, and/or equipment, prioritised as follows:

- MED 1: An aircraft proceeding to pick up, or carrying, a severely ill patient, or one for whom life support measures are being provided.
 - 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.
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METBRIEF (AUTOMATED METEOROLOGICAL TELEPHONE BRIEFING): Self help system which delivers meteorological information on the telephone using a computer generated voice, in response to a tone generated telephone request.

definitions

METEOROLOGICAL INFORMATION: Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.

METEOROLOGICAL OFFICE (MO): An office designated to provide meteorological service 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.

MINIMUM ALTITUDE: The minimum altitude for a particular instrument approach procedure is the altitude specified by AIP DAP at which an aircraft shall discontinue an instrument approach unless continual visual reference to the ground or water has been established and ground visibility is equal to or greater than that specified by the DAP for landing.

Note: Applies to 'old' type instrument approach charts.

MINIMUM DESCENT ALTITUDE (MDA): A specified altitude in a non-precision runway or circling approach below which descent may not be made without visual reference.

Note: Applies to 'new' type instrument approach charts.

MINIMUM FUEL: The term used to describe a situation in which an aircraft's fuel supply has reached a state where little or no delay can be accepted.

Note: This is not an emergency situation but merely indicates that an emergency situation is possible, should any undue delay occur.

MINIMUM SECTOR ALTITUDE (MSA): The lowest altitude which may be used which will provide a minimum clearance of 1000 ft above all objects located in an area contained within a sector of a circle of 25 nm or 10 nm radius centred on a radio aid to navigation or, where there is no radio navigation aid, the Aerodrome Reference Point.

MINIMUM VECTOR ALTITUDE: The lowest altitude which a controller may assign to a pilot in accordance with the Radar Terrain Clearance chart.

MISSED APPROACH HOLDING FIX (MAHF): A fix on an RNAV approach that marks the end of the missed approach segment and the point for the missed approach holding (where applicable).

MISSED APPROACH POINT (MAPT): That point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

MISSED APPROACH PROCEDURE (MAP): The procedure to be followed if the approach cannot be continued.

MISSED APPROACH TURNING FIX (MATF): A fix on an RNAV approach that marks a turning point during the missed approach segment.

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).

MULTICOM: The frequency (126.7 MHz) used for broadcasts while operating to or from a non-towered aerodrome that does not have a discrete CTAF assigned.

NAIPS: The National Aeronautical Information Processing System, which provides briefings and flight notification functions.

NAVIGATION SPECIFICATION: A set of aircraft and flight crew requirements needed to support performance based navigation operations within a defined airspace. There are two kinds of navigation specifications:

- RNP Specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.
- RNAV Specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note: The Performance-based Navigation Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.

definitions

NIGHT: 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.

NON-TOWERED AERODROME: An aerodrome at which air traffic control is not operating.

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.

NO-TRANSGRESSION ZONE (NTZ): A corridor of airspace of defined dimensions located centrally between the two extended runway centre-lines where controller intervention is required to manoeuvre aircraft when this airspace is penetrated by an aircraft conducting a simultaneous approach to a parallel instrument runway.

ONE WAY ROUTE: A route with limitations for use in one direction, depicted on ERC-H, ERC-L and/or TAC charts by an arrow in the direction that can be used without limitation (see ERSA for additional details).

OPERATOR: A person, organisation or enterprise engaged in or offering to engage in aircraft operation.

OPERATIONS MANUAL: A manual provided by an operator 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 (refer CAR 215).

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.

PAVEMENT CLASSIFICATION NUMBER (PCN): A number expressing the bearing strength of a pavement for unrestricted operations.

PERFORMANCE-BASED NAVIGATION (PBN): Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note: Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

PERMISSIBLE ALL-UP-WEIGHT: The weight to which an aircraft is limited by virtue of the physical characteristics of an aerodrome.

PILOT-IN-COMMAND: The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

PRECISION APPROACH PROCEDURE: An instrument approach procedure utilising azimuth and glide path information provided by ILS.

PRECISION RUNWAY MONITOR (PRM): A surveillance radar system with a minimum azimuth accuracy of 0.06 degrees, an update period of 2.5 seconds or less and a high resolution display providing position prediction and deviation alert, used in providing ILS course monitoring during independent approaches to runways separated by less than 1525 m.

PRE-DEPARTURE CLEARANCE (PDC): A means of delivering an unsolicited, text-based airways clearance to eligible aircraft via an ATC data link.

PREFERRED RUNWAY: A runway nominated by ATC or listed in the AIP as the most suitable for the prevailing wind, surface conditions or noise sensitive areas in the proximity of the 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.

definitions

PROCEDURAL SERVICE: Term used to indicate that information derived from an ATS surveillance system is not required for the provision of ATS.

PROCEDURE ALTITUDE/HEIGHT: A specified altitude/height flown at or above the minimum altitude/height, and established to accommodate a stabilised descent at a prescribed descent gradient/angle in the intermediate/final approach segment.

PROHIBITED AREA: An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited. Designation is appropriate only for reasons of Defence.

QNH ALTIMETER SETTING: That pressure setting 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.

RADIO HEIGHT: The radio altimeter reading which is equivalent to the OCA adjusted for terrain/obstacle profile.

RADIO NAVIGATION SERVICE: A service providing guidance information or position data for the efficient and safe operation of aircraft supported by one or more radio navigation aids.

RADAR/ADS-B INFORMATION SERVICE (RIS): An on-request service provided to assist pilots of VFR flights, within ATS surveillance system coverage in Class E and Class G airspace, to avoid other aircraft or to assist in navigation.

RAPID-EXIT TAXIWAY: A taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at high relative speeds.

RECEIVER AUTONOMOUS INTEGRITY MONITORING (RAIM): A system whereby an airborne GPS receiver/processor autonomously monitors the integrity of the navigation signals from GPS satellites.

REDUCED VERTICAL SEPARATION MINIMUM (RVSM): The vertical separation minimum of 1000 ft between FL290 and FL410 inclusive.

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.

REPORTING POINT: A specified geographical location in relation to which the position of an aircraft can be reported.

REQUIRED NAVIGATION PERFORMANCE (RNP): A statement of the navigation performance necessary for operation within a defined airspace.

RNP TYPE: A containment value expressed as a distance in nautical miles from the intended position within which flights would be for at least 95 per cent of the total flying time.

RESCUE COORDINATION CENTRE (RCC): A unit established for promoting efficient organisation of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region.

RESTRICTED AREA: An airspace of defined dimensions above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

Note: This designation is normally used whenever the activities of the Administering Authority of the airspace are a hazard to other users; or other users constitute a hazard to the activities of the Administering Authority.

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.

RUNWAY-HOLDING POSITION: A designated position intended to protect a runway, an obstacle limitation surface, or an ILS critical/sensitive area at which taxiing aircraft and vehicles must stop and hold, unless otherwise authorised by the aerodrome control tower.

Note: In radiotelephony phraseologies, the expression 'holding point' is used to designate the runway-holding position.

RUNWAY NUMBER: The runway identification associated with the runway direction end.

definitions

RUNWAY STRIP: The defined area, including the runway (and stopway if provided), intended both to reduce the risk of damage to aircraft inadvertently running off the runway and to protect aircraft flying over it during take-off, landing or missed approach.

RUNWAY VISIBILITY (RV): The distance along a runway over which a person can see and recognise a visibility marker or runway lights.
Note: The term RUNWAY VISIBILITY is used by ATC or ground personnel to report visibility along a runway as determined by a ground observer.

RUNWAY VISUAL RANGE (RVR): The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line. (ICAO)

Note: Within Australia, the term 'RUNWAY VISUAL RANGE' or 'RVR' will be used by ATC or ground personnel exclusively to report RVR determined by electronic means.

SARTIME: The time nominated by a pilot for the initiation of SAR action if a report has not been received by the nominated unit.

SARWATCH: A generic term covering SAR alerting based either on full position reporting procedures, scheduled reporting times (SKEDS), or SARTIME.

SEARCH AND RESCUE (SAR): The act of finding and returning to safety, aircraft and persons involved in an emergency phase.

SEARCH AND RESCUE REGION (SRR): The specified area within which search and rescue is coordinated by a particular Rescue Coordination Centre.

SEGMENT MINIMUM SAFE ALTITUDE: The lowest altitude at which the minimum obstacle clearance is provided.

SEGREGATED PARALLEL OPERATIONS: Simultaneous operations on parallel or near-parallel instrument runways in which one runway is used exclusively for approaches and the other runway is used exclusively for departures.

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.

Note: There are three categories of significant points: ground-based navigation aid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navigation aids.

SIGNIFICANT WEATHER: Any weather phenomenon which might affect flight visibility or present a hazard to an aircraft.

SIMULTANEOUS OPPOSITE DIRECTION PARALLEL RUNWAY

OPERATIONS (SODPROPS): A condition whereby arriving aircraft will approach and land on one runway, concurrent with aircraft departures from the parallel runway using the opposite direction to that being used for approach and landing.

SITUATION DISPLAY: An electronic display depicting the position and movement of aircraft and other information as required.

SOLE MEANS NAVIGATION 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.

SSR CODE: The number assigned to a particular multiple-pulse reply signal transmitted by a transponder in Mode A or Mode C.

STANDARD INSTRUMENT ARRIVAL (STAR): A designated IFR arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.

STANDARD INSTRUMENT DEPARTURE (SID): A designated IFR departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the en route phase of a flight commences.

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.

STANDARD PRESSURE REGION: Airspace above 10 000 ft where the sub-scale of a pressure sensitive altimeter is set to 1013.2 HPa.

definitions

STOPWAY: A defined rectangular area on the ground at the end of the take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

SUPPLEMENTAL MEANS NAVIGATION SYSTEM: A navigation system that must be used in conjunction with a sole means navigation system.

TACTICAL AIR NAVIGATION (TACAN): An ultra-high frequency navigation aid which provides a continuous indication of bearing and slant range, in nautical miles, to the selected ground station.

TAXIWAY (TWY): A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another.

TERRAIN CLEARANCE: The vertical displacement of an aircraft's flight path from the terrain.

THRESHOLD: The beginning of that portion of the runway usable for landing.

THRESHOLD CROSSING HEIGHT: The height of the ILS glide path at the threshold.

TOTAL ESTIMATED ELAPSED TIME: For IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights the estimated time required from take-off to arrive over the destination aerodrome.

TOUCH-AND-GO LANDING: A procedure whereby an aircraft lands and takes off without coming to a stop.

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: The lowest flight level available for use above the transition altitude.

TRANSITIONAL SURFACE: An inclined plane associated with the runway strip and the approach surfaces.

TRANSPONDER: A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

UNALERTED SEE-AND-AVOID: A procedure where flight crew, who have no specific knowledge of other aircraft in their vicinity, rely solely on their ability to physically sight and avoid colliding with aircraft that may be in their vicinity.

UNDERSHOOT SHEAR: A wind shear occurrence which produces an INITIAL effect of undershooting the desired approach path and/or decreasing air speed.

UNICOM (UNIVERSAL COMMUNICATIONS): UNICOM is a non-ATS communications service provided to enhance the value of information normally available about a non-towered aerodrome.

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.

VECTORING: Provision of navigational guidance to aircraft in the form of specific headings, based on the use of an ATS surveillance system.

VFR CLIMB AND DESCENT: ATC authorisation for an IFR flight in VMC, at or below FL180, in classes D and E airspace, to conduct a visual climb or descent.

VFR-ON-TOP: ATC authorisation for an IFR flight to operate in VMC, at or below FL180, in Class E airspace at any appropriate VFR altitude or flight level (in accordance with ENR 1.2 Section 2., ENR 1.7 Section 5. and as restricted by ATC).

VHF OMNI-DIRECTIONAL RADIO RANGE (VOR): A VHF radio navigational aid which provides a continuous indication of bearing from the selected VOR ground station.

definitions

VISIBILITY: Visibility for aeronautical purposes is the greater of:

- the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background; or
 - the greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.
-

VISUAL (ATC USAGE): Used by ATC to instruct a pilot to see and avoid obstacles while conducting flight below the MVA or MSA/LSALT.

VISUAL (PILOT USAGE): Used by a pilot to indicate acceptance of responsibility to see and avoid obstacles while operating below the MVA or MSA/LSALT.

VISUAL APPROACH SLOPE INDICATOR SYSTEM (VASIS): A system of lights so arranged as to provide visual information to pilots on approach of their position in relation to the optimum approach slope for a particular runway.

VS1G: The one-g stall speed at which the aeroplane can develop a lift force (normal to the flight path) equal to its weight.

WAY-POINT: A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation. Way-points are identified as either:

- Fly-by Way-point: A way-point which requires turn anticipation to allow tangential interception of the next segment of a route or procedure, or
 - Flyover Way-point: A way-point at which a turn is initiated in order to join the next segment of a route or procedure.
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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.

CODE	DEFINITION
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A

A/A	Air to Air
AACC	Area Approach Control Centre
AAD	Assigned Altitude Deviation
AAIS	Automatic Aerodrome Information Service
AAL	Above Aerodrome Level
ABI	Advance Boundary Information
ABM	Abeam
ABN	Aerodrome Beacon
ABT	About
ABV	Above ...
AC	Alto cumulus
+ACARS	Aircraft Communication Addressing and Reporting System (pronounced “AY-CARS”)
+ACAS	Airborne Collision Avoidance System
#ACC	Area Control Centre

CODE	DEFINITION
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ACCID	Initial Notification of an Aircraft Accident
ACD	Airways Clearance Delivery
ACFT	Aircraft
ACK	Acknowledge
ACN	Aircraft Classification Number
ACPT	Accept, Accepted
ACT	Active, Activated, Activity
AD	Aerodrome
ADC	Aerodrome Chart
ADDGM	Aerodrome Diagrams
ADDN	Addition, Additional
#ADF	Automatic Direction Finding Equipment
#ADIZ	Air Defence Identification Zone
ADJ	Adjacent
ADMS	Aeronautical Database Management System
ADR	Advisory Route
#ADS-B	Automatic Dependent Surveillance-Broadcast

abbreviations and acronyms

CODE	DEFINITION
#ADS-C	Automatic Dependent Surveillance-Contract
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

CODE	DEFINITION
+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	Aeronautical Chart 1:500,00 (followed by name/title)
AOC	Aerodrome Obstruction Chart (followed by name/title)
AOC	Air Operator's Certificate

CODE	DEFINITION
AP	Airport
+APAPI	Abbreviated Precision Approach Path Indicator (pronounced "AY-PAPI")
APCH	Approach
APDC	Aircraft Parking/Docking Chart (followed by name/title)
APN	Apron
APP	Approach Control, Approach Control Office, Approach Control Service
APR	April
APRX	Approximate, Approximately
APSG	After Passing
APV	Approve, Approved, Approval
AQZ	Area QNH Zone
ARFL	Aeroplane Reference Field Length
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

CODE	DEFINITION
ASC	Ascent to, Ascending to
ASDA	Accelerate-Stop Distance Available
ASE	Altimetry System Error
A-SMGCS	Advanced Surface Movement Guidance and Control System
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
ATM	Air Traffic Management
ATP	At...(time or place)
+ATIS	Automatic Terminal Information Service
ATS	Air Traffic Services
ATTN	Attention
+ AT-VASIS	Abbreviated "T" Visual Approach Slope Indicator System (pronounced "AY TEE VASIS")
ATZ	Aerodrome Traffic Zone
AUG	August
AUTH	Authorised, Authorisation
AUTO	Fully Automated Report (MET code)
AUW	All Up Weight

abbreviations and acronyms

CODE	DEFINITION
AUX	Auxiliary
AVM	Abrupt Vertical Manoeuvres (by the MIL)
AVBL	Available
AVG	Average
+AVGAS	Aviation Gasoline
AWIS	Aerodrome Weather Information Service
AWK	Aerial Work
AWS	Automatic Weather Station
AWY	Airway
AZM	Azimuth

B

B	Blue
+BASE	Cloud Base
BCFG	Fog Patches
BCN	Beacon (aeronautical ground light)
BCST	Broadcast
BCTA	Base of CTA (used only on charts)
BDRY	Boundary
BECMG	Becoming
BFR	Before
BKN	Broken (cloud descriptor)

CODE	DEFINITION
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

°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

CODE	DEFINITION
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
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

CODE	DEFINITION
CMPL	Completion, Completed, or Complete
CMSD	Commissioned
CNL	Cancel, Cancelled
CNL	Flight Plan cancellation message
CNS	Communications, Navigation and Surveillance
COM	Communications
CONC	Concrete
COND	Condition
CONS	Continuous
CONST	Construction, Constructed
CONT	Continue(s), Continued
COOR	Coordinate, Coordinated
COORD	Coordinates
COP	Change-over Point
COR	Correct, Corrected, Correction
COS	Conical Surface
COT	At the Coast, Coastal
COV	Cover, Covered, Covering
#CPDLC	Controller Pilot Datalink Communication
CRC	Cyclic Redundancy Check
CRZ	Cruise
CS	Cirrostratus
CS	Call-sign

abbreviations and acronyms

CODE	DEFINITION
#CTA	Control Area
+CTAF	Common Traffic Advisory Frequency
CTC	Contact
CTL	Control
CTN	Caution
CTR	Control Zone
CU	Cumulus
CUF	Cumuliform
CUST	Customs
CVR	Cockpit Voice Recorder
CWY	Clearway

D

D	Danger Area (followed by identification)
DA	Decision Altitude
DAP	Departure and Approach Procedures
+ D-ATIS	Data Link Automatic Terminal Information Service (pronounced "DEE-ATIS")
DCKG	Docking
DCMSD	Decommissioned
#DCPC	Direct Controller-Pilot Communications
DCT	Direct (in relation to flight

CODE	DEFINITION
	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
DFDR	Direct FLight Data Recorder
DH	Decision Height
DIF	Diffuse
DISP	Displaced
DIST	Distance
DIV	Diversion, Divert, Diverting
DLA	Delay, Delayed
DLIC	Data Link Initiation Capability
DLY	Daily
#DME	Distance Measuring Equipment
DNG	Danger, Dangerous
DOC	Documents
DOM	Domestic
DP	Dew Point Temperature

CODE	DEFINITION
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
DUC	Dense Upper Cloud
DUR	Duration
D-VOLMET	Data Link VOLMET
DVOR	Doppler VOR
DZ	Drizzle

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

CODE	DEFINITION
#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
ETOPS	Extended Range Operations by

abbreviations and acronyms

CODE	DEFINITION
	Aeroplanes with Two Turbine Power Units
EV	Every
EXC	Except
EXER	Exercises, Exercising, to Exercise
EXP	Expect, Expected, Expecting
EXTD	Extend, Extending, Extended

F

F	Fixed (chart symbol)
FAC	Facility, Facilities
FAF	Final Approach Fix
FAP	Final Approach Point
FATO	Final Approach and Take-off Area
+FAX	Facsimile Transmission
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
FDPS	Flight Data Processing System
FEB	February
FEW	Few (cloud descriptor)

CODE	DEFINITION
FFR	Flood, Fire Relief
FG	Fog
#FIA	Flight Information Area
#FIC	Flight Information Centre
#FIR	Flight Information Region
#FIS	Flight information Service
FL	Flight Level
FLD	Field
FLG	Flashing
FLR	Flares
FLT	Flight
FLTCK	Flight Check
FLUC	Fluctuating, Fluctuation, Fluctuated
FLW	Follow(s), Following
FLY	Fly, Flying
FM	From
FM	From (followed by time weather change is forecast to begin)
#FMS	Flight Management System
FMU	Flow Management Unit
FN	Fly Neighbourly Area
FNA	Final Approach
FPD	Flight Plan Designator
FPL	Filed Flight Plan Message
FPM	Feet Per Minute

CODE	DEFINITION
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
FZFG	Freezing Fog
FZL	Freezing Level
FZRA	Freezing Rain

G

G	Green
G	Variation from mean wind speed (gusts) (MET-used in METAR/SPECI and TAF code forms)
GAAP	General Aviation Aerodrome Procedures

CODE	DEFINITION
#GBAS	Goround Based Augmentation
#GCA	Ground Controlled Approach
GEN	General
GEO	Geographic, true
GES	Ground Earth Station
GFY	Glider Flying
GLD	Glider
+GLONASS	Global Orbiting Navigation Satellite System (pronounced "GLO-NAS")
#GLS	GBAS Landing System
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)
GPI	Glide Path Intercept
#GPS	Global Positioning System
GR	Hail
GRAD	Minimum Required Climb Gradient
+GRASS	Grass Landing Area
GRVL	Gravel
GS	Groundspeed

abbreviations and acronyms

CODE	DEFINITION
GS	Small Hail and/or Snow Pellets
GUND	Geoid Undulation

H

H	High pressure are of the centre of high pressure (MET)
#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
HLDG	Holding
HLS	Helicopter Landing Site
#HN	Sunset to Sunrise
HO	Service Available to meet operational requirements

CODE	DEFINITION
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

IAC	Instrument Approach Chart (followed by name/title)
IAF	Initial Approach Fix
#IAL	Instrument Approach and Landing
IAO	In and out of clouds
#IAS	Indicated Air Speed
IBN	Identification Beacon

CODE	DEFINITION
+ICAO	International Civil Aviation Organisation
IC	Ice Crystals (MET code)
ICE	Icing, Ice
ID	Identifier, identify
+IDENT	Identification
IF	Intermediate Fix or 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
+INOP	Inoperative
#INS	Inertial Navigation System
INSTL	Install, Installed, Installation
INSTR	Instrument
INT	Intersection

CODE	DEFINITION
+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

abbreviations and acronyms

CODE	DEFINITION
KM	Kilometres
KMH	Kilometres per Hour
KPA	Kilopascals
KT	Knots
KW	Kilowatts

L

L	Left (runway identification)
L	Low pressure area or the centre of low pressure (MET)
LAHSO	Land and Hold Short Operations
LAN	Inland
+LAT	Latitude
LCA	Locally, Location, Located, Local
LDA	Landing Distance Available
LDG	Landing
LDI	Landing Direction Indicator
LEN	Length
LF	Low Frequency (30 to 300 KHZ)
LGT	Light, Lighting.
LGTD	Lighted
LIH	Light Intensity High
LIL	Light Intensity Low
LIM	Light Intensity Medium

CODE	DEFINITION
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)
LMT	Local Mean Time
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

M	Metres (preceded by figures)
M	Mach number (followed by figures)
MAE	Men and Equipment

CODE	DEFINITION
MAG	Magnetic
MAHF	Missed Approach Holding Fix
MAINT	Maintenance
MAN	Manual
MAP	Aeronautical Maps and charts
MAP	Missed Approach Procedure
MAPT	Missed Approach Point
MAR	March
MAR	At Sea
MATF	Missed Approach Turning Fix
+MAX	Maximum
MBST	Microburst
MDA	Minimum Descent Altitude
MDF	Medium Frequency Direction Finding Station
#MEA	Minimum En-route Altitude
MED	Medical
MEHT	Minimum Eye Height Over Threshold
+MET	Meteorological, Meteorology
+METAR	Aviation routine weather report (in aeronautical meteorological code)
METRAD	MET Radar
MET REPORT	Aviation routine weather report
MF	Medium frequency (300 to 3000 KHZ)

CODE	DEFINITION
MHZ	Megahertz
MI	Shallow (MET)
MIFG	Shallow Fog
MIL	Military
MIN	Minutes
MIOI	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
MO	Meteorological Office
MOA	Military Operating Area
MOC	Minimum Obstacle Clearance (required)
MOD	Moderate (used to indicate the intensity of WX phenomena, interface or static reports, eg MOD RA = moderate rain)

abbreviations and acronyms

CODE	DEFINITION
MON	Monday
MON	Above Mountains
+MOPS	Minimum Operational Performance Standards
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
MSSR	Monopulse Secondary Surveillance Radar
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)

CODE	DEFINITION
N	
N	North, North Latitude
NAIPS	National Aeronautical Information Processing System
NAP	Noise Abatement Procedures
NAT	NAVAID Training
NAV	Navigation
NAVAID	Navigation Aid
NB	Northbound
NBFR	Not Before
NC	No Change
NCD	No Cloud Detected (by ceilometer) [used in automated METAR/SPECI]
#NDB	Non Directional Radio Beacon
NDV	No Directional Variation reporting capability (by visimeter) [used in automated METAR/SPECI]
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

CODE	DEFINITION
NNW	North North-West
NOF	International NOTAM Office
#NOZ	Normal Operating Zone
+NOTAM	Notice to Airmen
NOV	November
NPA	Non-Precision Approach
NR	Number
NS	Nimbostratus
NSC	Nil Significant Cloud
NSW	Nil Significant weather
NTA	No TAF Amendment
NTL	National
#NTZ	No Transgression Zone
NVG	Night Vision Goggles (by the MIL)
NW	North-West
NXT	Next

O

OBS	Observe, Observed, Observation
OBSC	Obscure, Obscured, Obscuring
OBST	Obstacle
OBSTR	Obstruction
#OCA	Oceanic Control Area

CODE	DEFINITION
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
OK	We agreed, or It is correct
#OLDI	On Line Data Interchange
OM	Outer Marker
OPA	Opaque, white type of ice formation
OPMET	Operational Meteorological
OPN	Open, Opening, Opened
OPN	Operational Notification Message
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

abbreviations and acronyms

CODE	DEFINITION
OVC	Overcast
OW	Over Water

P

P	Prohibited Area (followed by identification)
+PAL	Pilot Activated Lighting
PANS	Procedures for Air Navigation Services
+PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PARL	Parallel
PAX	Passengers
PBN	Performance-based navigation
PCD	Proceed, Proceeding
PCL	Pilot Controlled Lighting
PCN	Pavement Classification Number
#PDC	Pre-Departure Clearance
PEC	Pressure Error Correction
PER	Performance
PERM	Permanent
PH	Public Holiday
PFR	Preferred Route
PIB	Pre-flight Information Bulletin

CODE	DEFINITION
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	Number of persons on Board
POSS	Possible
#PPI	Plan Position Indicator
PPR	Prior Permission Required
PPSN	Present Position
PRD	Prohibited, Restricted and Danger Areas
PRFG	Aerodrome Partially Covered by fog (MET code)
PRI	Primary
PRKG	Parking
PRM	Precision Runway Monitoring
+PROB	Probable, Probability
PROC	Procedure
PROV	Provisional
PS	Plus
PSG	Passing
PSN	Position

CODE	DEFINITION
PSP	Pierced Steel Plank
#PSR	Primary Surveillance Radar
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
RAD	Radius
RAFC	Regional Area Forecast Centre
RAG	Ragged
RAG	Runway Arresting Gear
+RAIM	Receiver Autonomous Integrity Monitoring
+RAPIC	Radar Picture (MET)

CODE	DEFINITION
+RASC	Regional AIS System Centre
RCA	Reach Cruising Altitude
#RCC	Rescue Coordination Centre
RCH	Reach, Reaching
RCL	Runway Centre Line
RCLL	Runway Centre Line Lights
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
ERTE	Re-Route
RES	Reserve Fuel
RESA	Runway End Safety Area
RESTR	Restrictions
REV	Review
REC	Regional Forecasting Centre (MET)
RFF	Rescue and Fire Fighting Services

abbreviations and acronyms

CODE	DEFINITION
RH	Radio Height
RHC	Right Hand Circuit
RIF	Reclearance in flight
+RIS	Rader/ADS-B Information Service
RL	Report Leaving
RLA	Relay to
RLLS	Runway Lead-in Lighting
RMK	Remark(s)
+RNAV	Area Navigation
RNP	Required Navigation Performance
+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
#RPI	Radar Position Indicator
RPT	Regular Public Transport
RPT	Repeat, I Repeat
RQ	Require(d)
RQMNTS	Requirements
RR	Report Reaching
RSC	Rescue Sub-Centre

CODE	DEFINITION
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
RTS	Return to Service
RTZL	Runway Touchdown Zone Lights
#RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
RWS	Runway Strip
RWY	Runway

S

S	South, South Latitude
SA	Sand
SALS	Simple Approach Lighting System
+SAR	Search and Rescue
SARPS	Standards and Recommended Practices (ICAO)

CODE	DEFINITION
+SARTIME	Time search action required
SAT	Saturday
+SATCOM	Satellite Communication
SB	Southbound
SC	Stratocumulus
SCT	Scattered
SDBY	Standby
SDC	Standard Departure Clearance
SE	South East
SEA	Sea (used in connection with sea-surface temperature and state of the sea)
SEC	Seconds
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)

CODE	DEFINITION
SHF	Super High Frequent (3,000 to 30,000MHZ)
+SID	Standard Instrument Departure
SIF	Selective Identification
+SIGMET	Information concerning en route weather phenomena which may affect the safety of aircraft operations
SIGWX	Significant Weather
SIMUL	Simultaneous, Simultaneously
SITREP	Situation Report
SKC	Sky Clear
+SKED	Schedule, Scheduled
SLP	Speed Limiting Point
SLW	Slow, Slowly
#SMC	Surface Movement Control
#SMCV	Surface Movement Control Vehicles
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)

abbreviations and acronyms

CODE	DEFINITION
SP	Single Pilot
SPA	Sport Aviation
+SPECI	Aviation Special Weather (in Aeronautical meteorological code)
SPFIB	Specific Preflight Information Bulletin
+SPOT	Spotwind
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

CODE	DEFINITION
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 Surveillance

CODE	DEFINITION
	Area
#TAS	True Airspeed
+TAT	Terminal Area Thunderstorm Service (meteorological term)
TAX	Taxiing, Taxi
TBA	To Be Advised
TC	Tropical Cyclone
TCAC	Tropical Cyclone Advisory Centre
+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
TFR	Terrain Following Radar (by the MIL)
TGL	Touch and go Landing
TGS	Taxiing Guidance System
THR	Threshold
THRU	Through
THU	Thursday

CODE	DEFINITION
TIBA	Traffic Information Broadcasts by Aircraft
+TIL	Until
TIP	Until Past (place)
TKOF	Take-off
TL	Until
TLW	Time Limited WIP (work in progress)
#TMA	Terminal Control Area
TN	Indicator for Minimum Temperature (MET-used in TAF code form)
TNA	Turn Altitude
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
#TRA	Temporary Restricted Area
TRAN	Transition
TRANS	Transmits, Transmitter
TRL	Transition Level
TROP	Tropopause

abbreviations and acronyms

CODE	DEFINITION
TS...	Thunderstorm (followed by RA=rain, SN=snow, PE=ice pellets, GR=hail, GS=small hail and/or snow pellets or combinations thereof TSRASN= thunderstorm with rain and snow
#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
TX	Indicator for Maximum Temperature (MET-used in TAF code form)
TYP	Type of Aircraft
TYPH	Typhoon
U	
UAB	Until Advised By
#UDF	UHF Direction Finding Stations
UFN	Until Further Notice
UHDT	Unable Higher Due Traffic

CODE	DEFINITION
#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
UP	Unknown Precipitation
U/S	Unserviceable
UTA	Upper Control Area
#UTC	Coordinated Universal Time

V

V	Variation from mean wind speed (MET-used in METAR/ SPECI code forms)
VA	Volcanic Ash
VAAC	Volcanic Ash Advisory Centre
VAL	In Valleys
VAR	Magnetic Variation
+VASIS	Visual Approach Slope Indicator System
VCY	Vicinity

CODE	DEFINITION
VC	Vicinity of the aerodrome (followed by FG=fog, FC=funnel cloud, PO=dust/sand whirls, BLDU=blowing dust, BLSA=blowing sand or BLSN=blowing snow; eg VCFG=vicinity fog)
#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
VNC	Visual Navigation Chart
+VOLMET	Meteorological Information for Aircraft in Flight
#VOR	VHF Omni-directional Radio Range (OMNI)
VRB	Variable
VTC	Visual Terminal Chart
VTOL	Vertical Take-off and Landing
VV	Vertical Visibility (MET-used in METAR/SPECI and TAF code forms)

CODE	DEFINITION
W	
W	West, West Longitude
W	White
WAC	World Aeronautical Chart - ICAO 1:1 000 000 (followed by name/title)
WAFC	World Area Forecast Centre
WATIR	Weather and Terminal Information Reciter
WB	Westbound
WDI	Wind Direction Indicator
WDSPR	Widespread
WED	Wednesday
WEF	With Effect From, Effective From
WGS-84	World Geodetic System-1984
WI	Within
WID	Width
WIE	With Immediate Effect, Effective Immediately
+WILCO	Will Comply
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

abbreviations and acronyms

CODE	DEFINITION
WPT	Way Point
WRNG	Warning
WS	Wind Shear
WSW	West South-West
WT	Weight
WTSPT	Water Spout
WWW	World Wide Web
WX	Weather

X

X	Cross
XBAR	Crossbar (of approach lighting system)
XNG	Crossing
XS	Atmospherics

Y

Y	Yellow
YCZ	Yellow Caution Zone
YR	Your(s)

Z

Z	Coordinated Universal Time (in meteorological messages)
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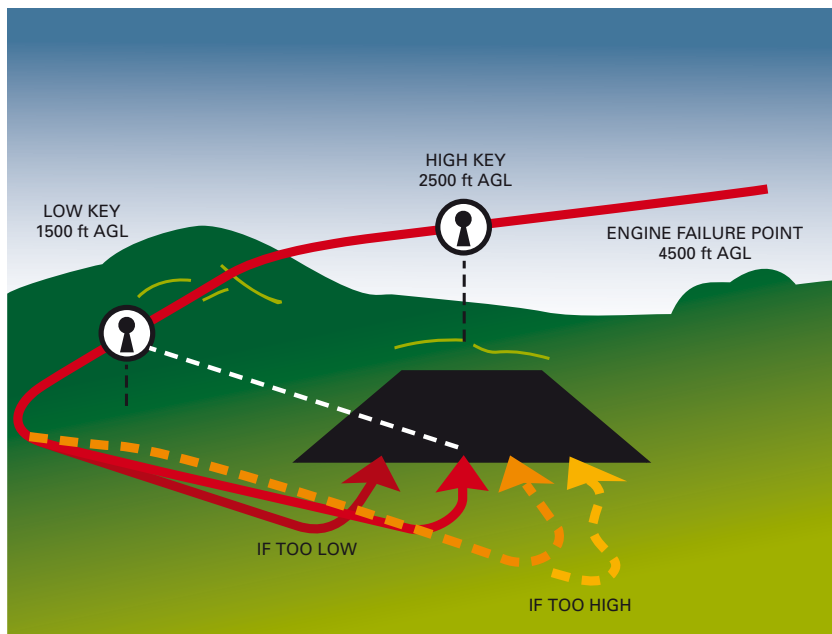
TYPE	REGISTRATION	
Best rate of climb speed (V _X)		kt
Best angle of climb speed (V _Y)		kt
Normal climb speed		kt
Best glide speed - Heavy		kt
Best glide speed - Medium		kt
Best glide speed - Light		kt
Stall speed (V _{S0})		kt
Full flap		kt
Short field take-off speed		kt
Short field landing speed		kt
Flapless landing speed		kt
Normal landing speed		kt
Maximum gear extension speed		kt
Maximum V _{LE} flap extension speed (V _{FE})		kt
Fuel capacity (usable)		litres
Fuel flow (50% power)		litres/hr
Fuel flow (75% power)		litres/hr
Basic empty weight		kg
Maximum take-off weight		kg
Maximum baggage weight		kg

quick reference

ARE YOU SAFE TO FLY?

I	llness	<i>Are you physically well?</i>
M	edication	<i>Are you free from the effects of drugs?</i>
S	tress	<i>Are you free from significant stress?</i>
A	lcohol	<i>Are you free from the effects of alcohol?</i>
F	atigue	<i>Are you adequately rested?</i>
E	ating	<i>Have you eaten properly to work effectively?</i>

Don't fly if you are not safe!



light signals to aircraft

SIGNALS FOR THE CONTROL OF AERODROME TRAFFIC

LIGHT SIGNALS

ON GROUND

Authorised to **TAKE-OFF**
if pilot is satisfied that
no collision risk exists

STEADY



Authorised to **TAXI** if
pilot is satisfied that
no collision risk exists

FLASHES



STOP

STEADY



**TAXI CLEAR OF
LANDING AREA** in use

FLASHES



Return to starting
point on aerodrome

FLASHES



IN FLIGHT




Authorised to **LAND**
if pilot is satisfied that
no collision risk exists

RETURN for landing

GIVE WAY
to other aircraft
CONTINUE CIRCLING

DO NOT LAND
Aerodrome unsafe

SIGNALS FOR THE CONTROL OF AERODROME TRAFFIC

GROUND SIGNAL	DESCRIPTION	WHERE DISPLAYED	MEANING
	Horizontal white dumb-bell	Adjacent to wind direction indicator	Use only hard surface movement areas. Where there are sealed and gravel manoeuvring areas, use only the sealed surfaces. Where there are constructed gravel and natural surface manoeuvring areas, use only the gravel surfaces. (See ERSA FAC for any local information relating to the dumb-bell signal)
	White Cross	(i) Adjacent to wind direction indicator (ii) On manoeuvring area	(i) Aerodrome completely unservicable. (ii) An area marked by a cross or crosses with the limit delineated by markers is unfit for use by aircraft
	White Double Cross	Adjacent to wind direction indicator	Gliding operations in progress

R UF LYIN GBLIND

Procedures, regulations and airspace boundaries change regularly. Some may have changed since this guide was published.

So, if this guide is your sole source of information, you're flying blind.

Always use current operational charts and documents, including:

- Aeronautical Information Publication (AIP) or Australian Airway Manual.
- En route Supplement Australia (ERSA) or Australian Airway Manual.
- Melbourne Visual Terminal Chart (VTC).
- NOTAM.

To order AIP, ERSA and VTC, contact the Airservices Publications Centre on 1300 306 630.

To order the Australian Airway Manual contact Jeppesen on (02) 6120 2999.

To download updates of this guide, go to www.casa.gov.au