Manual of Air Traffic Services

Electronic Edition Version 70

Valid from 2411271600

Next issue effective 2503191600

IMA Checkoff Table		
IMAs applied to this edition	**Date issued**	**Date applied**

Inquiries and requests for approval should be addressed in the first instance to:

ATM Standards Lead (ATMSL)

Airservices Australia

GPO Box 367

CANBERRA CITY ACT 2601

Australia

or

A8 Staff Officer 1 Capability Management ANSP

Royal Australian Air Force (RAAF)

Headquarters SRG

RAAF Base Williamtown

WILLIAMTOWN NSW 2314

Australia

Table of Contents

What’s Changed

This release incorporates changes from the following Change Requests, which have already been approved by the Change Implementation Group:

Title	Description of change	Change Request Number
Flight plan definitions update	Align the flight plan definitions with ICAO. Sections affected: 1.1.1 and 1.2.1	36693
VSS to VSS-M	Creates definitions and discrete rule sets for VSS and VSS-M. Sections affected: 1.1.1, 1.2.1 and 12.9.5.	34036
GRF v2 amendments	A number of small amendments to GRF related procedures are desired for completeness. Sections affected: 3.1.1, 7.1.7, 9.1.2, 12.2.3	36026
Alert phase update	Update alert phase circumstances to align with Annex 11. Section affected: 4.2.2	36692
Removal of 4.3.5	Removal of 4.3.5 due to duplication in FIHA. Section affected: 4.3.5	37117
Automated Balloon Releases	Amends the requirements for meteorological balloons near aerodromes to permit automatic meteorological balloon launching systems at some locations. Section affected: 5.1.1	37758
RPAS shielded operations above 400 FT	Extends the applicability of the shielded operations above the OLS RPAS segregation method to operations above 400 FT. Sections affected: 5.3.1, 5.3.3 and 5.3.4	37624
ATIS Designator Coordination	Include the requirement for procedural Towers to coordinate the ATIS designator to en route. Section affected: 6.3.4	35982
Vectoring	Rationalises the location and circumstances in which aircraft may be vectored. Section affected: 9.7.10	35503
Runway nomination conditions	Better aligns the runway conditions in which a particular runway may not be nominated for given wind conditions with the Part 172 MoS. Section affected: 12.2.1	37102
Removal of military aerodrome sequence instructions	Removal of 12.5.6.3 due to duplication in FIHA. Section affected: 12.5.6	37116
Vehicle clearance and readback requirements	Include vehicle clearance issue and readback requirements. Section affected: 12.7.1	35945

Index

D

E

Index

S

1 Definitions

1.1 Glossary - terms

1.1.1 Terms and definitions

1.1.1.1 Introduction

The terms and definitions published follow those defined within ICAO documents where possible.

1.1.1.2 'Service' and 'unit'

Throughout the manual, the term 'service' is used to designate functions or service rendered and the term 'unit' is used to designate a collective body performing a service.

1.1.1.3 A

Term	Definition
Accelerate Stop Distance Available (ASDA)	The take-off run available plus the length of stopway available (if stopway is provided).
Acceptance of Control	The act of accepting responsibility for the control of an aircraft.
Accepting Unit/Controller	Air traffic control unit/Controller next to take control of an aircraft.
Accident (for ATS reporting)	An occurrence that affects or could affect air safety associated with the operation of an aircraft or the ATS system in which it is known or believed that either physical damage has been caused to a person or property or an aircraft is missing and believed to be lost.
Active Bay	A bay or portion in which strips are held while they are actively in use for air traffic services purposes.
Addressee Originator Indicator	The location indicator followed by a three-letter designator and a filler character to indicate an organisation at the particular location. Example 'YSSYQFAX' is 'Qantas at Sydney' the filler character used to represent a department or division to facilitate internal distribution. 'YSSYQFAO' represents 'Qantas Operations at Sydney'.
Administering Authority	With respect to a Danger Area or Military Operating Area this is the agency nominated to exercise the conditions specified for the area and, where authorised, the Air Traffic Service provider for that area. *See also 'Controlling Authority' in these definitions.*
ADS-B Equipped Aircraft	Aircraft capable of transmitting Automatic Dependent Surveillance Broadcast (ADS-B) data.
ADS-B Ground Station	A ground-based system that receives aircraft position, altitude, speed and other parameters and presents it to air traffic control facilities.
ADS-B Position Symbol - High-Quality	A high-quality ADS-B position symbol reflects required position accuracy, position integrity, and a reliability that meets the requirements for the application of surveillance separation standards.
ADS-B Position Symbol - Low-Quality	A low-quality ADS-B position symbol reflects required position accuracy, position integrity, and a reliability that meets the requirements for the application of procedural separation standards.

Term	Definition
ADS-C Agreement	A reporting plan which establishes the conditions of Automatic Dependent Surveillance - Contract (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).
ADS-C Report Symbol	The position symbol displayed when an ADS-C report is received by the ground system.
Advanced Surface Movement Guidance and Control System (A-SMGCS)	A system providing routing, guidance and surveillance for the ground control of aircraft and vehicles.
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	Air traffic control service for aerodrome traffic.
Aerodrome Control Tower	A unit established to provide air traffic control service to aerodrome traffic.
Aerodrome Elevation	The elevation of the highest point of the landing area.
Aerodrome Ground Surveillance System	Surveillance that provides positional information on aircraft and vehicles on the movement areas and via a display system. This term includes systems such as A-SMGCS and SMR.
Aerodrome Meteorological Minima (ceiling and visibility minima)	The minimum heights of cloud base (ceiling) and minimum values of visibility prescribed for the purpose of determining the usability 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 operating in, entering or leaving the traffic circuit. ***Note:*** *At a controlled aerodrome an aircraft is in the traffic circuit when it is within the CTR and established on a leg of the circuit.*
Aerodrome Traffic Zone (ATZ)	An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.
Aerodrome Weather Information Broadcast (AWIB)	Broadcasts of actual weather conditions may be made on navaids from AWS and advanced aviation AWS sites. Information provided in Aerodrome Weather Information Broadcasts is in similar format to that of an ATIS.
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 Fixed Service (AFS)	A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.
Aeronautical Fixed Station	A station in the aeronautical fixed service.

Term	Definition
Aeronautical Fixed Telecommunications Network (AFTN)	A world-wide system of aeronautical fixed circuits provided for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communications characteristics.
Aeronautical Ground Light	Any light specially provided as an aid-to-air navigation, other than a light displayed on an aircraft.
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 or instructions of a lasting character essential to air navigation.
Aeroplane	A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces, which remain fixed under given conditions of flight.
AFTN Communications Centre	An AFTN station whose primary function is the relay or retransmission of AFTN traffic.
AIP Supplement	Temporary changes to information contained in the AIP which are published by means of special pages.
Airborne	An aircraft is considered airborne when all parts of the aircraft are off the ground.
Airborne Collision Avoidance System (ACAS)	An aircraft system based on secondary surveillance radar (SSR) transponder signals which operates independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are equipped with SSR transponders.
Aircraft Address (24 bit code)	*See 'ICAO 24 bit Aircraft Address (24 bit code)' in these definitions.*
Aircraft Identification (ACID)	A group of letters, figures or a combination thereof which is either identical to, or the coded equivalent of, the aircraft callsign to be used in air-ground communications, and which is used to identify the aircraft in ground-ground air traffic services communication.
Aircraft Weight Categories	The weight categories in which aircraft are divided to determine the impact of wake turbulence on other aircraft operations.
Air-Ground Communication	Two-way communications between aircraft and stations on the surface of the earth.
AIRMET Information	Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en route weather phenomena which may affect the safety of low-level (below A100) aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or the sub-area thereof.
Air Report (AIREP)	A report prepared by the pilot during the course of a flight in conformity with the requirements for position, operational or meteorological reporting specified in the AIREP form.
Airservices	Airservices Australia
Airspace Release	A defined volume of airspace normally under the jurisdiction of one controlling/administering authority that is temporarily released, by common agreement, for exclusive use of another.

Term	Definition
Airspace Reservation	A defined volume of airspace normally under the jurisdiction of one aviation authority and temporarily reserved, by common agreement, for exclusive use of another.
Airspace speed limitation	A speed limit specified for a particular class of airspace.
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-to-air Refuelling (AAR)	Transfer of fuel between aircraft whilst airborne.
Air-to-air Refuelling Anchor Pattern	A prescribed area published in DAH for the purpose of AAR.
Air-to-air Refuelling Anchor Point	A defined reference point upon which an anchor refuelling pattern is orientated.
Air-to-air Refuelling Control Point (ARCP)	The planned point on an air-to-air refuelling track that the receiver will be in position to commence AAR.
Air-to-air Refuelling Exit Point	A point on an air-to-air refuelling track where air-to-air refuelling terminates.
Air-to-air Refuelling Tanker Orbit Pattern	A standard manoeuvring area based on the ARCP for a tanker to establish the formation prior to track refuelling.
Air-to-air Refuelling Track	A prescribed route designated for air-to-air refuelling.
Air Traffic	All aircraft in flight or operating on the manoeuvring area of an aerodrome.
Air Traffic Control Clearance	Authorisation for aircraft to proceed under conditions specified by an Air Traffic Control unit. ***Note 1:*** *For convenience, the term 'air traffic control clearance' is frequently abbreviated to 'clearance' when used in appropriate context.* ***Note 2:*** *The abbreviated term 'clearance' may be prefixed by 'taxi', 'take-off', 'departure', 'airways', 'en route', 'approach' or 'landing' to indicate the particular portion of the flight to which the air traffic control clearance relates.*
Air Traffic Control Instructions	Directives issued by Air Traffic Control for the purpose of requiring a pilot to take a specific action.
Air Traffic Control Service	A service provided for the purpose of: a) preventing collisions: i) between aircraft; and ii) on the manoeuvring area between aircraft and obstructions; and b) 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 Traffic Services Airspaces	Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified.
Air Traffic Services Unit	A generic term meaning (variously) air traffic control unit, flight information centre, or air traffic services reporting office.

Term	Definition
Air Transit	The airborne movement of a helicopter that is: a) for the expeditious transit from one place within the aerodrome to another place within the aerodrome; b) at or below 100 FT above the surface; and c) at speeds greater than those used in air-taxiing.
Air Transport Operation	A regular public transport operation or a charter operation.
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.
ALERFA	The code word used to designate an alert phase. *See 'Alert Phase (ALERFA)' in these definitions.*
Alert Phase (ALERFA)	A situation wherein apprehension exists as to the safety of an aircraft and its occupants.
Alerted See-and-Avoid	A procedure where the pilot, having been alerted to the existence and approximate location of other traffic in their immediate vicinity, seeks to sight known aircraft to avoid a collision.
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 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 where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use.
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: a) when set to QNH or Area QNH it will indicate altitude; b) when set to QFE it will indicate height above the QFE datum; and c) 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. ***Note 1:*** *The letter 'A' followed by three figures denotes specific altitude e.g. 'A060' for 6000 FT AMSL.* ***Note 2:*** *For ATS use, aircraft below 10 000 FT are considered to be flying at an 'altitude'. Above 10 000 FT aircraft are considered to be flying at 'flight levels'.*
Approach Control Service	Air traffic control service for arriving or departing controlled flights.

Term	Definition
Approach procedure with vertical guidance (APV)	*See 'Instrument Approach Procedure (IAP)' in these definitions.*
Approach Sequence	The order in which two or more aircraft are cleared to approach to land at the aerodrome.
Appropriate ATS Authority	The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.
Approved Self-Contained Navigation System	Aircraft equipped with INS, IRS or GNSS and indicating one of the following approvals: a) RNAV5; b) RNAV10 (RNP10); c) RNP2 (in CTA only); or d) RNP4.
Apron	A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.
Apron Taxiway	A portion of a taxiway system located on an apron and intended to provide a through taxi route across the apron. An Apron Taxiway does not form part of the manoeuvring area.
Area Control Service	Air Traffic Control service for controlled flights in control areas.
Area Navigation	A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground or space-based navaids or within the limits of the capability of self-contained aids, or a combination of these.
Area Navigation Routes	An ATS route established for the use of aircraft capable of employing area navigation.
Area of Conflict	The area in which the navigation tolerances of selected tracks overlap.
Area QNH	A forecast altimeter setting which is representative of the QNH of any location within a particular area.
Arrival Routes	Routes identified in an instrument approach procedure by which aircraft may proceed from the en route phase of flight to an initial approach fix.
ATC speed restriction	An ATC traffic management speed or an ATC-issued speed control instruction.
ATS Route	A specified route designed for channelling the flow of traffic as necessary for the provision of air traffic services.
ATS Surveillance Service	A term used to indicate an air traffic service provided directly by means of an ATS surveillance system.
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 secondary surveillance radar (MSSR).*

Term	Definition
Australian-Administered Airspace	The airspace over Australian territory — and airspace that has been allocated to Australia by ICAO under the Chicago Convention and for which Australia has accepted responsibility — and airspace administered by Australia at the request of another country. (Air Services Act 1995 - SECT 3 Interpretation).
Australian Eastern Oceanic Controlled Airspace	Controlled Oceanic airspace contained within the YBBB FIR east of the mainland as well as the ANAU and AGGG FIRs.
Auto Release	A procedure whereby voice coordination between Tower and Departures is minimised to facilitate departures.
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. ***Note:*** *The abbreviated term 'ADS contract' is commonly used to refer to ADS event contract, ADS demand contract, ADS periodic contract or an emergency mode.*
Automatic Relay Installation	A teletypewriter installation where automatic equipment is used to transfer messages from incoming to outgoing circuits.
Automatic Terminal Information Service (ATIS)	The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts.
Automatic Weather Station (AWS)	An AWS provides the basic elements of an aerodrome weather report.
Aviation Activities	Those activities involving the use of an airborne platform.

1.1.1.4 B

Term	Definition
Base Turn	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.*
Basic Lateral Separation Point (BLSP)	The point at which the navigation tolerances of both aircraft are no closer than 1 NM.
Bay	A division on a flight progress board on which strip holders are arranged.
Bay Divider	A fixed or moveable divider used on a flight progress board to separate bays as required.
Blanket Clearance	A pre-arranged clearance originated for specific activities or events and specified in a Letter of Agreement or MATS Supplementary Procedures.
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.
Block Level	A section of airspace with specified upper and lower limits on a specific track, in which a cleared aircraft is permitted to manoeuvre.
Box	A division within a flight progress strip used to record information of a particular significance.
Braking action	A term used by pilots to characterise the deceleration associated with the wheel braking effort and directional controllability of the aircraft. See MATS *12.2.3.8 Braking action descriptors*
Break-out Procedure(s)	Immediate evasive manoeuvres, which are performed on instruction by air traffic control. ***Note:*** *In the context of simultaneous parallel operations, break-out procedures are used to direct a threatened aircraft and a deviating aircraft away from each other.*
Broadcast	A transmission of information relating to air navigation that is not addressed to a specific station or stations.
Broadcast Area	An area designated under CAR99A as an area in which broadcast requirements apply. See also DAH.

1.1.1.5 C

Term	Definition
Ceiling	The height above the ground or water of the base of the lowest layer of cloud below 20 000 FT covering more than half the sky.
CENSAR	An automated Centralised SARTIME database software package used by ATS to manage SARTIMEs.
Centre	A generic callsign used in the en route environment which can include Air Traffic Control (Procedural or ATS Surveillance System), Advisory, Flight Information, and Alerting Services depending on the classification of airspace in which the service is provided.

Term	Definition
Channel	A single means of direct fixed communication between two points.
Circling Approach	An extension of an instrument approach procedure which provides for visual circling of the aerodrome prior to landing.
Clean Hand-off	A hand-off that permits changes to a clearance without the need for back coordination between transferring and receiving controllers: a) Lateral boundary - the receiving controller may issue level or track changes within 45 degrees of the nominal forward track; or b) Vertical boundary - the receiving controller may issue further climb or descent in the expected direction, and track changes within 45 degrees of the nominal forward track. ***Note 1:*** *Approach/Departures are considered to be one controller for the purposes of clean hand-offs.* ***Note 2:*** *A clean hand-off does not constitute a clearance to enter controlled airspace, or another controller's airspace.* *See 'Hand-off' in these definitions.*
Clearance	*See 'Air Traffic Control Clearance' in these definitions.*
Clearance Expiry Time	A time specified by an Air Traffic Control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply forthwith.
Clearance Limit	The point to which an aircraft is granted an air traffic control clearance.
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 aircraft may make a portion of its initial climb to a specified height.
Cloud Amounts	Cloud amounts are reported as: 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): no cloud of operational significance when CAVOK is not appropriate NCD (No Cloud Detected): only reported in fully automated reports
Common Traffic Advisory Frequency (CTAF)	A designated frequency on which pilots make positional broadcasts when operating in the vicinity of a non-controlled aerodrome.
Communications Centre	An aeronautical fixed station which relays or retransmits telecommunication traffic from (or to) a number of other AFS directly connected to it.
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.
Conditional Route (CDR)	An ATS route, or portion thereof, which can be planned and used under specified conditions.
Conflict	A situation in which, in the opinion of Air Traffic Services personnel, the distance between aircraft, as well as their relative positions and speed, may compromise the safety of the aircraft.

Term	Definition
Conflict Resolution	The determination of alternative flight paths which would be free from conflicts and the selection of one of these flight paths for use.
Contaminated Runway	A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors. ***Note:*** *At locations using GRF, a contaminated runway should be reported to pilots using the applicable Runway Condition Code (RWYCC) provided by the Aerodrome Operator in an RCR. Also report the type of contaminant using the relevant runway surface condition descriptor.* *See 'Runway Surface Condition Descriptors' in these definitions.*
Control Area (CTA)	A controlled airspace extending upwards from a specified limit above the earth, excluding OCA.
Control Zone (CTR)	A controlled airspace extending upwards from the surface of the earth to a specified upper limit.
Controlled Aerodrome	An aerodrome at which air traffic control service is provided to aerodrome traffic.
Controlled Airspace	An airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification. ***Note:*** *Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E.*
Controlled Flight	Any flight which is subject to an air traffic control clearance.
Controller	An Air Traffic Controller, qualified in accordance with CASR Part 65, or the relevant Defence Instructions, and holding rating(s) and endorsement(s) appropriate to the assigned functions.
Controller Pilot Data Link Communications (CPDLC)	A means of communications between controller and pilot using data link for ATC communications.
Controlling Authority	a) With respect to airspace classifications, this is the Air Traffic Service provider for that area. b) With respect to Restricted Areas, this is the agency nominated to exercise the conditions of entry specified for the area and, where authorised, the Air Traffic Service provider for that area. *See also 'Administering Authority' in these definitions.*
Coordination	The process of obtaining agreement on clearances, transfer of control, advice or information to be issued to aircraft, by means of information exchanged.
Co-sited (Navigation) Aids	Waypoints or navaids that are within 600 m of each other.
Crossing Tracks	A term used in the application of separation indicating tracks that intersect at or between 45 degrees and 135 degrees.
Cruise Climb	An aeroplane cruising technique resulting in a net increase in altitude as aeroplane mass decreases.
Cruising Level	A level maintained during a significant portion of a flight.
Current Flight Plan	The flight plan that reflects changes to the filed flight plan, if any, brought about by subsequent ATC clearances.
Customs	Australian Border Force.

1.1.1.6 D

Term	Definition
Danger Area	An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.
Day	The hours from the beginning of morning civil twilight to the end of evening civil twilight.
Decision Altitude/Height (DA/H)	A specified altitude or height in a 3D instrument approach operation 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.*
Defence	Department of Defence
Department of Home Affairs Incident Control Directions	Directions initiated by the Secretary (or delegate) of the Department of Home Affairs, as authorised by the Aviation Transport Security Act, to be relayed to specified aircraft suspected or known to be involved in an aviation security incident.
Dependent Parallel Approaches	Simultaneous instrument approaches to parallel or near-parallel instrument runways where ATS surveillance system separation minima between aircraft on adjacent extended runway centre lines are prescribed.
Designator Strip	A bay divider which is labelled to indicate the situation to which a particular division of a bay applies.
DETRESFA	The code word used to designate a distress phase. *See 'Distress Phase (DETRESFA)' in these definitions.*
Direct Controller-Pilot Communications (DCPC)	Two-way controller pilot communications by VHF/UHF voice or CPDLC.
Discrete Code	A four-digit SSR Code assigned to only one aircraft at a time.
Distance Measuring Equipment (DME)	Equipment which measures, in nautical miles, the slant range of an aircraft from the selected DME ground station.
Distress (Emergency State)	A state of being threatened by serious and/or imminent danger and requiring immediate assistance.
Distress Phase (DETRESFA)	A situation where there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger, or require immediate assistance.
DME Distance	The slant range from the source of a DME signal to the receiving antenna.
DME or GNSS Arrival Procedure	Procedures specified in DAP as being able to be carried out using either GNSS or DME.
Drop Area	The airspace through which the parachutists will descend after leaving the PJE aircraft.
Drop Zone	The intended landing area on to which the parachutists will descend.

Term	Definition
Dry Runway	A runway that is free of visible moisture and not contaminated within the area intended to be used.
Duplex	A method in which telecommunications between two stations can take place in both directions simultaneously.
Dynamic Airborne Route Planning System (DARPS)	A procedure that allows long haul, CPDLC equipped aircraft to re-plan in-flight to take advantage of the most efficient operational route segments based on the latest updated weather forecast. A DARPS route transitions from and terminates at waypoints on the original Flex Track.

1.1.1.7 E

Term	Definition
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 Autoland (EAL)	An automated avionics system responding to pilot incapacitation that will fly the aircraft to and land at a system determined aerodrome without pilot input.
Emergency Fuel	The term used to describe a situation when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the final reserve fuel for the flight. ***Note:*** *This is a distress condition.*
Emergency Phase	A generic term encompassing the uncertainty phase, alert phase or distress phase.
Essential Aerodrome Information	That information relating to the aerodrome and its facilities which a pilot requires in order to operate in safety.
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 an aircraft is estimated to be over a position 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 the designated point, defined by reference to navaids, from which it is intended that an instrument approach procedure will be commenced or, if no navaid 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.
Event (for ATS reporting purposes)	An occurrence which does not come within the definition of an accident or incident, yet the reporting of the information may be useful by enabling the service provider to anticipate errors and failures, thereby assisting in controlling risk.

Term	Definition
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.*

1.1.1.8 F

Term	Definition
Fighter Scrambles Take-off	A procedure in which aircraft involved in fighter scrambles may be permitted to use the most convenient take-off direction, irrespective of wind direction, but subject to the disposition of other terminal area traffic. Fighter scrambles aircraft will normally be parked on Operational Readiness Platforms (ORPs).
Filed Flight Plan	The latest flight plan as submitted by the pilot, an operator or a designated representative, for use by ATS units.
Final Approach	That part of an instrument approach procedure which: a) commences at the specified final approach fix or point, or where such a fix or point is not specified: i) at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or ii) at the point of interception of the last track specified in the approach procedure; and b) ends at a point in the vicinity of an aerodrome from which: i) a landing can be made; or ii) a missed approach is initiated.
Final Approach Altitude	The specified altitude at which final approach is commenced.
Final approach course or track (simultaneous parallel runway operations at Class C aerodromes)	That part of an arrival or approach where an aircraft is aligned with the runway centreline and established on the same lateral navigational guidance as that of the approach procedure.
Final Approach Fix (FAF)	A specified point on a non-precision approach procedure which identifies the commencement of the final segment.
Final Approach Point (FAP)	A specified point on the glide path of a precision approach procedure which identifies the commencement of the final segment. ***Note:*** *The FAP is coincident with the FAF of a localiser-based non-precision approach procedure.*
Final Approach Segment	That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.
Fix	A geographical position of an aircraft at a specific time determined by visual reference to the surface, or by navigational aids.
Fix (flight progress strip)	A shortened term for a point of departure, point of arrival, reporting point, or other geographical position significant to the recording and control of aircraft movements.
Flex Track	A non-fixed ATS route calculated on a daily basis to provide the most efficient operational flight conditions between specific city pairs.
Flight Crew Member	A licenced crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Term	Definition
Flight Data	Data regarding the actual or intended movement of an aircraft, normally presented in coded or abbreviated form.
Flight Data Region (FDRG)	An area associated with a Flight Information Region in which flight information is processed by a Flight Data Processor.
Flight Following	The provision of an ongoing Surveillance Information Service (SIS).
Flight Identification (FLTID)	An identification of up to seven 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 Area (FIA)	An airspace of defined dimensions, excluding controlled airspace, within which flight information and 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 and alerting service.
Flight Information Region (FIR)	An airspace of defined dimensions within which flight information and alerting services 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 pressure datum of 1013.2 hPa and is separated from other flight level surfaces by specific pressure intervals.
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 plan monitoring.*
Flight Plan	Specified information relative to the intended flight or portion of flight of an aircraft. ***Note 1:*** *The term flight plan may be prefixed by the words "preliminary", "filed", "current" or "operational" to indicate the context and different stages of a flight.* ***Note 2:*** *When the word "message" is used as a suffix to this term, it denotes the content and format of the flight plan data as transmitted.*
Flight Plan Data	Data selected from the flight plan for purposes of processing, display or transfer.
Flight Visibility	The visibility forward from the cockpit of an aircraft in flight.
Flow Control	Measures designed to adjust the flow of traffic into given airspace, along a given route, or bound for a given aerodrome, so as to ensure the most efficient utilisation of the airspace or aerodrome.
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.

Term	Definition
Formation Take-off	A procedure in which the aircraft will take-off in groups of two or more, with other elements following at prearranged intervals.
Freezing Fog	Any fog consisting predominantly of water droplets at temperatures below 0°C must be reported as freezing fog (FZFG) whether it is depositing rime ice or not.
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.

1.1.1.9 G

Term	Definition
Geographic feature	Distinguishable elements of the natural or built environment associated with a location.
Glide Path	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.
Global Reporting Format (GRF)	A globally harmonised methodology for assessing and reporting surface conditions on paved runways.
Go-around	A procedure in which the pilot discontinues the approach immediately and rejoins for another circuit, or proceeds as directed by ATC.
Ground Effect	A condition of improved performance (lift) due to the interference of the surface with the airflow pattern of the rotor system when a helicopter or other VTOL aircraft is operating near the ground.
Ground-based augmentation system (GBAS)	An augmentation system in which the user receives augmentation information directly from a ground-based transmitter.
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 or by automated systems.

1.1.1.10 H

Term	Definition
Hand-off	The relay of identification and the transfer of control for an aircraft between Controllers while maintaining continuous surveillance.
Hazard Alert	A prefix to transmissions alerting pilots to sudden changes to components of FIS that would have an immediate and/or prolonged detrimental effect on the safety of aircraft.
Head of State	Heads of State or of Government, or other selected dignitaries on official visits to Australia (as provided by Department of Prime Minister and Cabinet Ceremonial and Hospitality Branch), or the personal transport of the Governor-General or the Prime Minister.
Heading	The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from north. (True/Magnetic/Compass or Grid).

Term	Definition
Height	The vertical distance of a level, a point, or an object considered as a point measured from a specified datum.
Helicopter	A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more normally power-driven rotors on substantially vertical axes.
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 are to be related to and delineated by prominent geographic features.
Helicopter Landing Site (HLS)	A place that is used as an aerodrome for the purposes of the landing and taking-off of helicopters. Includes heliports and helidecks.
Helicopter Lane	A lane outside controlled airspace, designed for use by helicopters to facilitate traffic flow.
Helicopter Movement Area	That part of an aerodrome that can safely be used for the hovering, taxiing, take-off and landing of helicopters. The helicopter movement area consists of the manoeuvring area and aprons, but excludes those areas reserved for unrestricted use by the general public.
Helideck	A heliport located on a floating or fixed offshore structure.
Heliport	An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.
Heliport Reference Point (HRP)	The designated location of a heliport or a landing location.
Highest Useable Level	The highest level available to an aircraft within a defined airspace that will provide safe vertical separation from the activity in that area.
Hold Short Line	A line marked across a runway, in accordance with the requirements of AIP-AD, at which landing aircraft must stop when required during Land and Hold Short Operations (LAHSO).
Holding Bay	A defined area where aircraft can be held or bypassed to facilitate efficient surface movement of aircraft.
Holding Fix	A geographic location that serves as a reference for a holding procedure.
Holding Procedure	A predetermined manoeuvre which keeps an aircraft within a specified airspace while awaiting further clearance.
Hospital Aircraft	*See 'Medical Flight' in these definitions.*

1.1.1.11 I

Term	Definition
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.
Identification	The situation which exists when the position symbol of a particular aircraft is seen on a situation display, and positively identified by ATC.
IFR Flight	A flight conducted in accordance with the Instrument Flight Rules.

Term	Definition
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.
INCERFA	The code word used to designate an uncertainty phase. *See 'Uncertainty Phase (INCERFA)' in these definitions.*
Incident (for ATS reporting purposes)	An occurrence associated with the operation of an aircraft or the ATS system other than an accident which affects or could affect aviation safety.
In-company Flights	A group of aircraft that occupy an airspace block and self-separate from other aircraft within the group.
Independent Parallel Approaches	Simultaneous instrument approaches to parallel or near-parallel instrument runways where ATS surveillance system separation minima between aircraft on adjacent extended runway centre lines are not prescribed.
Independent Parallel Departures	Simultaneous departures in the same direction from parallel or near-parallel instrument runways.
Independent Visual Approaches	Visual approach operations to parallel or near parallel instrument runways where the distance between runway centre lines and use of particular procedures allows a visual approach to one runway independently of approaches occurring on an adjacent parallel or near-parallel runway.
Indicated Airspeed (IAS)	The uncorrected reading on the airspeed indicator.
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.
Initial Approach	That part of an instrument approach procedure consisting of the first approach to the first navigational facility associated with the procedure, or to a predetermined fix.
Initial Approach Altitude	The altitude/level below which an aircraft proceeding towards an aerodrome to make an instrument approach is not to descend until the instrument procedure has been initiated. The altitude/level is measured by reference to QNH and standard pressure respectively.
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.

Term	Definition
Instrument Approach Operations	An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations: a) A two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and b) A three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance. ***Note:*** *Lateral and vertical navigation guidance refers to the guidance provided either by:* *a) ground-based radio navigation aids; or* *b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.*
Instrument Approach Procedure (IAP)	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. Instrument approach procedures are classified as follows: a) Non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument approach operations Type A; b) Approach procedure with vertical guidance (APV). A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A; or c) Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS Cat I) designed for 3D instrument approach operations Type A or B.
Instrument Flight Rules (IFR)	Those rules specified in the Civil Aviation Regulations.
Instrument Landing System (ILS)	A precision instrument approach system which normally consists of a VHF Localiser, UHF Glide slope, and VHF Marker Beacons.
Instrument Meteorological Conditions (IMC)	Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions.

Term	Definition
Instrument Runway	One of the following types of runways intended for the operation of aircraft using instrument approach procedures: a) *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; b) *precision approach runway, CAT I:* an instrument runway served by ILS or GBAS 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; c) *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 300 m; or d) *precision approach runway, CAT III:* an instrument runway served by ILS to and along the surface of the runway and: i) for CAT IIIA - intended for operations with a decision height lower than 100 FT, or no decision height and a RVR not less than 175 m; ii) for CAT IIIB - intended for operations with a decision height lower than 50 FT, or no decision height and a RVR less than 175 m, but not less than 50 m; and iii) for CAT IIIC - intended for operations with no decision height and no RVR limitations.
Intermediate Approach	That part of an instrument approach procedure from the first arrival at the first navigational facility or predetermined fix, to the beginning of the final approach.
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 a reversal, racetrack or dead reckoning track procedure and the final approach fix or point, as appropriate.

1.1.1.12 J

Term	Definition
Joint User Aerodrome	An aerodrome used jointly on a continuing or regular basis by civil and service aircraft where a tenant Department requires special facilities on the aerodrome for the conduct of its operations.

1.1.1.13 K

Term	Definition
Known Traffic	Aircraft whose altitude, position and intentions are known to ATC.

1.1.1.14 L

Term	Definition
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.

Term	Definition
Landing Area	That part of the movement area intended for the landing or take-off of aircraft.
Landing Distance Available (LDA)	The length of runway declared available and suitable for the ground run of an aeroplane landing.
Lateral Separation	Separation between the navigation tolerances of aircraft in the horizontal plane expressed in terms of distance or angular displacement between tracks.
Lateral Separation Entry/Exit Point	The basic lateral separation point (BLSP) of entry and exit to an area of conflict corrected for distance measuring tolerances or time buffers, as appropriate.
Latest Intercept Point (LIP)	An RNP AR APCH procedure waypoint, other than an initial approach fix (IAF) indicating a position that an aircraft receiving a surveillance service may be cleared direct to, to commence an RNP AR APCH. ***Note:*** *A LIP is identified by a hash (#) symbol on an IAL chart adjacent to the relevant waypoint.*
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 instructions	A generic term identifying instructions or procedures published by an ATS service provider to direct their internal operations.
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.
Localiser	The component of an ILS which provides azimuth guidance to a runway. It may be used as part of an ILS or independently.
Location Indicator	A four-letter code group formulated in accordance with rules prescribed by ICAO and assigned to the location of an aeronautical fixed station.
Longitudinal Separation	Longitudinal spacing of aircraft along the same or reciprocal tracks expressed in units of time or distance which is never less than the prescribed standard interval.
Lost Link	The loss of command and control link between the Remote Pilot (RP) and Remotely Piloted Aircraft (RPA).
Lowest Safe Altitude (LSALT)	The lowest altitude which will provide safe terrain clearance at a given place. ***Note:*** *LSALT includes grid LSALT, route LSALT, MSA and MVA.*
Lowest Useable Level (LUL)	The lowest level available to an aircraft within a defined airspace that will provide safe vertical separation from other activities or obstacles in that area.
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 operations.

1.1.1.15 M

Term	Definition
Mach Number Technique (MNT)	The technique of clearing successive jet aircraft operating along the same track to maintain specified Mach numbers in order to maintain longitudinal separation.
Manoeuvring Area	That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.
Marker	An object, other than a landing direction indicator, a wind director indicator or flag, used to indicate an obstacle or to convey aeronautical information by day.
Marker Beacon	A type of radio beacon, the emissions of which radiate in a vertical pattern.
Markings	Signs displayed on surfaces in order to convey aeronautical information.
Maximum Take-off Weight (MTOW)	The maximum take-off weight of an aircraft as specified in its Certificate of Airworthiness.
Medical Flight	A flight providing transport of medical patients, personnel and/or equipment, prioritised as follows: a) *MEDEVAC:* a life critical medical emergency evacuation e.g. an aircraft proceeding to pick-up or carrying a severely ill patient, or one for whom life support measures are being provided; or b) *HOSP:* a medical flight declared by medical authorities e.g. an aircraft transporting or proceeding to pick-up medical personnel or equipment urgently required for the treatment of a severely ill patient or returning urgently required medical personnel and/or equipment at the termination of a MEDEVAC flight.
Message Fields	An assigned area of a message containing specified elements of data.
Meteorological Information	Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.
Meteorological Office	An office designated to provide meteorological service for international air navigation.
Meteorological Report	A statement of observed meteorological conditions related to a specific time and location.
Meteorological Watch Office (MWO)	An office designated to provide information concerning the occurrence or expected occurrence of specified en route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations within its specified area of responsibility.
Military Airspace	A collective term encompassing military controlled airspace/control zones, military Restricted Areas and Military Operating Areas (MOA)
Military Authority Assumes Responsibility for Separation of Military Aircraft (MARSA)	A procedure which authorises the pilots of military aircraft to assume responsibility for separation between their aircraft and other nominated military aircraft (or military contract civil aircraft).
Military Low Jet (MLJ)	Military aircraft operating on LJR.
Military Operating Area (MOA)	An airspace of defined dimensions, with specified conditions, established for hazardous military activities.

Term	Definition
Minimum Descent Altitude/Height (MDA/H)	A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference. ***Note 1:*** *'Minimum Descent Altitude (MDA)' is referenced to mean sea level (MSL) and 'Minimum Descent Height (MDH)' 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.*
Minimum Fuel	The term used to describe a situation when an aircraft's fuel supply has reached a state where having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome may result in landing with less than final reserve fuel for the flight. ***Note:*** *The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than final reserve fuel for the flight. This is not an emergency situation but an indication that an emergency situation is possible should any additional 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 significant point, the ARP, or the HRP.
Minimum Vector Altitude (MVA)	The lowest altitude a controller may assign to a pilot in accordance with a radar terrain clearance chart.
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	The procedure to be followed if the approach cannot be continued.
MODE (SSR)	The conventional identifier related to specific functions of the interrogation signals transmitted by an SSR interrogator.
Model aircraft	An aircraft (other than a balloon or a kite) that does not carry a person and: a) weighs 150kg or less and is operated for sport or recreation; or b) weighs 7kg or less and is operated by a school or higher education institution for education, training, or research.
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 (126.7MHz) used for broadcasts while operating to or from a non-controlled aerodrome that does not have a discrete CTAF assigned.

Term	Definition
Multilateration (MLAT) system	A group of equipment configured to provide position derived from the secondary surveillance radar (SSR) transponder signals (replies or squitters) primarily using time difference of arrival (TDOA) techniques. Additional information, including identification, can be extracted from the received signals.

1.1.1.16 N

Term	Definition
National Situation Room	A 24/7 crisis management information and whole-of-government coordination facility provided by the National Emergency Management Agency. It provides whole-of-government all-hazards monitoring and situational awareness for domestic and international events affecting Australia or Australian interests.
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: a) *Required Navigation Performance (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; and b) *Area Navigation (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 (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.*
Navigation Tolerance	A procedural or surveillance tolerance applied to contain the possible position of an aircraft operation in the horizontal dimension allowing for tracking and equipment errors. *Dependent tolerance:* A lateral separation tolerance applied to an aircraft pair that includes the communication, navigation and surveillance components required for separation. *Independent tolerance:* A navigation tolerance applied to an individual aircraft. *Cross track tolerance:* An independent tolerance that only accounts for cross track (lateral) navigation errors. *Circular Error of Position (CEP):* An independent tolerance that takes into account both along track (longitudinal) and cross track (lateral) errors.
Near-parallel Runways	Non-intersecting runways whose extended centre lines have an angle of convergence/divergence of 15 degrees or less.
New information register	A repository for information used to ensure all operational staff are familiar with any operational changes that have been issued since they last performed operational duty.
Night	The hours between the end of evening civil twilight to the beginning of morning civil twilight.

Term	Definition
Night Vision Imaging System (NVIS)	Night Vision Imaging System means a self-contained binocular night vision enhancement device, usually including goggles, that: a) is helmet mounted or otherwise worn by a person; and b) can detect and amplify light in both the visual and near infra-red bands of the electromagnetic spectrum.
No-Fly Zone of a controlled aerodrome	The no-fly zone of a controlled aerodrome includes any areas and airspace that are at or below 400 FT AGL and: a) within 3 NM in any direction, from the centreline of any runway of a controlled aerodrome; or b) within the approach and departure paths of the controlled aerodrome, whether or not they extend beyond 3 NM from the runway centreline. See CASR Part 101 Manual of Standards for further detail on approach and departure paths.
No Transgression Zone (NTZ)	A corridor of airspace of defined dimensions located centrally between the two extended runway centre lines, where a penetration by an aircraft requires a controller intervention to manoeuvre any threatened aircraft on the adjacent approach.
NOCOM Cancellation Time	The time at which a military NOCOM aircraft will resume normal radio procedures and reporting. ***Note:*** *This time is considered to be a scheduled report time for SAR purposes, not a SARTIME.*
NOCOM Period	The period(s) described in Item 18 of the flight plan during which communications will be non-continuous.
Non-aviation Activities	Those activities not involving the use of an airborne platform.
Non-Continuous Communication (NOCOM)	A procedure that may be used by military aircraft for operation in military restricted airspace or Class G airspace where, due to the nature of the operation, communication will be non-continuous for a specified time.
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-precision Approach (NPA)	*See 'Instrument Approach Procedure (IAP)' in these definitions.*
Non-precision Approach and Landing Operations	An instrument approach and landing which does not utilise electronic glide path guidance.
Normal Operating Zone (NOZ)	Airspace of defined dimensions extending to either side of a published instrument approach procedure final approach course or track. Only that half of the normal operating zone adjacent to a no transgression zone (NTZ) is taken into account in independent parallel approaches.
Notice to Airmen (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.

1.1.1.17 O

Term	Definition
Obstacle	All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.
Obstruction Lights/Markers	Lights or markers located on or adjacent to obstructions of potential hazard to aircraft moving on the ground or in the navigable airspace, which indicate, by day or night, the obstructions or hazards.
Occurrence Report	A report submitted for the purpose of meeting statutory obligations to ATSB and CASA. An Occurrence Report may include an Airservices ATS Occurrence Report or Defence Aviation Safety Occurrence Report as appropriate.
Oceanic Control Area (OCA)	Controlled oceanic airspace extending upwards from a specified limit above the earth within Australian-administered airspace.
Okta	One eighth of the celestial dome. ***Note:*** *For the purpose of cloud amount estimation in the production of ATIS or other aerodrome weather report.*
One-way Route	A route with limitations on 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. Refer to ERSA for additional details.
Operational Control	The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.
Operator	A person, organisation or enterprise engaged in or offering to engage in aircraft operation.
Overshoot Shear	A wind shear occurrence which produces an initial effect of overshooting the desired approach path and/or increasing airspeed.

1.1.1.18 P

Term	Definition
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 Communication (PBC)	Communication based on performance specifications applied to the provision of air traffic services. ***Note:*** *An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.*
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.*
Performance-based Surveillance (PBS)	Surveillance based on performance specifications applied to the provision of air traffic services. ***Note:*** *An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety 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	Either of a Pilot-in-Command or other Flight Crew Member.
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.
Point of No Return (PNR)	The point farthest removed from base to which an aircraft can fly and return to base with statutory reserves of fuel remaining.
Position Symbol	The visual indication in symbolic form, on a situation display, of the position of an aircraft, aerodrome vehicle or other object obtained after automatic processing of positional data, derived from any source.
Positive Radio Fix (PRF) Point	An NDB (when propagation is normal), a VOR, TACAN site or marker beacon. ***Note:*** *For ATC separation and coordination purposes not DME or GPS.*
Possible Position	An area of probability defined by the nominal track or position of an aircraft and its navigation tolerances.
Precision Approach (PA)	*See 'Instrument Approach Procedure (IAP)' in these definitions.*

Term	Definition
Precision Approach Procedure	An instrument approach procedure utilising azimuth and glide path information provided by ILS or PAR.
Precision or Electronic Approach Aid	Any air or ground interpreted navigation facility which accurately fixes the position of an aircraft in azimuth, elevation, and in some cases range, with respect to the ground point of intercept.
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 and noise sensitive areas in the proximity of the aerodrome.
Primary Radar	A radar system which uses reflected signals.
Primary Surveillance Radar (PSR)	A surveillance radar system which uses reflected radio signals.
Procedural Control	Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control services.
Procedural Separation	The separation used when providing procedural control.
Procedure Turn	A manoeuvre in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.
Profile	The orthogonal projection of a flight path or portion thereof on the vertical surface containing the nominal track.
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 military necessity.
Published speed restriction	A speed restriction shown on a Standard Instrument Departure (SID), Standard Instrument Arrival (STAR), or other instrument flight procedure.

1.1.1.19 Q

Term	Definition
QFE Altimeter Setting	*See 'Altimeter Setting' in these definitions.*
QNH Altimeter Setting	*See 'Altimeter Setting' in these definitions.*

1.1.1.20 R

Term	Definition
Radar	A radio detection device which provides information on range, azimuth and/or elevation of objects.
Radar Approach	An approach in which the final approach phase is executed under the direction of a Controller using radar.
Radar Cloud Break	A procedure whereby an aircraft is vectored to a suitable position below cloud in the vicinity of the aerodrome from which a visual approach and landing can be made.
Radar Clutter	The visual indication on a situation display of unwanted signals.
Radar Control	The provision of air traffic control service using radar-derived information.
Radar Display	An electronic display of radar-derived information depicting the position and movement of aircraft.
Radar Map	Information superimposed on a radar display to provide ready indication of selected features.
Radar Position Symbol (RPS)	The visual indication, in symbolic form, on a radar display of the position of an aircraft obtained after automatic processing of positional data derived from primary and/or secondary surveillance radar.
Radar Separation	The separation used when aircraft position information is derived from radar sources.
Radar Service	A service provided directly by the means of radar.
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 navaids.
Radius to Fix (RF)	A segment of an instrument approach procedure used to provide a specific curved path radius and is defined by radius, arc length and fix.
RAPIC	A meteorological radar picture of weather data processed by a computer.
Rapid-exit Taxiway	A taxiway connected to a runway at an acute angle and designed to allow landing aeroplanes to turn off at relatively high 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.
Reciprocal Runway Operation (RRO)	A mode of runway use, other than SODPROPS, in which an arriving or departing aircraft operates to the same or parallel runway surface(s), but in the opposite direction to another arriving aircraft. ***Note:*** *Two aircraft are considered to be engaged in RRO, from the point at which they leave the normal traffic pattern to land on a reciprocal runway or, for departures, from the time they notify intent to operate from a reciprocal departure runway until the operation has rejoined the standard operating traffic pattern and is part of the routine flow of traffic.*
Reciprocal Tracks	A term used in the application of separation indicating tracks where the angle between the track and the reciprocal of the other track is less than 45 degrees.
Reduced Vertical Separation Minimum (RVSM)	The vertical separation minimum of 300 m (1000 FT) between FL290 and FL410 inclusive.

Term	Definition
Remotely Piloted Aircraft (RPA)	A remotely piloted aircraft, other than a balloon, a kite or a model aircraft. ***Note:*** *RPA are divided into type categories:* *a) Micro RPA - weight 250g or less;* *b) Very small RPA - weight more than 250g up to 2kg;* *c) Small RPA - weight more than 2kg up to 25kg;* *d) Medium RPA - weight more than 25kg up to 150kg; or* *e) Large RPA - weight more than 150kg.* *See CASR Part 101 for further detail on type definitions.*
Reporting Point	A specified geographical location in relation to which the position of an aircraft can be reported.
Required Communication Performance (RCP) Specification	A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.
Required Navigation Performance (RNP)	A statement of the navigation performance necessary for operation within a defined airspace.
Required Surveillance Performance (RSP) Specification	A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.
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.
Resolution Advisory (RA)	An indication given to the flight crew recommending a manoeuvre or a manoeuvre restriction to avoid collision.
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 used when necessary in the interests of public safety or the protection of the environment.*
Restricted Area Conditional Status	Restricted Areas are assigned a conditional status to indicate the level of accessibility to the Restricted Area: a) RA1 - pilots may flight plan through the Restricted Area and under normal circumstances expect a clearance from ATC; b) RA2 - pilots must not flight plan through the Restricted Area unless on a route specified in ERSA GEN FPR or under agreement with Defence, however a clearance from ATC is not assured. Other tracking may be offered through the Restricted Area on a tactical basis; and c) RA3 - pilots must not plan through the Restricted Area and clearances will not be available.
Reversal Procedure	A procedure designed to enable aircraft to reverse direction during the initial approach segment of an instrument approach procedure. The sequence may include procedure turns or base turns.
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.
Route	The sum total of one or more consecutive route segments to be flown from departure to destination.

Term	Definition
Route Segment	A description of track and distance between two specific points.
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/MLS 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 Condition Assessment Matrix (RCAM)	A matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report of braking action.
Runway Condition Code (RWYCC)	A number describing the runway surface condition to be used in the runway condition report. ***Note:*** *The purpose of the runway condition code is to permit an operational aeroplane performance calculation by the flight crew.*
Runway Condition Report (RCR)	A comprehensive standardised report relating to runway surface condition(s) and its effect on the aeroplane landing and take-off performance. ***Note:*** *A runway condition report is prepared by the aerodrome operator and is only provided for paved runways.* See MATS *12.2.3.1 Runway surface conditions*
Runway in Use	A runway under the control of the Aerodrome Controller.
Runway Number	The runway identification, (including the discrete letter L, C or R if nominated) associated with the runway direction end.
Runway Strip	A defined area, including the runway (and stopway, if provided), intended: a) to reduce the risk of damage to aircraft running off a runway; and b) to protect aircraft flying over it during take-off or landing operations.
Runway Surface Condition(s)	A description of the condition(s) of the runway surface used in the runway condition report which establishes the basis for the determination of the runway condition code for aeroplane performance purposes.

<table>
<tr><th>Term</th><th>Definition</th></tr>
<tr><td>Runway Surface Condition Descriptors</td><td>A description for the condition(s) of the runway surface from the following:
a) DRY (see 'Dry Runway' in these definitions);
b) WET (see 'Wet Runway' in these definitions);
c) SLIPPERY WET (see 'Slippery Wet Runway' in these definitions); or
d) For a contaminated runway:
i) COMPACTED SNOW: Snow that has been compacted into a solid mass such that aeroplane tyres, at operating pressures and loadings, will run on the surface without significant further compaction or rutting of the surface;
ii) DRY SNOW: Snow from which a snowball cannot readily be made;
iii) FROST: Frost consists of ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture;
Note: Under certain conditions frost can cause the surface to become very slippery and it is then reported appropriately as reduced braking action.
iv) ICE: Water that has frozen or compacted snow that has transitioned into ice, in cold and dry conditions;
v) SLUSH: Snow that is so water-saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully;
vi) STANDING WATER: Water of depth greater than 3 mm;
Note: This is the most likely runway contaminant to be experienced in Australia. Running water of depth greater than 3 mm is reported as standing water.
vii) WET ICE: Ice with water on top of it or ice that is melting; or
viii) WET SNOW: Snow that contains enough water content to be able to make a well-compacted, solid snowball, but water will not squeeze out.</td></tr>
<tr><td>Runway Visibility (RV)</td><td>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.</td></tr>
<tr><td>Runway Visual Range (RVR)</td><td>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.</td></tr>
</table>

1.1.1.21 S

Term	**Definition**
Safety Alert	The provision of advice to an aircraft when an ATS Officer becomes aware that an aircraft is in a position which is considered to place it in unsafe proximity to terrain, obstructions, active restricted or prohibited areas, or another aircraft.
Same Track	A term used in the application of separation indicating an identical track or a track that converges or diverges by less than 45 degrees.
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 (SKED) or SARTIME.
Search and Rescue (SAR)	The act of finding and returning to safety, aircraft and persons involved in an emergency phase.
Search Area	The area in which an aircraft is believed to have crashed or forced-landed.
Search and Rescue Region (SRR)	The specified area within which search and rescue is coordinated by a particular Rescue Coordination Centre.
Secondary Surveillance Radar (SSR)	A radar system wherein a radio signal transmitted from the radar station initiates the transmission of a radio signal from another station.
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.
Segregation	Segregation ensures that two or more aircraft do not come into such close proximity that a threat to the safety of those aircraft exists.
Self-Contained Navigation System	Navigation systems based on INS, IRS or GNSS. *See also 'Approved Self-Contained Navigation System' in these definitions.*
Separation	Separation is the concept of ensuring aircraft maintain a prescribed minimum from another aircraft or object, whilst meeting the associated condition(s), and requirements of the standard, as specified in MATS.
Separation Standard	A prescribed means to ensure separation between aircraft using longitudinal, lateral, vertical and visual standards.
SIGMET Information	Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en route weather and other phenomena in the atmosphere which may affect the safety of aircraft operations.
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 navaid, intersection and waypoint. In the context of this definition, intersection is a significant point expressed as radials, bearings and/or distances from ground-based navaids.*

Term	Definition
Significant Weather	Any weather phenomenon which might affect flight visibility or present a hazard to an aircraft. ***Note:*** *Significant weather phenomena include:* *a) Mist (BR)/Fog (FG);* *b) Dust (DU)/Duststorm (DS);* *c) Funnel cloud (FC);* *d) Smoke (FU)/Haze (HZ);* *e) Hail (GR)/Small hail or Snow pellets (GS)/Ice pellets (PL);* *f) Dust devil (PO);* *g) Rain (RA)/Drizzle (DZ)/Unidentified precipitation (UP);* *h) Sand (SA)/Sandstorm (SS);* *i) Snow (SN)/Snow grains (SG);* *j) Squall (SQ); and* *k) Volcanic ash (VA)*
Simplex	The method in which telecommunication between two stations takes place in one direction at a time.
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.
Situational Awareness (ATS)	The perception and integration of external data inputs, the comprehension of their impact on the air situation, and the consideration of their effect on the provision of an effective air traffic management service.
Situation Display	An electronic display depicting the position and movement of aircraft and other information as required.
Slippery Wet Runway	A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.
Special Use Airspace (SUA)	A generic term used for airspace volumes designated for specific operations that may impose limitations on airspace access or use for non-participating aircraft. SUA includes Prohibited, Restricted, Danger and Military Operating Areas, and airspace reservations.
Special VFR Flight	A VFR flight cleared by air traffic control to operate within a control zone in the specified meteorological conditions below VMC. ***Note:*** *Special VFR is permitted within CTA next to a CTR for the purpose of entering or leaving the CTR.*
SSR Code	The number assigned to a particular multiple-pulse reply signal transmitted by a transponder in Mode A or Mode C.
Standard assignable level	The normal altitude or flight level specified for assignment to aircraft in a certain situation; often used to provide vertical separation and reduce coordination requirements.
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.

Term	Definition
Standard Instrument Departure (Radar)	A radar-based SID comprising standard climb gradient data to minimum safe altitude while being radar vectored by ATC.
Standard Pressure Region	Airspace above 10 000 FT where the sub-scale of a pressure sensitive altimeter is set to 1013.2 HPA.
Standard Pressure Setting	The pressure of 1013.2 HPA 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 Rate	A specification for a rate of climb or descent of not less than 500 FT per minute, provided that the last 1000 FT of level change to an assigned level must be made at 500 FT per minute.
State Aircraft	An aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that force in the course of his/her duties as such a member) and aircraft used in the military, Customs, or Police services of a foreign country.
Step Climb/Descent	A procedure used to simultaneously climb or descend aircraft to vertically-separated levels.
Stop and Go Landing	A procedure whereby an aircraft lands, comes to a complete stop on the runway and then commences take-off from that point.
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.
Strayed Aircraft	An aircraft which has deviated significantly from its intended track or which reports that it is lost.
Stream Take-off	A procedure in which formation aircraft take-off in quick succession at pre-arranged intervals.
Strip Holders	A holder which carries a flight progress strip.
Surveillance Flight Information Service (SFIS)	The mandatory provision of SIS and/or FIS to all aircraft operating within certain Broadcast Areas.
Surveillance Information Service (SIS)	An on request service provided to assist pilots of VFR flights, within ATS surveillance system coverage in Class E and G airspace, to avoid other aircraft or to assist in navigation.
Surveillance Radar	Radar equipment used to determine the position of an aircraft in range and azimuth.
Suspense Bay	Bays used to display prepared strips prior to their being required for air traffic services purposes.

1.1.1.22 T

Term	Definition
Tactical Air Navigation (TACAN)	An ultra-high frequency navaid which provides continuous indication of bearing and distance, in nautical miles, to the selected station.
Take-off Distance Available (TODA)	The length of the take-off run available plus the length of the clearway available.
Take-off Run Available (TORA)	The length of runway declared by the State to be available and suitable for the ground run of an aeroplane taking-off. This, in most cases, corresponds to the physical length of the runway pavement.

Term	Definition
Taxiing	Movement of an aircraft on the surface of an aerodrome under its own power, excluding take-off and landing.
Taxilane	A portion of an apron that is not a taxiway and that is provided only for aircraft to access aircraft parking positions.
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.
Telecommunication	Any transmission, emission, or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, visual or other electromagnetic systems.
Terminal Area Surveillance Radar (TAR)	A high definition radar which is used for air traffic control purposes in the terminal area.
Terminal Control Area (TMA)	A control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes in which air traffic services are provided by Approach and Departures Control.
Terminal Control Unit (TCU)	A unit providing air traffic services generally within a terminal control area.
Terrain Clearance	The vertical displacement of an aircraft’s flight path from the terrain.
Terrain/Obstruction Alerts	The provision of advice to an aircraft when an ATS officer becomes aware that an aircraft is in a position which is considered to place it in unsafe proximity to terrain or obstructions.
Threshold	The beginning of that portion of the runway useable for landing.
Threshold Lights	Lights placed across the ends of a runway or landing strip to indicate the useable limits thereof.
Thrust Stream Turbulence	Localised wind velocities (caused by the jet blast of a turbine engine, slip stream from a propeller driven aircraft, or rotor wash from a helicopter) of sufficient strength to cause damage to other aircraft, vehicles or property, or injury to personnel operating within the affected area.
Total Estimated Elapsed Time	*For IFR flights:* the estimated time required from take-off to arrive over that designated point, defined by reference to navaids, from which it is intended that an instrument approach procedure will be commenced, or if no navaid 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.
Touchdown Zone	The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.
Touchdown Zone Elevation	The highest runway centre line elevation in the touchdown zone.
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).
Track Symbol	A computer generated symbol representing the derived or predicted position of a specific aircraft on a controller's situation display.

Term	Definition
Traffic Advisory (TA) (aircraft)	An indication given to the flight crew that a certain intruder is a potential threat.
Traffic Alert and Collision Avoidance System (TCAS)	*See 'Airborne Collision Avoidance System (ACAS)'in these definitions.*
Traffic and Collision Alert Device (TCAD)	A basic airborne collision avoidance system designed primarily for general aviation use, providing relative information on other transponding aircraft that are responding to a ground SSR radar facility or ACAS.
Traffic Avoidance Advice	Advice specifying manoeuvres to help a pilot avoid a collision.
Traffic Information	Information issued by an ATS unit to alert a pilot to other known or observed air traffic which may be in proximity to the position or intended route of flight and to help the pilot avoid a collision.
Traffic Information Broadcasts by Aircraft (TIBA)	A procedure that permits the transmission of reports and relevant supplementary information by pilots to provide information to other aircraft in the vicinity when no air traffic services are available in a given airspace.
Traffic Pattern	The path described by the normal flow of aircraft in the vicinity of an aerodrome as necessitated by the terrain, layout, direction of landing and take-off, and proximity to other aerodromes.
Transfer of Control	The act of handing over responsibility for the control of an aircraft to another controller/unit.
Transfer of Control Point	A defined point, located along the flight path of an aircraft, at which the responsibility for providing air traffic control service to the aircraft is transferred from one controller/unit to another.
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.
True Airspeed (TAS)	The speed of an aircraft relative to undisturbed air.

1.1.1.23 U

Term	Definition
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.
Uncertainty Phase (INCERFA)	A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.
Undershoot Shear	A wind shear occurrence which produces an initial effect of undershooting the desired approach path and/or decreasing air speed.
Unidentified Aircraft	An aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.

Term	Definition
Unmanned Free Balloon	A non-power-driven unmanned lighter-than-air aircraft in free flight. ***Note:*** *Unmanned free balloons are classified as Small, Light, Medium and Heavy in accordance with CASR Part 101.*
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.
Urgency (Emergency State)	A state covering the safety of an aircraft or other vehicle or of some person on board or within sight but not requiring immediate assistance.

1.1.1.24 V

Term	Definition
Vectoring	Provision of navigational guidance to aircraft in the form of specific headings, based on the use of an ATS surveillance system.
Vertical Separation	The vertical spacing of aircraft.
VFR Climb/Descent	ATC clearance for an IFR flight in VMC in Classes D and E airspace, to conduct a visual climb or descent.
VFR Flight	A flight conducted in accordance with the visual flight rules.
VFR-on-top	ATC clearance for an IFR flight to operate in VMC in Class E airspace, at any appropriate VFR altitude or flight level.
VHF Omni-directional Radio Range (VOR)	A VHF radio navigational aid which provides a continuous indication of bearing from the selected VOR ground station.
Visibility	The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.
Visual (ATC)	Used by ATC to instruct a pilot to see and avoid obstacles while conducting flight below the applicable LSALT.
Visual (pilot)	Used by a pilot to indicate acceptance of responsibility to see and avoid obstacles while operating below the applicable 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. ***Note:*** *This generic description includes the T-Visual Approach Slope Indicator System (T-VASIS) and the Precision Approach Path Indicator (PAPI) facilities used in Australia.*
Visual Manoeuvring (circling) Area	The area in which obstacle clearance should be taken into consideration for aircraft carrying out a circling approach.
Visual Meteorological Conditions (VMC)	Meteorological conditions expressed in terms of visibility, ceiling and distance from cloud, equal to or better than specified criteria. See MATS *3.3.1 VMC criteria*
Visual Separation	A means of spacing aircraft through the use of visual observation by a tower controller or by a pilot when assigned separation responsibility.
Visual Surveillance System (VSS)	An electro-optical system providing a full or partial electronic visual presentation of traffic and any other information necessary to maintain situational awareness at an aerodrome and its vicinity.

Term	Definition
Visual Surveillance System - Movement Area (VSS-M)	An electro-optical system providing an electronic visual presentation of aerodrome movement areas where a direct line-of-sight obstruction exists.
Voice Switch	The interface used to select various forms of air-ground and ground-ground communication. It may also provide control and/or monitoring of communication, navigation and other equipment. This term includes systems such as VCCS (Voice Communication Control System), VCS (Voice Communication System), VSCS (Voice Switching and Control System) and ATCSS (Air Traffic Control Switching System).

1.1.1.25 W

Term	Definition
Wake turbulence envelope	A volume of airspace behind, below and to either side of the generating aircraft which extends: a) up to 760 m to either side of the nominal track of the aircraft; b) up to but not including 1000 FT below the aircraft; and c) for a distance or time behind the aircraft as per the applicable wake turbulence standard.
Waypoint	A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation. Waypoints are identified as either: a) *fly-by waypoint:* a waypoint which requires turn anticipation to allow tangential interception of the next segment of a route or procedure; or b) *fly-over waypoint:* a waypoint at which a turn is initiated in order to join the next segment of a route or procedure.
Wet Runway	A runway that: a) is covered by surface water, slush or loose snow not more than 3 mm deep; or b) has sufficient moisture on the surface to cause it to appear reflective, but without significant areas of standing water.
Wind Shear Escape Manoeuvre	An emergency manoeuvre conducted by an aircraft that involves a full power climb straight ahead. The procedure may be conducted at any time the aircraft enters, or the onboard warning system advises of, wind shear.

1.2 Glossary - contractions

1.2.1 Abbreviations and acronyms

1.2.1.1 Legend

Abbreviations shown as singular are also applicable in plural. Abbreviations or acronyms with:

@	Cannot be used in the text of NOTAM or meteorological messages.
*	Cannot be used in internationally addressed messages.
+	May be used as spoken words on radiotelephony channels.
#	May be spoken using constituent letters e.g. QNH, ILS.

1.2.1.2 Numerics

Contraction	Expansion	Use
2D	Two-dimensional	#
3D	Three-dimensional	#

1.2.1.3 A

Contraction	Expansion	Use
AAIS	Automatic Aerodrome Information Service	*#
AAL	Above Aerodrome Level	
AAMS	Australian Aeronautical Message System	@*
AAR	Air-to-air Refuelling	
ABT	About	
ACAS	Airborne Collision Avoidance System (pronounced 'AY-CAS')	+
ACCID	Initial notification of an aircraft accident (message type designator)	
ACD	Airways Clearance Delivery	@*
ACFT	Aircraft	
ACID	Aircraft Identification	@*
ACP	Acceptance (message type designator)	
ACT	Active, activate, activity	
AD	Aerodrome	
ADC	Aerodrome Controller	@*
ADEP	Aerodrome of Departure	@*
ADES	Aerodrome of Destination	@*

Contraction	Expansion	Use
ADF	Australian Defence Force	@*
ADF	Automatic Direction Finding Equipment	#
ADS-B	Automatic Dependent Surveillance - Broadcast (1090 MHz Extended Squitter)	#
ADS-C	Automatic Dependent Surveillance - Contract	#
ADT	Autonomous Distress Tracking	
AEP	Aerodrome Emergency Plan	*
AEWC	Airborne Early Warning and Control	@*
AFRU	Aerodrome Frequency Response Unit	*+
AFS	Aeronautical Fixed Service	
AFTN	Aeronautical Fixed Telecommunications Network	#
AGA	Aerodromes, Air Routes and Ground Aids	
AGL	Above Ground Level	#
AGSS	Aerodrome Ground Surveillance System	@*
AIDC	ATS Inter-facility Data Communication	
AH	After Hours	*
AIC	Aeronautical Information Circular	#
AIP	Aeronautical Information Publication	#
AIRAC	Aeronautical Information Regulation and Control	+
AIREP	Air Report	+
AIRMET	Information concerning en route weather significant to aircraft operations at or below A100 not contained in a valid GAF	+
AIS	Aeronautical Information Service	#
AIS-AF	Aeronautical Information Service - Air Force	@*
ALERFA	Alert Phase	+
ALR	Alerting (message type designator)	
ALT	Altitude	
ALTN	Alternate (Aerodrome)	
AMI	Aeronautical Message Interface	@*
AMSL	Above Mean Sea Level	#
AMSA	Australian Maritime Safety Authority	*
AOJ	Airways Operations Journal or ATC Watchlog	@*
APCH	Approach	
APP	Approach Control, Approach Control Office or Approach Control Service	
APU	Auxiliary Power Unit	#
APV	Approach Procedure with Vertical Guidance	
AR	Amended Route	@*

Contraction	Expansion	Use
ARCP	Air-to-air Refuelling Control Point	@*
ARFF	Aerodrome Rescue and Fire Fighting Service	@*
ARP	Aerodrome Reference Point	
ARP	Air Report (message type designator)	
ARR	Arrive or Arrival (message type designator)	
ARS	Special Air Report (message type designator)	
A-SMGCS	Advanced Surface Movement Guidance and Control System	@*
ATC	Air Traffic Control (in general)	
ATD	Actual Time of Departure	#
ATFM	Air Traffic Flow Management	
ATFMX	Air Traffic Flow Management Exempt	@#
ATIS	Automatic Terminal Information Service	+
ATM	Air Traffic Management	
ATMD	ATM Director	@*
ATMSL	ATM Standards Lead	#
ATS	Air Traffic Services	#
ATSB	Air Transport Safety Bureau	@*
ATSO	Air Traffic Services Officer	@*
AUTH	Authorised or Authorisation	
AUTO	Automatic	
AVBL	Available	
AVFAX	Meteorological and NOTAM Facsimile Service	*+
AWIS	Aerodrome Weather Information Service	*+
AWK	Aerial Work - General Aviation	*
AWS	Automatic Weather Station	*

1.2.1.4 B

Contraction	Expansion	Use
BA	Broadcast Area	@*
BARO-VNAV	Barometric Vertical Navigation (pronounced 'BAA-RO-VEENAV')	+
BASE	Cloud Base	+
BLSP	Basic Lateral Separation Point	@*
BLW	Below	
BOF	Briefing Office (Civil)	@*
BoM	Bureau of Meteorology	@*

1.2.1.5 C

Contraction	Expansion	Use
CADAS	Comsoft Aeronautical Data Access System	@*
CAR	Civil Aviation Regulation	*
CASA	Civil Aviation Safety Authority	+*
CAT	Category	
CATIS	Computerised Automatic Terminal Information Service	@*
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions (pronounced 'KAV-OH-KAY')	+
CB	Cumulonimbus	#
CD	Clearance Delivery	@*
CDN	Coordination (message type designator)	
CDR	Conditional Route	#
CEN	Centre (ATC Unit/position)	*
CENSAR	Centralised SARTIME Database	*+
CEP	Circular Error of Position	@*#
CET	Clearance Expiry Time	@*
CFL	Cleared Flight Level including Block Levels	@*
CFM	Confirm(ing) or I Confirm	
CHG	Modification (message type designator)	
CIRA	Circuit Area	@*
CIV	Civil	
CK	Check	
CL	Centre Line	
CLD	Cloud	
CLIAS	Climbing Indicated Airspeed	*
CMPL	Completion, Completed, Complete	
CMSD	Commissioned	*
CNL	Cancel, Cancelled, Flight Plan Cancellation (message type designator)	
COBT	Calculated Off Blocks Time	*#
COM	Communications	
COMC	AFTN Communications Centre	@*
CPDLC	Controller Pilot Data Link Communications	#
CPL	Current Flight Plan (message type designator)	@
CRU	Control and Reporting Unit (RAAF)	@*
CSN	Channel Sequence Number	@*
CTA	Control Area	#
CTAF	Common Traffic Advisory Frequency (pronounced 'SEE-TAF')	+*

Contraction	Expansion	Use
CTL	Control	
CTOT	Calculated Take-off Time	*#
CTR	Control Zone	

1.2.1.6 D

Contraction	Expansion	Use
DA	Decision Altitude	
DAH	Designated Airspace Handbook	*
DAP	Departure and Approach Procedures	*
DASR	Defence Aviation Safety Regulation	@*
DATIS	Digital Automatic Terminal Information Service	@*
DCMSD	Decommissioned	*
DCPC	Direct Controller-Pilot Communications	#
DCT	Direct	
DEG	Degrees	
DEP	Depart or Departure (message type designator) or Departures (ATC Unit/position)	
DER	Departure End of Runway	
DES	Descend to, Descending to	
DEST	Destination	
DETRESFA	Distress Phase	+
DF	Direction Finder, Direction Finding	#
DH	Decision Height	
DLA	Delay or Delayed or Delay (message type designator)	
DLE	Delay En route	@*
DME	Distance Measuring Equipment	#
DOC	Documents	*
DOF	Date of Flight	+
DR	Dead Reckoning	
DRA	Direct Radar Access (ADATS)	@*
DTG	Date Time Group	

1.2.1.7 E

Contraction	Expansion	Use
E	East or East Longitude	
EAL	Emergency Autoland	@*#
EAT	Expected Approach Time	
EET	Estimated Elapsed Time	#
ELT	Emergency Locator Transmitter	
ELT(DT)	Emergency Locator Transmitter (Distress Tracking)	
EMERG EMG	Emergency	
END	Stop-End (related to RVR)	@
ENDCE	Endurance	@*
ENR	En route	
EOBT	Estimated Off-Block Time	
EQN	Equatorial Latitudes Northern Hemisphere (N00 - N30)	
EQS	Equatorial Latitudes Southern Hemisphere (S00 - S30)	
ERC	En route Chart	*
ERSA	En route Supplement Australia	+*
EST	Estimate or Estimated or Estimation (as message type designator)	
ETA	Estimated/Estimating Time of Arrival	#
ETL	Estimated Time of Landing	@*

1.2.1.8 F

Contraction	Expansion	Use
FAC	Facility, Facilities	
FAF	Final Approach Fix	
FANS	Future Air Navigation System	@*
FAP	Final Approach Point	
FAWP	Final Approach Waypoint	*
FAX	Facsimile transmission	+
FFR	Flood or Fire Relief; Fire Fighting	@*
FIA	Flight Information Area	#*
FIC	Flight Information Centre	#
FIO	Flight Information Officer	@*
FIR	Flight Information Region	#
FIS	Flight Information Service	#
FL	Flight Level	
FLT	Flight	

Contraction	Expansion	Use
FLTCDR	Flight Commander - RAAF	@*
FLTID	Flight Identification	@*
FLW	Follow, Follows, Following	
FNA	Final Approach	
FNC	Flight Number Callsign	@*
FOM	Figure of Merit	@*
FPL	Filed Flight Plan	
FPM	Feet Per Minute	
FPR	Flight Plan Route	
FREQ	Frequency	
FRI	Friday	
FT	Feet	
FZFG	Freezing Fog	

1.2.1.9 G

Contraction	Expansion	Use
GAF	Graphical Area Forecast	+
GBAS	Ground Based Augmentation System (pronounced 'GEE-BAS')	+
GDP	Ground Delay Program	*#
GEN	General	
GFY	Glider Flying	*
GLS	GBAS Landing System	#
GNSS	Global Navigation Satellite System	#
GPS	Global Positioning System	#
GRF	Global Reporting Format	@*
GS	Groundspeed	

1.2.1.10 H

Contraction	Expansion	Use
H+...	...min past the hour	@*
H24	Continuous day and night service	#
HDG	Heading	
HDS	Hours of Daylight Saving	*
HEAD	Head of State	*
HF	High Frequency (3 000 to 30 000 kHz)	#
HIAL	High Intensity Approach Lighting	+*
HIRL	High Intensity Runway Lighting	*

Contraction	Expansion	Use
HJ	Sunrise to Sunset	#
HLS	Helicopter Landing Site	
HN	Sunset to Sunrise	#
HNH	High Latitudes Northern Hemisphere (N60 - N90)	
HOSP	Hospital aircraft	
HPA	Hectopascal	
HQJOC-AOC	Headquarters Joint Operations Command - Air Operations Centre	@*
HR	Hour, hours	
HRP	The designated location of a heliport or a landing location	
HSH	High Latitudes Southern Hemisphere (S60 - S90)	

1.2.1.11 I

Contraction	Expansion	Use
IAF	Initial Approach Fix	
IAL	Instrument Approach and Landing charts	#*
IAP	Instrument Approach Procedure	
IAS	Indicated Air Speed	#
IAW	In Accordance With	@*
ICAO	International Civil Aviation Organization	+
ID	Identifier or Identify	
IDENT	Identification	+
IF	Intermediate Approach Fix	
IFR	Instrument Flight Rules	#
ILS	Instrument Landing System	#
IMC	Instrument Meteorological Conditions	#
INCERFA	Uncertainty Phase	+
INFO	Information	+
INPR	In progress	
INS	Inertial Navigation System	
INTAS	Integrated Tower Automation Suite	@*
ISA	International Standard Atmosphere	
IWP	Intermediate Waypoint	@*

1.2.1.12 J

Contraction	Expansion	Use
JACC	Joint Airspace Control Cell (Defence)	@*
JO	Monday to Friday except Public Holidays	*
JRCC (Australia)	Joint Rescue Coordination Centre	@#

1.2.1.13 K

Contraction	Expansion	Use
kg	Kilogram	
KHZ	Kilohertz	
KIAS	Knots Indicated Airspeed	
KM	Kilometres	
kt	Knots	

1.2.1.14 L

Contraction	Expansion	Use
L	Left (runway identification)	
LAHSO	Land and Hold Short Operations	*
LAM	Logical Acknowledgement (message type designator)	
LAT	Latitude	+
LDA	Landing Distance Available	
LDR	Landing Distance Required	#
LIP	Latest Intercept Point - RNP AR APCH	@*#
LJR	Low Jet Route	*
LOC	Localiser	
LONG	Longitude	+
LR	Last Received Message	
LS	Last Sent	
LSALT	Lowest Safe Altitude	*
LTD	Limited	
LUL	Lowest Useable Level	*
LVL	Level	

1.2.1.15 M

Contraction	Expansion	Use
... m	Metres (preceded by figures)	
M ...	Mach Number (followed by figures)	
MAG	Magnetic	
MAP	Aeronautical Maps and Charts	
MAPT	Missed Approach Point	
MARSA	Military Authority Assumes Responsibility for Separation of Military Aircraft	@*+
MATS	Australian Manual of Air Traffic Services	@*
MAX	Maximum	+

Contraction	Expansion	Use
MDA	Minimum Descent Altitude	
MDH	Minimum Descent Height	
MEDEVAC	Medical Evacuation Flight	+
MET	Meteorology, Meteorological	+
METAR	Aviation routine weather report (in aeronautical meteorological code)	+
MHZ	Megahertz	
MID	Mid-point (related to RVR)	
MIL	Military	
MIL	Military Flight Plan	@*
MILSPECREQ	Military Special Requirements Flight	@*
min	Minutes	
MLAT	Multilateration	
MLJ	Military Low Jet	*
MLS	Microwave Landing System	#
MNH	Middle Latitudes Northern Hemisphere (N30 - N60)	
MNM	Minimum	
MNPS	Minimum Navigation Performance Specifications	
MOA	Military Operating Area	
MON	Monday	
MOWP	Method Of Working Plan	*
MSA	Minimum Sector Altitude	#
MSH	Middle Latitudes Southern Hemisphere (S30 - S60)	
MSL	Mean Sea Level	
MSSR	Monopulse Secondary Surveillance Radar	
MTOW	Maximum Take-off Weight	*
MWO	Meteorological Watch Office	

1.2.1.16 N

Contraction	Expansion	Use
N	North or North Latitude	
NAIPS	National Aeronautical Information Processing System	*
NAP	Noise Abatement Procedures	@*
NAV	Navigation	
NAVAID	Navigation Aid	
NAVEX	Navigation Exercise	*
NCSS	National Check and Standardisation Supervisor	@*
NDB	Non-Directional Radio Beacon	#
NE	North-East	
NIL	None or Nothing	+
NM	Nautical Mile	
NOCOM	Non-Continuous Communication	*+#
NOF	International NOTAM Office	
NOMC	National Operations Management Centre	*
NOTAM	Notice to Airmen	+
NOTAMC	Cancelling NOTAM	
NOTAMN	New NOTAM	
NOTAMR	Replacing NOTAM	
NOZ	Normal Operating Zone	
NPA	Non-Precision Approach	
NTZ	No Transgression Zone	
NVG	Night Vision Goggles	*#
NVIS	Night Vision Imaging System (pronounced "EN-VIZ")	*+
NW	North-West	

1.2.1.17 O

Contraction	Expansion	Use
OAR	Office of Airspace Regulation (CASA)	@*
OCA	Oceanic Control Area	#
OCA	Operational Command Authority (supervision)	@*
OCTA	Outside Control Area	*#
OK	We agree or It is correct	
OPR	Operate, Operator, Operative, Operating, Operational	
OPS	Operations, or Base Operations Room/Centre (Military)	
O/R	On Request	
OT	Other Times	*

1.2.1.18 P

Contraction	Expansion	Use
PA	Precision Approach	
PAL	Pilot Activated Lighting	*+
PANS	Procedures for Air Navigation Services	
PAPI	Precision Approach Path Indicator	+
PAR	Precision Approach Radar	#
PBC	Performance-based Communication	
PBN	Performance-based Navigation	
PBS	Performance-based Surveillance	
PCN	Pavement Classification Number	
PDAI	Pre-Determined Addressee Indicator	@*
PERM	Permanent	
PILS	Practice ILS	*
PJE	Parachute Jumping Exercise	
PNR	Point of No Return	#
POB	Persons On Board	#
PRD	Prohibited, Restricted and Danger Areas	*
PRF	Positive Radio Fix	
PRI	Primary	
PRM	Precision Runway Monitoring	*
PROC	Procedure	
PSN	Position	
PSR	Primary Surveillance Radar	

1.2.1.19 Q

Contraction	Expansion	Use
QFE	Atmospheric pressure at aerodrome elevation (or at runway threshold)	+#
QNH	Altimeter sub-scale setting to obtain elevation or altitude	#

1.2.1.20 R

Contraction	Expansion	Use
R	Right	
R	Acknowledgement of Receipt	
R...	Restricted Area (followed by identification)	
R...	Radial from VOR (followed by three figures)	
RA *(number)*	Restricted Area Conditional Status	*#
RAAF	Royal Australian Air Force	@*
RAIM	Receiver Autonomous Integrity Monitoring	
RAPIC	Meteorological Radar Picture	*
RCAM	Runway Condition Assessment Matrix	@*
RCC	Rescue Coordination Centre	#
RCF	Radio Communication Failure	
RCP	Required Communication Performance	#
RCR	Runway Condition Report	@*
RDP	Radar Data Processor	@*
REC	Receive, Receiver, Received	
REQ	Request, Requested	
RF	Constant Radius Arc to Fix	
RFF	Rescue and Fire-fighting Facility	@*
RFL	Requested Flight Level	@*
RMK	Remark	
RNAV	Area Navigation (pronounced 'AR-NAV')	+
RNP	Required Navigation Performance	#+
RNP AR APCH	RNP Authorisation Required approach ***Note:*** *This is the ICAO naming convention for approaches also referred to as RNAV (RNP) approaches. Charts are being progressively amended to align with the ICAO naming convention.*	
RNP APCH	RNP approach ***Note:*** *This is the ICAO naming convention for approaches also referred to as RNAV (GNSS) approaches. Charts are being progressively amended to align with the ICAO naming convention.*	

Contraction	Expansion	Use
RP	Remote Pilot	@*#
RPA	Remotely Piloted Aircraft	@*#
RPAS	Remotely Piloted Aircraft System (pronounced 'AR-PAZ')	@*+
RPLC	Replace(d)	
RPT	Regular Public Transport	*
RQP	Request Flight Plan (message type designator)	
RQS	Request Supplementary Flight Plan (message type designator)	
RSP	Required Surveillance Performance	#
RTCC	Radar Terrain Clearance Chart	@*
RV	Runway Visibility	@*
RVR	Runway Visual Range	#
RVSM	Reduced Vertical Separation Minimum	
RWY	Runway	
RWYCC	Runway Condition Code	@*

1.2.1.21 S

Contraction	Expansion	Use
S	South or South Latitude	
SAR	Search And Rescue	+
SARTIME	Time Search Action Required	+*
SATCOM	Satellite Communication (used only when referring generally to both voice and data satellite communication or only data satellite communication)	+
SATVOICE	Satellite Voice Communication	+
SBAS	Satellite-Based Augmentation System (pronounced 'ESS-BAS')	+
SCNS	Self-Contained Navigation System	@*
SE	South-East	
SELCAL	Selective Calling System	+
SER	Service, Servicing, Served	
SFC	Surface	
SFIS	Surveillance Flight Information Service	@*
SID	Standard Instrument Departure	+
SIGMET	Information concerning en route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations	+
SIS	Surveillance Information Service	*
SKED	Schedule, Scheduled	+

Contraction	Expansion	Use
SM	Shift Manager	@*
SMC	Surface Movement Control	#
SO1 CM ANSP	HQ SRG A8 SO1 CM ANSP (formerly XO 44WG)	@*
SO2 STD ANSP	HQ SRG A7 SO2 STAND ANSP (formerly ATC STAND1)	@*
SPA	Sport Aviation	*
SPECI	Aviation Special Weather Report (in aeronautical meteorological code)	+
SPI	Special Position Identification	*#
SPL	Supplementary Flight Plan (message type designator)	
SQN	Squadron	@*
SRR	Search and Rescue Region	
SSH	Service Standards Head	#
SSR	Secondary Surveillance Radar	#
STAR	Standard Instrument Arrival	+
STD ANSP	HQ SRG A7 STAND ANSP (formerly 44WG Standardisation Team)	@*
SUA	Special Use Airspace	@#*
SUBJ	Subject to	
SUP	Supplement (AIP Supplement)	
SUPPS	Regional Supplementary Procedures	
SURVEREP	Surveillance report	@*
SVC	Service (message type only)	
SW	South-West	
SWX	Space Weather	

1.2.1.22 T

Contraction	Expansion	Use
... T	Bearing True	
TACAN	UHF Tactical Air Navigation Aid	+
TAF	Aerodrome Forecast (message type designator)	+
TAR	Terminal Area Surveillance Radar	
TAS	True Air Speed	#
TCAS RA	Traffic Alert and Collision Avoidance System Resolution Advisory (pronounced 'TEE-CAS-AR-AY')	+
TCI	Technical Customer Interface	@*
TCU	Terminal Control Unit	@*
TDZ	Touchdown Zone	
TEL	Telephone	
TFR	Transfer	@*

Contraction	Expansion	Use
TIBA	Traffic Information Broadcast by Aircraft	+
TMA	Terminal Control Area	#
TM	Temporary Military Operating Area	#*
TODA	Take-off Distance Available	
TORA	Take-off Run Available	+
TR	Track	
TRA	Temporary Reserved Airspace	
TRA	Temporary Restricted Area	#*
TW	Tailwind	*
TWR	Aerodrome Control Tower (ATC Unit/position)	
TWY	Taxiway	

1.2.1.23 U

Contraction	Expansion	Use
UFB	Ultimate Fallback Display (Eurocat)	@*
UHF	Ultra High Frequency (300 - 3000 MHz)	#
UNL	Unlimited	
UTC	Coordinated Universal Time	#

1.2.1.24 V

Contraction	Expansion	Use
VASIS	Visual Approach Slope Indicator System	+
VFR	Visual Flight Rules	#
VHF	Very High Frequency (30 - 300 MHz)	#
VIA	By Way Of ...	*
VIS	Visibility	
VMC	Visual Meteorological Conditions	#
VNAV	Vertical Navigation (pronounced 'VEE-NAV')	+
VOR	VHF Omni-direction Radio Range	#
VSA	Visual Approach	@*
VSCS	Voice Switching and Control System	@*
VSS	Visual Surveillance System	@*#
VSS-M	Visual Surveillance System - Movement Area	@*#
VTOL	Vertical Take-off and Landing	

1.2.1.25 W

Contraction	Expansion	Use
WATIR	Weather and Terminal Information Reciter	*
WEF	With Effect From, or Effective From	
WG	Wing (Military - normally preceded by a number)	@*
WPT	Waypoint	
WT	Weight	
WX	Weather	

1.2.1.26 X

Contraction	Expansion	Use
XO	Executive Officer (military)	@*
XW	Crosswind	*

1.2.1.27 Z

Contraction	Expansion	Use
Z	Coordinated Universal Time (in meteorological messages)	

1.3 Glossary - metrics

1.3.1 Units of measurement and time

1.3.1.1 Introduction

This chapter presents units of measurement and time used in airways operations and air-ground communications.

1.3.1.2 Units of measurement

Description - Measurement of	Measurement	Abbreviation
Altimeter setting	hectopascals	HPA
Altitudes, elevations and heights	feet	FT
Distance: aerodromes data (e.g. runway lengths)	metres	m
Distance used in navigation position reporting - generally in excess of 2 NM	nautical miles and tenths	NM
Speed: horizontal, including wind speed	knots	kt
Speed: vertical	feet per minute	FPM
Temperature	degrees celsius	C
Time	hours and minutes (UTC)	hr and min
Visibility	kilometres above 5000 m, or metres when equal to or less than 5000 m	KM or m
Weight (mass) metric	tonnes or kilograms	Tonnes or kg
Wind direction in observations for landing and take-off	degrees magnetic	MAG
Wind direction, except for landing and take-off	degrees true	T

1.3.1.3 Time system

Unit	Description
UTC	Use Coordinated Universal Time (UTC) for all ATS operational times in accordance with 24-hour clock system.
Hours	Use the 24-hour clock system. The end of the day (UTC) is represented by '2359'. Midnight is represented by '0000' for the beginning of the day. The time of midnight may be prefixed by the date. *Example: '0611280000' denotes 'midnight on 28 November 2006'.*
Whole minutes	Where times are recorded by the whole minute, from the 30th second to the 29th second of the next minute, record the time as that minute shown when the second hand passes zero. *Example: 4 minutes and 35 seconds is recorded as '05 minutes'; 7 minutes and 19 seconds is recorded as '07 minutes'.*
Half minutes	Where times are recorded by the whole and half minute: From the 45th second of the first minute to the 14th second of the next minute, record the time as that whole minute shown when the second hand passes zero. *Example: 2 minutes 47 seconds records as '03 minutes'.* From the 15th to 44th second of a minute, record the time as a half minute and attach to that minute when the second hand last passed zero. *Example: 2 minutes 15 seconds records as '02½ minutes'; and 2 minutes 40 seconds also records as '02½ minutes'.*
Date time groups	A date time group can be composed using 6, 8 or 10 figures in the following formats. Generally, the six-figure group is used. However, this should be extended to eight or ten if necessary to eliminate any opportunity for misinterpretation. *Six-figure group*: A date time group composed of 6 figures: the first two denoting the date; and the last four denoting the hour and minutes. *Eight-figure group:* A date time group composed of 8 figures: the first two denoting the month; the second two denoting the date; and the last four denoting the hour and minutes. *Ten-figure group*: A date time group composed of 10 figures: the first two denoting the year; the second two denoting the month; the third two denoting the date; and the last four denoting the hour and minutes. *Example: '0612021548' denotes '15:48 on 2 December 2006'.*

1.4 Flight data records

1.4.1 Information to be recorded

1.4.1.1 Information

Where applicable, record the following information:

a) the STAR to be issued;
b) ACIDs of opposite direction aircraft, and a four-figure time of passing;
c) the time of entering or leaving lateral conflict with another aircraft or route;
d) pilot-requested levels;
e) level restrictions;
f) restrictions from another unit;
g) sighting and passing annotations;
h) a reported cruising level subject to a further check;
i) in-flight weather conditions;
j) any requests from the aircraft that need to be passed on to the next sector, or flow controller (e.g. PILS, VSA, DME Arrival etc);
k) step climb/descent annotation, including the ACIDs of the aircraft involved;
l) clearance limits;
m) traffic information;
n) latest divert times;
o) VFR-on-top annotation;
p) IFR Pick-up annotation;
q) SIS annotation; and
r) any other data that is considered critical for effective traffic management.

1.4.1.2 Local instructions

Refer to local instructions for any additional recording requirements or methods of recording specific information.

2 Operational context

2.1 MATS administration

2.1.1 Operational concept

2.1.1.1 Joint document

MATS is a joint document of Defence and Airservices and is based on the rules published in (CASA) CASR Part 172 – Manual of Standards (MOS) and ICAO standards and recommended practices, combined with rules specified by Airservices and Defence. The requirements and obligations detailed in MATS are in accordance with provisions and regulations of the Air Navigation Act, Air Services Act, and Defence Instructions.

2.1.1.1.1 Document hierarchy

Where a difference exists between operational documents, apply the following hierarchy: AIP Australia and Defence AIP take precedence over MATS, and for military aircraft Defence AIP has precedence over AIP Australia.

2.1.1.2 Printed and electronic editions

MATS is available as either a print edition or as an electronic edition. For the purposes of referencing, both editions contain identical rule sets. The difference between the two is how Interim MATS Amendments are processed and presented.

See MATS 2.1.7 Interim MATS amendments (IMA)

2.1.1.3 Defence authority for use

MATS is a Defence Order, Instruction or Publication (OIP) which is authorised for use in accordance with Defence Aviation Safety Regulation - Air Navigation Service Providers (DASR ANSP).

2.1.1.4 Additions to MATS

Additions to the instructions contained in MATS may be published using the following documents:

Document	Use
Joint Operating Procedures (JOP)	National rule-set applying to Airservices and RAAF related to specific systems (predominantly CMATS)
MATS Supplementary Procedures (MATS Supp)	Local rule-set applying to Airservices and RAAF within a specific region
local instructions (e.g. NAPM, Local Instructions, Letter of Agreement, Standing Instructions)	Local rule-set applying to specific Airservices or RAAF unit(s) or group(s)

Note: *Defence may also make additions to MATS in accordance with DASR provisions.*

2.1.1.5 Content

As a general principle, technique, training, system specific and explanatory material, other than material that is necessary to provide context to the rules, is contained in supporting documentation in the ATS documentation suite.

2.1.1.6 Duplication

MATS excludes duplications of source material except as required to provide context to the rule.

2.1.1.7 Defence MATS document sponsor

The OIP sponsor is appointed in accordance with DASR to ensure all OIP are applicable and authorised. The MATS sponsor and approval authority for changes is SO1 CM ANSP.

2.1.2 MATS structure

2.1.2.1 Content

MATS is a single manual containing:

a) thirteen consecutively-numbered parts, containing chapters;
b) a Table of Contents listing all Parts and Chapter titles;
c) an Index; and
d) the 'What's Changed' section that identifies the description and rationale for each change incorporated into that version.

2.1.2.2 Hierarchy

The method of reference within MATS is:

a) Part;
b) Chapter;
c) Section, which separates discrete topic areas within the Chapter;
d) Clause, details rules and procedures within the Section; and
e) Sub-clause, details rules and procedures associated with a Clause.

2.1.2.3 Numbering

Parts, chapters, sections, clauses and sub-clauses consist of up to five digits, each separated by a period:

a) The first digit is the part number;
b) The second digit is the chapter number;
c) The third digit is the section number;
d) The fourth digit is the clause number; and
e) The fifth digit is the sub-clause number.

2.1.2.3.1 Example clause numbering

For example, Clause '2.1.1.1 Joint document' is part 2, chapter 1, section 1, and clause 1. The clause title is 'Joint document'. This clause appears under the section heading at '2.1.1 Operational concept'.

For another example, see MATS 2.1.2.5 Illustration of structure

2.1.2.3.2 Clause sets

Where a set of clauses are related to each other and must be applied in conjunction, the related sub-clauses will contain the four numbers of the parent clause plus an additional number. The sub-clause is related to all other clauses containing the same first four numbers. The sub-clause text is also indented. In this chapter for example, clause '2.1.2.3 Numbering' is a clause and '2.1.2.3.1 Example clause numbering' and '2.1.2.3.2 Clause sets' (this clause) are sub-clauses. Together they form a clause set.

For another example, see MATS 2.1.2.5 Illustration of structure

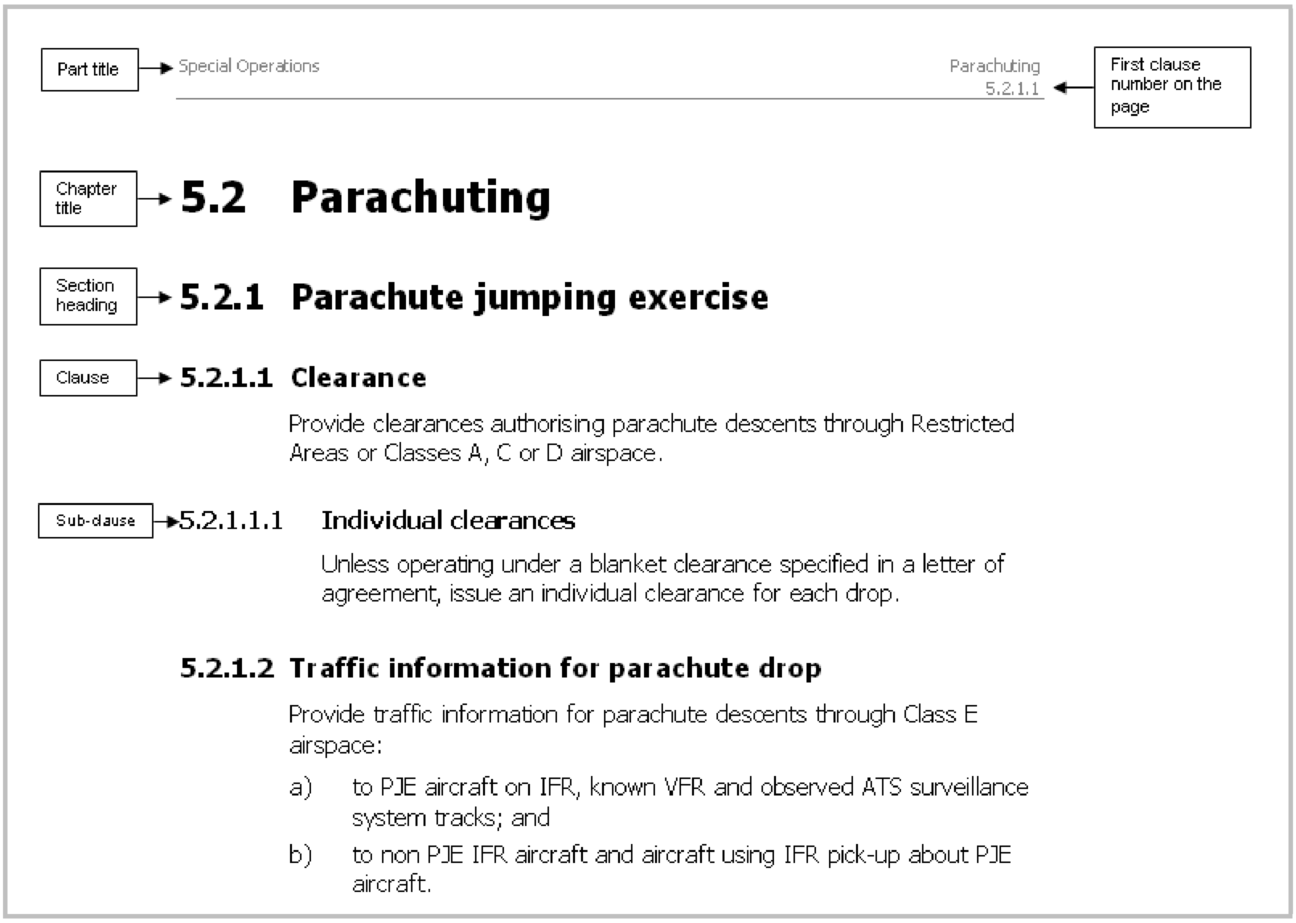
2.1.2.4 Amendments

MATS is amended by replacement.

2.1.2.4.1 Change bars

Change bars will appear on the changed clauses in each new version to alert users that there has been a change to the clause since the last version.

2.1.2.5 Illustration of structure



2.1.3 Clause content

2.1.3.1 Terminology

Instructions are indicated by the use of an active verb e.g. 'instruct', 'provide'. These instructions are mandatory and equate to the verbs 'must' or 'shall'. Where 'may' is used, the instruction is optional.

2.1.3.2 Singular and plural

Unless specifically stated, terms used in singular also provide for the plural and vice versa.

2.1.3.3 List content

List clauses are written using a lead-in sentence that shows the relationship between the list points including, if required, an indication that list points must be carried out in a specific order.

2.1.3.3.1 List numbering

Lists are numbered using the following styles:

a) Level 1 listed as a) b) c) where a specific order is not required;

b) Level 1 listed as 1) 2) 3) where a specific order is required; and

c) Level 2 listed as i) ii) iii) under any Level 1 numbered list.

2.1.3.3.2 List point relationships

The relationship between list points is as follows:

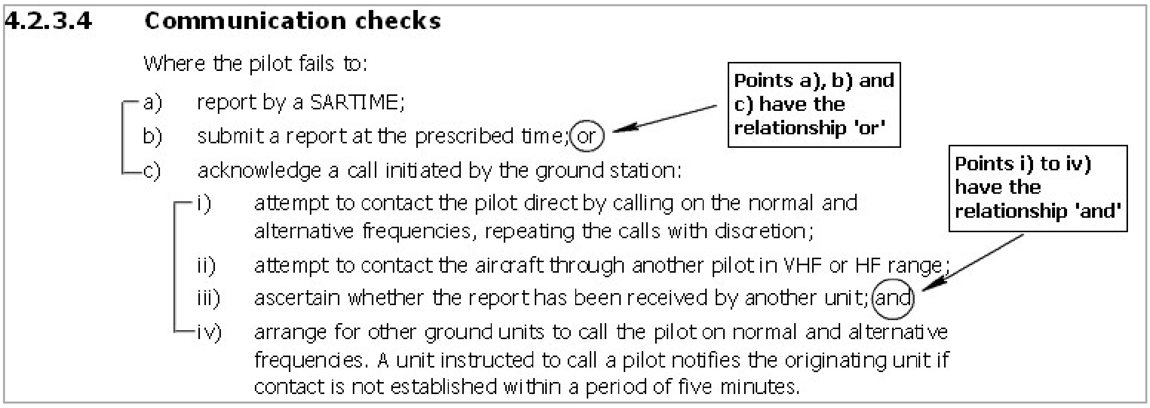
a) The relationship may be 'and' or 'or';

b) 'And' and 'or' relationships are not used within the same list; and

c) The list point relationship is shown only on the second last list point.

Note: *A clause may include a level 1 list with a level 2 list embedded. The list point relationship may not be the same in each of the lists e.g. Clause 4.2.3.4 (shown below) has points a) to c) where the list point relationship is 'or'. List point c) also has a level 2 list embedded with points i) to iv) where the list point relationship is 'and'.*

Illustration of list point relationships



4.2.3.4 Communication checks

Where the pilot fails to:

a) report by a SARTIME;

b) submit a report at the prescribed time; or

c) acknowledge a call initiated by the ground station:

i) attempt to contact the pilot direct by calling on the normal and alternative frequencies, repeating the calls with discretion;

ii) attempt to contact the aircraft through another pilot in VHF or HF range;

iii) ascertain whether the report has been received by another unit; and

iv) arrange for other ground units to call the pilot on normal and alternative frequencies. A unit instructed to call a pilot notifies the originating unit if contact is not established within a period of five minutes.

2.1.4 Review cycle

2.1.4.1 Requirement

It is the responsibility of the ATMSL and SO1 CM ANSP to review MATS at intervals not exceeding two years.

2.1.4.2 Review considerations

In particular, reviews consider:

a) changes in the legislative environment;

b) changes in other related documents;

c) incidents or reviews;

d) if the document is still fit for purpose; and

e) if the document still meets the needs of the business.

2.1.5 Change process

2.1.5.1 Frequency of amendments

MATS may be published up to four times a year, in accordance with the AIRAC cycle.

2.1.5.2 Book version numbers

Each time MATS is amended, the book is completely replaced.

2.1.5.3 Not for urgent changes

Do not use this process for urgent changes. If you consider a change must be made in less time, contact the supervisor immediately.

2.1.5.4 Process

A summary of the MATS change process is:

Responsible person	Action
The Proponent	Submit a Request for Change Form to: a) ATM Standards - NCSS; or b) STD ANSP.
NCSS or STD ANSP	Assess the proposal and: a) if not supported, conduct an internal peer review; or b) if supported: i) STD ANSP retain the change; or ii) NCSS forward the change to ATS Integrity.
ATS Integrity or STD ANSP	Complete the following, as applicable: a) Consult with ATC procedures specialists; b) Review for national applicability and congruence with existing procedures; c) Review for legislative and ICAO compatibility; and d) Develop/refine the change, in consultation with affected parties as required.
CIG	Review the change and approve or reject progress
ATS Integrity	Process the approved change for the next available update of MATS or, if urgent, an Interim MATS Amendment

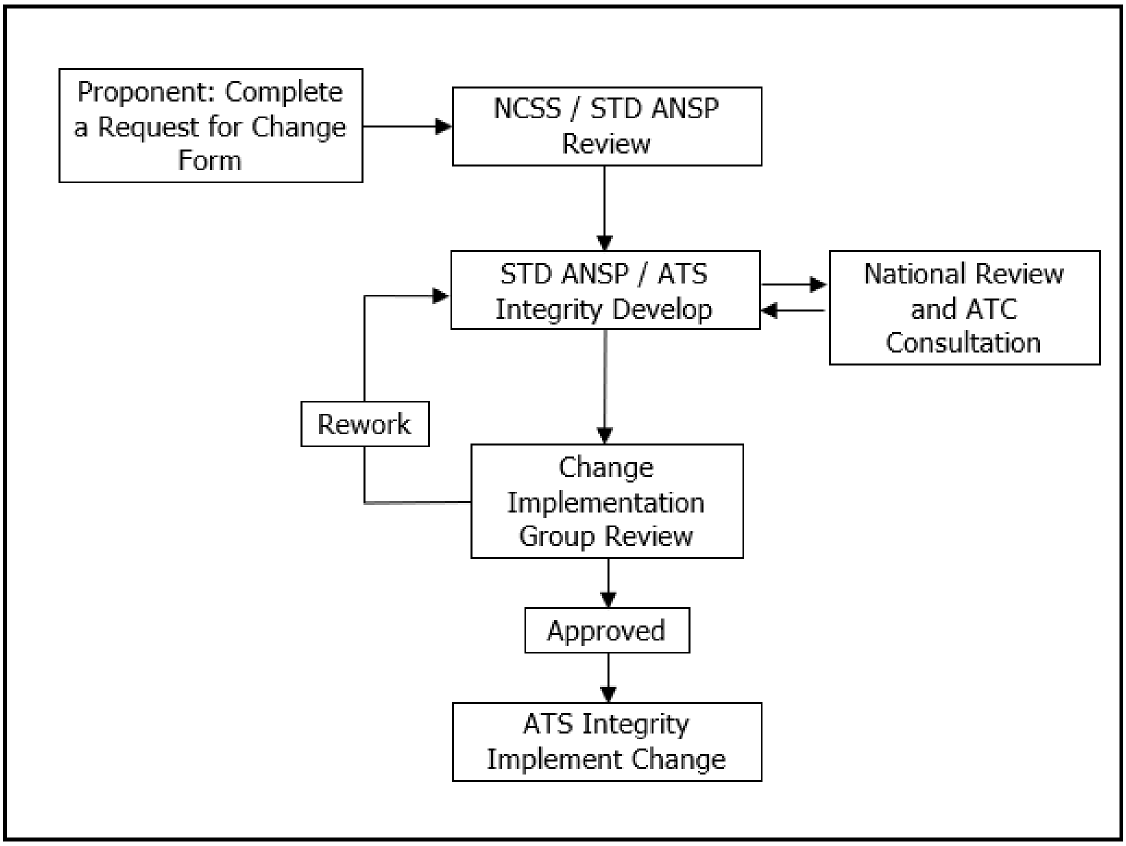
Note: *ATM Standards may also be a Proponent.*

See MATS 2.1.6.3.1 Initiating changes

See MATS 13.1.1.1 Access to forms

2.1.5.4.1 Flowchart showing change process

The change process is summarised in the flowchart below showing the actions/ tasks required by each role involved in the change process.



2.1.6 Responsibilities

2.1.6.1 Proponents

A proponent may be any user of MATS.

2.1.6.1.1 To suggest a change

To suggest a change, complete a Request for Change Form and send via email to ATM Standards - NCSS or STD ANSP, as appropriate.

2.1.6.1.2 Replacement text is not required

Replacement text may be suggested at this stage of the process. Alternatively this will be done by ATS Integrity or STD ANSP.

2.1.6.2 NCSS or STD ANSP review

The NCSS or STD ANSP review:

a) evaluates each change request and determines whether the request should be progressed; and
b) provides proponents with information concerning the outcome of their request - rejection, refinement requirements or progression.

2.1.6.3 ATS Integrity or STD ANSP change development

ATS Integrity or STD ANSP:

a) research and scope the implications of the change;
b) check the regulations and other legislative requirements and:
    i) evaluate conformance with ICAO and Australian regulations;
    ii) discuss the proposal with Defence/Airservices/CASA, as appropriate; and
    iii) identify other documents, such as AIP, that need to be changed as a result of the proposal;
c) examines and consults the national applicability of a change; and
d) develops and presents the change request for consideration by the CIG.

2.1.6.3.1 Initiating changes

ATS Integrity is responsible for initiating changes originating from CASA, ICAO and other matters that substantially affect safety or the management of the MATS document.

2.1.6.3.2 Fast track

ATS Integrity may fast track changes of an editorial nature, without the requirement to follow the normal change process.

2.1.6.4 Change Implementation Group (CIG)

The CIG review change requests for approval. ATS Integrity is responsible to manage the CIG and status of proposed changes including implementing approved change requests by the agreed date.

2.1.6.4.1 CIG group members

Core members of the CIG are nominees from:

a) ATM Standards - NCSS;

b) ATM Standards - ATS Integrity;

c) Directorate of Strategic Airspace Management and Air Base Operations - AFHQ;

d) STD ANSP; and

e) Stakeholders representing other organisations or business units may be co-opted as required.

2.1.7 Interim MATS amendments (IMA)

2.1.7.1 Interim changes

Urgent change that requires action prior to the next scheduled amendment date will be published as an IMA.

2.1.7.2 Change specific

Each IMA relates to one change or set of changes. Each subsequent IMA contains a new change.

2.1.7.3 Power of IMA

IMA have the same status as MATS.

2.1.7.4 Initiating IMA

In normal circumstances any of the following may initiate IMA:

a) Service Standards Head (SSH);

b) ATM Standards Lead (ATMSL); or

c) SO1 CM ANSP.

2.1.7.5 Raising IMA

Where possible, only issue IMA to address critical safety requirements. The ATMSL or SO1 CM ANSP may determine that certain non-critical safety matters should be addressed through an IMA.

2.1.7.6 Issuing IMA

Where possible issue IMA with at least seven days notice. Where safety requirements dictate issue an IMA for immediate effect.

2.1.7.7 IMA distribution - print edition

IMA are distributed electronically and printed locally. Physically store each IMA with the print edition of MATS (attach to front inside cover).

2.1.7.7.1 Check-off table

A check-off table is located on the inside of the front cover of the print edition of MATS. Each IMA also shows a list of all current IMA at the time of publishing.

2.1.7.7.2 Complete replacement

Usually, all changes within the IMA will be incorporated into the print edition at the next update. When the print edition is replaced by a later version, destroy any IMA with the old edition. A new IMA will be issued for the new print edition if required.

2.1.7.8 IMA distribution - electronic edition

All IMA will result in the publication of a new electronic edition of MATS. Each new electronic edition will incorporate one or more IMA and be numbered to reflect the IMA number. For example, IMA V30_01 would result in the release of MATS Electronic Edition V30.1, IMA V30_02 would result in MATS Electronic Edition V30.2 etc. Where two or more IMA are incorporated into an edition, for example IMA V30_03 and IMA V30_04, MATS Electronic Edition V30.4 would be published.

2.1.7.8.1 IMA incorporation into the electronic edition

IMA will be reflected in the electronic edition as follows:

a) The numbers for all IMA incorporated in the electronic edition will be displayed in blue on the first page;
b) Clauses deleted by an IMA will display the IMA number at the location of the deleted clause(s);
c) Clauses amended by an IMA will display the IMA number in red next to the clause heading and the clause text in green;
d) Change bars will appear next to the amended portion of the clause;
e) References to clauses amended by an IMA will contain a reference to the IMA number e.g. See MATS 8.1.3.1.1 Check and correct - Refer IMA V28_04; and
f) Where clauses are either deleted or inserted by an IMA, subsequent clauses will be re-numbered.

Note 1: *Changes to clause references will not be reflected by a change bar or change in colour.*

Note 2: *Changes to clause numbers will not be reflected by a change bar or change in colour.*

2.1.8 National Information Circulars

2.1.8.1 National Information Circular (NIC)

Operational information may be published by National Information Circular provided the information:

a) pertains to operational matters;

b) affects operations on a widespread or national level; and

c) contributes to the safety or efficiency of operations.

2.1.8.1.1 Content

A NIC may only contain information. Do not publish instructions by NIC.

2.1.8.2 Authorisation

NIC will be authorised by the ATMSL and/or SO1 CM ANSP as pertinent to distribution.

2.1.8.2.1 Distribution

A NIC may be distributed to:

a) Airservices only;

b) Defence only; or

c) Airservices and Defence.

2.1.8.3 Validity

NIC are normally valid for three months and then cancelled. Variations to validity may be made subject to operational requirements.

2.2 Air Traffic Services

2.2.1 Objectives and divisions

2.2.1.1 ATS objectives

The objectives of Air Traffic Services are to:

a) prevent collisions between aircraft;

b) prevent collisions between aircraft on the manoeuvring area and obstructions on that area;

c) expedite and maintain an orderly flow of air traffic;

d) provide advice and information useful for the safe and efficient conduct of flights; and

e) notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required.

2.2.1.2 Services provided

The air traffic services comprise three services:

a) The *air traffic control service*, to accomplish objectives a), b) and c) of Clause 2.2.1.1. This service is divided into three parts:
   i) *Area control service*: the provision of air traffic control service for controlled flights, except for those parts of such flights described in Clause 2.2.1.2 a) ii) and iii), in order to accomplish objectives a) and c) of Clause 2.2.1.1;
   ii) *Approach control service*: the provision of air traffic control service for those parts of controlled flights associated with arrival or departure, in order to accomplish objectives a) and c) of Clause 2.2.1.1; and
   iii) *Aerodrome control service*: the provision of air traffic control service for aerodrome traffic, except for those parts of flights described in Clause 2.2.1.2 a) ii), in order to accomplish objectives a), b) and c) of Clause 2.2.1.1.

b) The *flight information service*, to accomplish objective d) of Clause 2.2.1.1; and

c) The *alerting service*, to accomplish objective e) of Clause 2.2.1.1.

See MATS 2.2.1.1 ATS objectives

2.2.1.3 Tower approach

A control tower may provide approach services when a separate approach control service is not provided.

2.2.1.4 Division of responsibility

Local instructions specify the division of responsibility between aerodrome control and approach.

2.2.1.5 Duty priority

Give first priority to separating aircraft, issuing safety alerts and providing directed traffic information as required by this Manual. Perform first that action which is most critical from a safety standpoint.

2.2.1.5.1 Additional services

Provide additional services, such as the provision of traffic information to IFR flights and aircraft using IFR Pick-up about VFR flights in Class E, or the provision of SIS, contingent only upon higher priority duties and other factors including equipment limitations, volume of traffic, frequency congestion and workload.

2.2.1.6 Best judgement

Do not allow anything in these instructions to preclude you from exercising your best judgement and initiative when:

a) the safety of an aircraft may be considered to be in doubt; or
b) a situation is not covered specifically by these instructions.

2.2.1.6.1 Rule deviation

Specify any rule deviation in the occurrence report.

2.2.1.7 Duty of care

Upon becoming aware of information such that it would be reasonable to conclude that an unsafe situation has, or may occur, it would be expected that all necessary action is taken to remove that risk.

Note: *The extent of the action required will be driven by professional judgement given the particular circumstances and would include an assessment of the likelihood of the event occurring and the potential severity of the outcome.*

2.2.1.8 Reasonable assurance

'Reasonable assurance' that separation will be achieved requires the controller to ensure:

a) the disposition and relative performances of aircraft, vehicles or persons concerned are such that, under normal operation, separation will be maintained;
b) that if the aircraft, vehicle or person is required to operate in a certain way to achieve and maintain separation, they have the appropriate information to ensure they do; and
c) any equipment necessary to assure separation is operating within normal parameters and there is no reason to expect this will change.

2.3 Traffic priorities

2.3.1 General priorities

2.3.1.1 Safety

Do not compromise safety in order to meet traffic priorities.

2.3.1.2 Overall priority

See AIP ENR 1.4. REGULATION OF FLIGHT - ASSESSMENT OF PRIORITIES.

2.3.1.2.1 Head of State

Consult the NOMC if confirmation of Head of State status is required.

2.3.1.2.2 Exceptions

The following are exceptions to priorities as reflected in AIP:

a) Military operational requirement where other priorities have been agreed; and

b) Navaid checks where prior arrangement has been made for aircraft engaged in navaid checks.

2.3.2 Priorities during Degraded Modes

2.3.2.1 Priorities to conflicting operational demands

Apply the following priorities in order, to conflicting operational demands during periods of Degraded Mode operations:

1) International scheduled commercial air transport operations;
2) Domestic jet scheduled commercial air transport operations;
3) Military aircraft except training flights;
4) Pressurised propeller aircraft scheduled commercial air transport operations;
5) With equal status:
   i) Aircraft engaged in the personal transport of State Governors or Administrator of the NT;
   ii) State Premiers or the Chief Ministers of the NT or the ACT; and
   iii) Medical Aircraft (HOSP) operations;
6) Remaining scheduled commercial transport operations; and
7) Other operations.

2.3.2.2 Lower priority flights

Lower priority flights may be processed concurrently with flights of higher priority when:

a) traffic conditions permit; and
b) the lower priority flight will depart or enter controlled airspace at low levels within the Terminal area.

Note: *The Degraded Modes Traffic Management Plan illustrates the process to enable an orderly reduction of traffic levels to those which can be maintained during periods of reduced system availability.*

2.3.3 Air Traffic Flow Management (ATFM)

2.3.3.1 Ground Delay Program (GDP)

Apply GDP procedures, during the relevant GDP hours of operation, to departing flights:

a) from Perth; or

b) that will arrive at Brisbane, Sydney, Melbourne or Perth.

See AIP ENR 1.9

See ERSA

2.3.3.1.1 GDP priority

At Perth, apply the GDP for departures before the GDP for other locations.

2.3.3.1.2 GDP exceptions

Do not apply GDP procedures to the following flights:

a) Emergency;

b) MEDEVAC, FFR, SAR;

c) HOSP;

d) HEAD; or

e) ATFMX.

2.3.3.1.3 Compliance waiver

In extenuating circumstances and on pilot request, the NOMC may provide an ATFM waiver. Instruct flights issued with an ATFM waiver to flight plan STS/ATFMX in item 18.

2.3.3.1.4 Unable to apply GDP

Advise the NOMC when factors such as workload prevent the application of GDP procedures, with the reason and duration.

2.3.3.2 COBT requests

Advise flights requesting a new/amended COBT or that have an ATFM query to contact:

a) their company for scheduled flights; or

b) the NOMC for itinerant flights.

2.3.3.3 Ground procedures - controlled aerodromes

Only approve push-back or taxi for an aircraft subject to a GDP if:

a) the aircraft is compliant or late non-compliant;

b) there is an operational requirement e.g. gate availability; or

c) there is a reasonable expectation that the CTOT will be achieved.

2.3.3.3.1 COBT compliance window

Consider an aircraft to be compliant when the push-back or taxi time is within the compliance window:

GDP	COBT compliance window
Arrivals (Sydney, Brisbane, Melbourne, Perth)	-5 min to +15 min
Departures (Perth)	-5 min to +10 min

2.3.3.3.2 Early non-compliant

When the flight is early non-compliant, advise the pilot 'PUSH-BACK (*or* TAXI) CLEARANCE NOT AVAILABLE DUE FLOW MANAGEMENT. EXPECT CLEARANCE AT TIME (*COBT -5 min*)'.

2.3.3.3.3 Achieving CTOT

When early push-back or taxi is operationally required, delay the flight by other means to achieve the CTOT.

2.3.3.3.4 No ATFM system COBT

When an aircraft does not have a COBT or is not known to the ATFM system, consider the flight to be operating outside the hours of a GDP.

Note: *The NOMC monitors participation in and compliance with the ground delay program and will take action as appropriate.*

2.3.3.4 Non-compliant - tower and flow

When a flight is non-compliant, advise the pilot as soon as possible 'YOU ARE NON-COMPLIANT WITH FLOW MANAGEMENT, EXPECT AIRBORNE DELAY'.

2.3.3.5 Diverting to a GDP aerodrome

Notify the NOMC when an aircraft diverts to a GDP aerodrome.

2.3.3.6 GDP revision

Apply GDP revision in accordance with the following levels:

GDP revision	Compliance requirement
Level 1	Consider all flights departing for the affected aerodrome within the next 30 min as compliant regardless of the indicated COBT
Level 2	Consider flights that have already manoeuvred to depart as compliant. All other flights should immediately comply with the revised COBT
Level 3	Immediate compliance with the revised COBT should occur for all flights, except by ATMD approval

2.3.3.6.1 Exception - long domestic flights

Do not apply Level 2 and 3 GDP revision procedures to flights departing Perth, Darwin, Karratha, Port Hedland or Broome for Brisbane, Sydney or Melbourne.

2.3.3.6.2 Notification of compliance

The NOMC will specify what level of compliance is required following a GDP revision.

2.3.3.6.3 Pilot advice to obtain new COBT

When a Level 2 or 3 GDP revision occurs, advise pilots subject to immediate compliance 'GDP REVISION WITH IMMEDIATE COMPLIANCE AT (*airport*), OBTAIN NEW COBT FROM YOUR COMPANY (*or* THE NOMC)'. Cease advice after 30 min.

See MATS 2.3.3.2 COBT requests

2.3.3.7 Agreed flow rates

Specify agreed flow rates for arriving aircraft, and procedures to vary those rates, in local instructions. Base flow rates on either time or distance.

2.4 Airspace administration

2.4.1 Airspace classes, services provided and flight requirements

2.4.1.1 Airspace classes

Class	Type of flight	Separation provided	Service provided	Airspace speed limitation	Radio requirements	Subject to an ATC clearance
A	IFR	All aircraft	Air traffic control service	Not applicable	Continuous two-way	Yes
	VFR not permitted					
C	IFR	IFR from IFR IFR from VFR IFR from Special VFR	Air traffic control service	Not applicable	Continuous two-way	Yes
	VFR	VFR from IFR	Air traffic control service for separation from IFR	250 kt IAS below 10 000 FT AMSL	Continuous two-way	Yes
			VFR/VFR traffic information (and advice to avoid other aircraft on request)			
	Special VFR	Special VFR from Special VFR, when VIS does not meet VMC	Air traffic control service	250 kt IAS below 10 000 FT AMSL	Continuous two-way	Yes
D	IFR	IFR from IFR. IFR from Special VFR	Air traffic control service, traffic information about VFR flights	200 kt IAS at or below 2500 FT AAL within 4 NM of the primary Class D aerodrome 250 kt IAS - in the remaining Class D airspace	Continuous two-way	Yes
	VFR	Nil	Air traffic control service, traffic information on all other flights		Continuous two-way	Yes
	Special VFR	Special VFR from Special VFR, when VIS does not meet VMC	Air traffic control service		Continuous two-way	Yes

Class	Type of flight	Separation provided	Service provided	Airspace speed limitation	Radio requirements	Subject to an ATC clearance
E	IFR	IFR from IFR	Air traffic control service and traffic information on VFR flights as far as is practicable	250 kt IAS below 10 000 FT AMSL	Continuous two-way	Yes
	VFR	Nil	Flight information service. SIS - flight following O/R, (ATC workload permitting)	250 kt IAS below 10 000 FT AMSL	Continuous two-way	No
G On and North of 65° South	IFR	Nil	Flight information service	250 kt IAS below 10 000 FT AMSL	Continuous two-way	No
	VFR	Nil	Flight information service. SIS - flight following O/R, (ATC workload permitting)	250 kt IAS below 10 000 FT AMSL	VHF radio required for operations above 5000 FT AMSL and at aerodromes where carriage and use of radio is required	No
G South of 65° South	IFR	Nil	Flight information service O/R	250 kt IAS below 10 000 FT AMSL	Continuous two-way	No
	VFR	Nil	Flight information service O/R	250 kt IAS below 10 000 FT AMSL	Nil	No

Note 1: *Speed limitations do not apply to military aircraft, except as specified in ERSA.*

Note 2: *The exclusion of VFR flight from Class A airspace does not apply to military aircraft or approved military contract aircraft, in military airspace.*

See MATS 9.5.1.2 Published speeds

2.4.1.1.1 Class D speed limit

In Class D airspace, you may approve a pilot's request to exceed the 200 kt speed limit to a maximum limit of 250 kt. You may approve a higher minimum speed if the pilot informs ATC it is required.

2.4.1.1.2 Class E speed limit

Do not clear civil aircraft in Class E airspace to operate at speeds greater than those indicated other than for safety reasons.

2.4.1.2 Alerting service

Provide the alerting service:

a) for all aircraft provided with air traffic control service;

b) to any aircraft known or believed to be the subject of unlawful interference; and

c) in so far as practicable, to all other aircraft having filed a flight plan or otherwise known to air traffic services.

2.4.1.3 Airspace with shared vertical or lateral boundaries

Where airspaces adjoin vertically or laterally, apply the services of the least restrictive airspace at the common boundary.

Note 1: *Prohibited/Restricted/Military Operating Areas are considered the most restrictive, then Class A airspace etc., with Class G airspace the least restrictive.*

Note 2: *When controlled airspaces, or a controlled airspace and a Prohibited/ Restricted/Military Operating Area vertically adjoin, except for VFR in Class E, the common level between airspaces is not useable for transiting aircraft without a clearance.*

See AIP ENR 1.4

2.4.1.4 VFR AWK aircraft

You may exempt VFR AWK aircraft operating below 300 FT AGL in Class C and D airspace from the requirement to maintain continuous two-way radio communication.

2.4.2 Airspace establishment

2.4.2.1 Classes of airspace

Refer to DAH and AIP/MAP for details of airspace classes, PRD, MOA and air routes.

Note 1: *The OAR is the authority which regulates airspace classes, PRD, MOA and air routes. Approved modifications are issued in DAH, ERSA, NOTAM and AIP Supplements. OAR approval is required for changes to established airspace classes, PRD, MOA and air routes.*

Note 2: *When an active Restricted or Military Operating Area is coincident with another class of airspace, the services provided within the Restricted or Military Operating Area may be at variance with the coinciding airspace in accordance with Clause 2.4.2.2, and conditions of entry may be applied.*

Note 3: *When an active Danger Area or airspace reservation is coincident with another class of airspace, the services provided within the Danger Area or airspace reservation are the same as those provided within the coincident airspace, unless specifically approved otherwise by the OAR.*

See MATS 2.4.1.1 Airspace classes

See MATS 2.4.2.2 Military ATS within military airspace

2.4.2.2 Military ATS within military airspace

Unless otherwise specified in AIP/NOTAM, provide the following service to civil aircraft operating in military CTA/CTR, military Restricted Areas and Military Operating Areas:

Airspace	Level of service provided by Defence ATC
Military airspace controlled/ administered by Defence ATC	Approved aircraft - equivalent to Class A and/or Class C airspace, as applicable
Restricted Areas and Military Operating Areas controlled/administered by other military units e.g. Navy or Army	No ATS ***Note:*** *ATC may provide limited FIS and SAR services in accordance with Clause 4.2.21.1*

See MATS 2.4.7 Air Defence operations in military airspace
See MATS 4.2.21.1 Entering an active Restricted/Military Operating Area

2.4.2.3 Defence airspace management

Manage all Defence administered airspace through the JACC.

2.4.2.3.1 Primary user

The primary user has priority for the use of the airspace and the controlling/ administering authority must only permit operations within the airspace with the approval of the primary user. This may require the total exclusion of other airspace users.

Note: *During a declared emergency every effort will be made to obtain approval to transit the airspace.*

2.4.2.3.2 ATS service provider

Airservices may provide ATS within military airspace in accordance with documented procedures. The various authorities must agree upon the management of the designated airspace and operations within it.

See MATS 2.4.5 Releasing airspace

2.4.2.3.3 Defence airspace changes

The contact or controlling/administering authority is responsible for coordinating changes to their airspace with the JACC. Direct requests to establish temporary PRD or MOA to the JACC via email: adf.airspace@defence.gov.au

2.4.2.4 Civil airspace changes

Refer all requests for civil airspace changes (Temporary, Restricted or Danger Areas or reclassification of airspace) to the OAR via telephone: 02 6217 1177 (all hours) or via email address: oar@casa.gov.au (business hours).

2.4.2.4.1 Extensions to published tower hours

Short-term extensions to ATC tower hours at non-continuous civil Class C and Class D towers do not require OAR notification.

2.4.3 Special Use Airspace (SUA)

2.4.3.1 Flight within Restricted Areas and Military Operating Areas

Obtain approval/clearance from the controlling/administering authority when flight within a Restricted Area or Military Operating Area is required.

Note 1: *MOA have the same entry approval requirements as Restricted Areas:*

a) for all aircraft within Australian territory (including Australian territorial waters which are generally up to 12 NM offshore); and

b) for all Australian registered aircraft, outside Australian territory.

Note 2: *Outside Australian territory, foreign registered aircraft are not subject to MOA entry control but should contact and identify their operation to the MOA administering authority.*
See AIP ENR 5.1

Note 3: *Notwithstanding the clearance requirements within CTA/CTR, flight within a Danger Area does not require specific approval.*

2.4.3.1.1 Flight within a MOA outside Australian territory

Manage foreign registered aircraft that elect to transit a MOA outside Australian territory, without approval, in accordance with Clause 4.2.21.1.

See MATS 4.2.21.1 Entering an active Restricted/Military Operating Area

2.4.3.1.2 Restricted Area conditional status

Manage access to Restricted Areas in accordance with the published conditional status or agreements published in local instructions. Where a conditional status cannot be ascertained, the default status is RA3.

2.4.3.2 Operations at vertical limits

Aircraft operating at the vertical limits of Prohibited/Restricted/Military Operating Areas and airspace reservations are separated from activities within those airspaces.

2.4.3.2.1 Exception

Where separate Prohibited/Restricted/Military Operating Areas or airspace reservations vertically adjoin, the level between airspaces is not useable for transiting aircraft without a clearance or approval.

2.4.3.3 Lateral separation with adjacent airspace

Separate flying operations in adjacent Restricted/Military Operating Areas or airspace reservations, or in adjacent portions of the same Restricted/Military Operating Area or airspace reservation, by ensuring that the possible positions of the aircraft are separated by a minimum of 1 NM in the horizontal plane.

2.4.3.4 Non-participating aircraft

Separate non-participating aircraft from Prohibited/Restricted/Military Operating Areas or airspace reservations, by application of an ATS surveillance system or procedural separation standard.

2.4.3.4.1 Exception PJE

You may assign a PJE pilot responsibility for not entering a Restricted/Military Operating Area in accordance with Clause 5.2.2.5.

See MATS 5.2.2.5 PJE aircraft not entering a Restricted Area

2.4.3.4.2 Exception non-flying

Where the Prohibited/Restricted/Military Operating Area is classified as non-flying, a procedural separation standard only requires the application of appropriate aircraft navigation tolerances. The 1 NM buffer for lateral separation is not required.

2.4.3.4.3 Special circumstances

Where special procedures or equipment so permit, segregation of flying operations may be agreed on the basis that the aircraft subject to special procedures or the special equipment are guaranteed by the controlling/ administering authority not to fly beyond the designated horizontal boundary.

2.4.3.4.4 Military flying/non-flying classification

Regard a Restricted/Military Operating Area classified as 'military flying/non-flying' as 'military flying' for separation when the associated airspace description:

a) does not specify the activity type; or

b) specifies both flying and non-flying activities may occur.

2.4.4 Deactivating airspace

2.4.4.1 Activate by NOTAM

Except as listed in DAH or as specified below, notify or amend the activation and deactivation times for SUA by NOTAM.

2.4.4.2 Early deactivation

The published cessation time of a SUA or Class C CTR may be amended by voice:

a) without the issue of a NOTAM provided the new cessation time is less than one hour prior to the original published cessation time; or

b) with subsequent issue of a NOTAM when the deactivation is one hour or more prior to the original published cessation time.

Note: *Class C CTR must be activated by NOTAM to be eligible for early deactivation by voice.*

2.4.4.2.1 Notification

When less than 30 min notice is provided, any early deactivation of a SUA, or Class C CTR must be agreed by the accepting authority. Variations to this requirement may be specified in local instructions.

2.4.5 Releasing airspace

2.4.5.1 Airspace release

Arrange the release of airspace by voice and with mutual agreement of the respective controlling/administering authorities.

Note 1: *Only appropriately rated controllers may accept an airspace release.*

Note 2: *A civil ATS unit may subsequently relinquish a release back to the controlling/administering authority.*

2.4.5.1.1 Releasing authority

The releasing authority:

a) does not provide for the separation of aircraft within the airspace release; and

b) where applicable, ensures that activity under its control is ceased or kept clear of the released airspace.

2.4.5.2 Ad-hoc airspace releases between civil ATC units/sectors

Civil ATC units/sectors may arrange ad-hoc airspace releases between each other for a portion of a sector provided an appropriately endorsed controller remains responsible for the unreleased portion.

2.4.5.2.1 ATS contingencies

Do not use ad-hoc airspace releases for an ATS contingency unless in accordance with the relevant contingency plan.

2.4.5.3 Airspace releases specified in MATS Supps

Airspace released under arrangements documented in MATS Supps must be made available for use by the controlling/administering authority within an agreed timeframe. The ATS service provider must not establish procedures in airspace for which they are not the controlling/administering authority that would preclude them from making the airspace available to the controlling/administering authority.

2.4.5.4 Releasing control zones and control areas

Civil or military control zones and Class A or C airspace may be released wholly or in part to another ATC authority.

2.4.5.4.1 ATS within released CTR/CTA

Provide air traffic services within released CTR, Class A and Class C airspace in accordance with the current classification as depicted in AIP.

See MATS 2.4.2 Airspace establishment

2.4.5.5 Releasing Restricted/Military Operating Areas

Restricted/Military Operating Areas may be released wholly or in part to an ATC authority during the hours of activation.

2.4.5.5.1 Civil non-ATS controlling authorities

Specify procedures for the release of Restricted Area(s) with civil non-ATS controlling authorities in a Letter of Agreement.

Note: *Civil non-ATS controlling authorities are authorities other than Defence or Airservices.*

2.4.5.5.2 ATS within released Restricted/Military Operating Areas

Provide air traffic services within released Restricted/Military Operating Areas in accordance with the underlying established airspace classification as depicted in AIP.

Note: *Released Restricted/Military Operating Areas remain active and, subject to MATS 2.4.3.1, pilots require approval or clearance to operate within the airspace.*

See MATS 2.4.2 Airspace establishment
See MATS 2.4.3.1 Flight within Restricted Areas and Military Operating Areas

2.4.5.6 Approval to operate in released Restricted/Military Operating Areas

Provide pilots with an approval to operate or a clearance according to the established airspace classification, until the airspace is resumed by the controlling/administrative authority.

2.4.5.6.1 Clearance exception

Where an aircraft is subject to a clearance and that clearance will cause the aircraft to enter a released Restricted or Military Operating Area, reiteration of the clearance is not required.

2.4.5.7 Service advice

Inform pilots operating within a released Restricted/Military Operating Area of:

a) the level of service that will apply; and
b) the extent of the approval, as appropriate.

2.4.5.7.1 Service advice exception

Where an aircraft is operating in Class A or C airspace and enters released Restricted/Military Operating Area where the level of service is Class A or C, reiteration of the level of service is not required.

2.4.6 Reserving airspace

2.4.6.1 Airspace reservation

Authorities may mutually agree to an airspace reservation to allow:

a) flights of military significance requiring use of controlled airspace, which would otherwise be subject to restrictions if required to avoid that airspace or to conform with the terms of a clearance; and
b) civil flights through military airspace when circumstances make flight on the normal route inadvisable, and use of alternative routing is impossible or would impose economic penalties. This is not intended to preclude civil diversions where military traffic conditions require.

2.4.6.1.1 Types of airspace reservation

The types of airspace reservations available are those:

a) relating to fixed defined areas; or
b) that are 'mobile', because they cover activities such as aerial refuelling, en route formation flights, etc.

2.4.6.1.2 Airspace reservation activity

Airspace reservation activity may be managed as follows:

a) The normal controlling authority accommodates the reserved operation; or

b) The airspace reservation is released to another ATS authority to accommodate the activity.

See MATS 2.4.5.1 Airspace release

See also MATS 9.2.3.1 Use of blanket clearance

2.4.6.1.3 Airspace limits

Contain the activity within the limits of an airspace reservation. For mobile reservations, apply the largest tolerance(s) that would be expected to be required.

2.4.6.2 Reservation applications

Applications for airspace reservation must be in writing and submitted to the controlling authority at least 48 hours prior to the planned reservation. Consider the operational and economic aspects of all flights when granting or refusing the application. Forward written confirmation of the arrangement to the accepting authority.

Note: *Military flights requiring the use of controlled airspace are coordinated between the local civil and military authorities during the planning stages of the military operations. Large scale military exercises will be planned to avoid civil traffic peaks where possible.*

2.4.6.3 Relinquishing reserved airspace

When operations have ceased or there is a significant lull in activity, the authority reserving the airspace should, subject to safety considerations, relinquish the airspace.

2.4.6.3.1 Cessation of operation

Notify the releasing authority immediately after cessation of the operation for which the airspace was reserved.

2.4.7 Air Defence operations in military airspace

2.4.7.1 Defence ATC

Defence ATC accommodates Air Defence air operations within military airspace. Defence ATC will accommodate Air Defence activity through use of the airspace reservation system, the establishment of Temporary Restricted Areas, Temporary Military Operating Areas or through the confining of the activity within promulgated permanent military controlled airspace.

2.4.7.2 Defence ATC responsibilities

Defence ATC is responsible for the provision of separation for any transiting civil or military aircraft through areas (or portions of areas) reserved or restricted for Air Defence operations.

2.4.7.3 Separation from Air Defence activities

Defence ATC provides separation between approved transit traffic and Air Defence activity. ATS surveillance system separation may be applied by a controller situated within the relevant Air Defence/ATC unit.

See MATS 2.4.2.2 Military ATS within military airspace

2.4.7.3.1 Airspace safety tolerances

Where ATS surveillance system separation is used, a safety tolerance area defined as a block of airspace which moves with the transiting aircraft and from which Air Defence activity is to be excluded, is applied as follows:

a) 2000 FT above and below the transiting aircraft; and

b) 10 NM radius horizontally, by an ATS surveillance system, centred on the transiting aircraft.

2.4.7.3.2 Communication requirements for ATS surveillance system separation

When ATS surveillance system separation is applied between transit traffic and Air Defence activity, ensure direct, continuous and static free, two-way communications is available between all aircraft involved and the Air Defence/ATC unit.

2.4.7.3.3 Procedural separation

Where procedural separation is employed, or where a controller is not located within the CRU, Defence ATC is responsible for devising procedural clearances to ensure separation between transiting aircraft and the Air Defence activity.

2.4.7.3.4 Procedural control

Where procedural control is employed, separation is achieved through the segregation of airspace, either vertically or laterally. Minimum vertical separation is 2000 FT. Air Defence Units are responsible for containing their operations within the limits imposed by Defence ATC.

2.4.7.3.5 Transit traffic

Establish communication with transit traffic prior to entry into airspace reserved or restricted for Air Defence activity. In addition, ensure the controller has direct contact with the Air Defence Controller controlling that Air Defence activity, either through HOTLINE communication or co-location.

2.4.8 Special Use Airspace (SUA) design

2.4.8.1 Method of determining airspace dimensions

Use the methodology of this section to determine vertical and lateral dimensions for PRD, MOA and airspace reservations.

2.4.8.1.1 Exception - ground-based activities that may affect airspace users

Refer proponents/operators of ground-based activities that are hazardous to aviation, such as commercial blasting or ordnance demolition, to the OAR.

Note: *The OAR will assess the impact of these activities.*

2.4.8.1.2 Use Restricted Area method

Use the methodology specified for Restricted Areas when calculating the airspace limits for:

a) a Prohibited Area;

b) a Military Operating Area; or

c) an airspace reservation.

2.4.8.1.3 Adjacent control areas

When establishing Prohibited/Restricted/Military Operating Areas or airspace reservations, consider the requirements of adjacent controlled airspace to ensure existing operations will remain effective.

2.4.8.1.4 Published vertical limits

The promulgated vertical limits of Prohibited and Restricted Areas shown in AIP, FLIP and NOTAM contain the required buffers.

2.4.8.2 OAR approval for PRD establishment

Submit the proposed airspace dimensions to the OAR for approval. Ensure that all necessary coordination has been carried out between the relevant authorities and that appropriate buffers have been added prior to submission.

2.4.8.2.1 NOTAM instructions

After the OAR has granted approval, provide the airspace information to the NOF for promulgation in a NOTAM.

2.4.8.3 Determining vertical dimensions and limits

When determining the dimensions for SUA, the airspace proponent determines the vertical limit for which an activity takes place. This vertical limit is known as:

a) Planned Height when promulgated with reference to height above ground level;
b) Planned Altitude when promulgated with reference to height above mean sea level; or
c) Planned Level when promulgated with reference to height within the standard pressure region.

2.4.8.3.1 Planned Height - non-flying activities

The Planned Height is the maximum height specified for the type of ordnance being used. This figure includes buffers for burst safety distances, ricochet, air danger height and trajectory.

2.4.8.3.2 Planned Altitude/Level - flying activities

The Planned Altitude/Level refers to the altitudes or levels at which the planned activity will occur.

2.4.8.3.3 Ordnance delivery

For ordnance delivery where the weapon’s safety template will exceed the level of the delivery aircraft, use the weapon’s safety template height to determine the planned Altitude/Level.

2.4.8.3.4 Final level

Do not use planned height or planned altitude/level as the final level in the calculation of airspace upper limits.

2.4.8.4 Flying and non-flying activities

Classify activities as 'flying', 'non-flying' or 'flying/non-flying':

a) Flying activities are those involving the use of an airborne platform;
b) Non-flying activities encompass all other activities not involving the use of an airborne platform; or
c) Flying/non-flying encompasses both types of activity.

2.4.8.4.1 Multiple activities

Where flying and non-flying activities will take place in the same airspace, determine the dimensions to encompass both activities.

2.4.8.4.2 Vertical limit AGL

Where flying activity is planned as a height AGL, convert it to AMSL prior to calculating the airspace upper and lower limits.

2.4.8.5 Calculating Restricted Area Upper Limit - non-flying activity

To calculate the Restricted Area Upper Limit (RAUL) for non-flying activities:

1) add the elevation of the highest point in the area to the Planned Height to determine the Activity Altitude/Level;
2) in the standard pressure region, add a Pressure Variation Buffer of 1000 FT to compensate for variations to atmospheric pressure below 1013.2 HPA; and
3) add an Instrument/Pilot Tolerance (I/PT) buffer of 500 FT below FL290 or 1000 FT at or above FL290.

2.4.8.6 Calculating Restricted Area Upper Limit - flying activity

To calculate the Restricted Area Upper Limit (RAUL) for flying activities:

1) add a Standard Flying Activity Buffer (SFAB) of 500 FT below FL290 or 1000 FT at or above FL290 to the Planned Altitude/Level; and
2) add an Instrument/Pilot Tolerance (I/PT) buffer of 500 FT below FL290 or 1000 FT at or above FL290.

2.4.8.7 Calculating Restricted Area Lower Limit - flying activity

To calculate the Restricted Area Lower Limit (RALL) for flying activities:

1) subtract a Standard Flying Activity Buffer (SFAB) of 500 FT below FL290 or 1000 FT at or above FL290 from the Planned Altitude/Level; and
2) subtract an Instrument/Pilot Tolerance (I/PT) buffer of 500 FT below FL290 or 1000 FT at or above FL290.

2.4.8.8 Calculating Lowest and Highest Useable Levels

To calculate useable levels:

1) round the RAUL up to the nearest 500/1000 FT for the Lowest Useable Level (LUL); and
2) round the RALL down to the nearest 500/1000 FT for the Highest Useable Level (HUL).

2.4.8.9 Vertically adjoined airspace

When designated airspaces vertically adjoin treat all airspaces as one for the purpose of aircraft avoiding the areas. The vertical limits are the:

a) lower limit of the lower airspace; and
b) upper limit of the highest airspace.

2.4.8.10 Vertical separation with vertically adjoined airspace

Separate a controlled flight operating in one airspace from a controlled flight operating in an adjacent airspace, by an air traffic control vertical minimum appropriate to the levels involved.

2.4.8.10.1 Retain useable levels

Establish the highest and lowest useable levels within each airspace to ensure a level is not lost at the adjoining boundary.

2.4.8.10.2 Local instructions

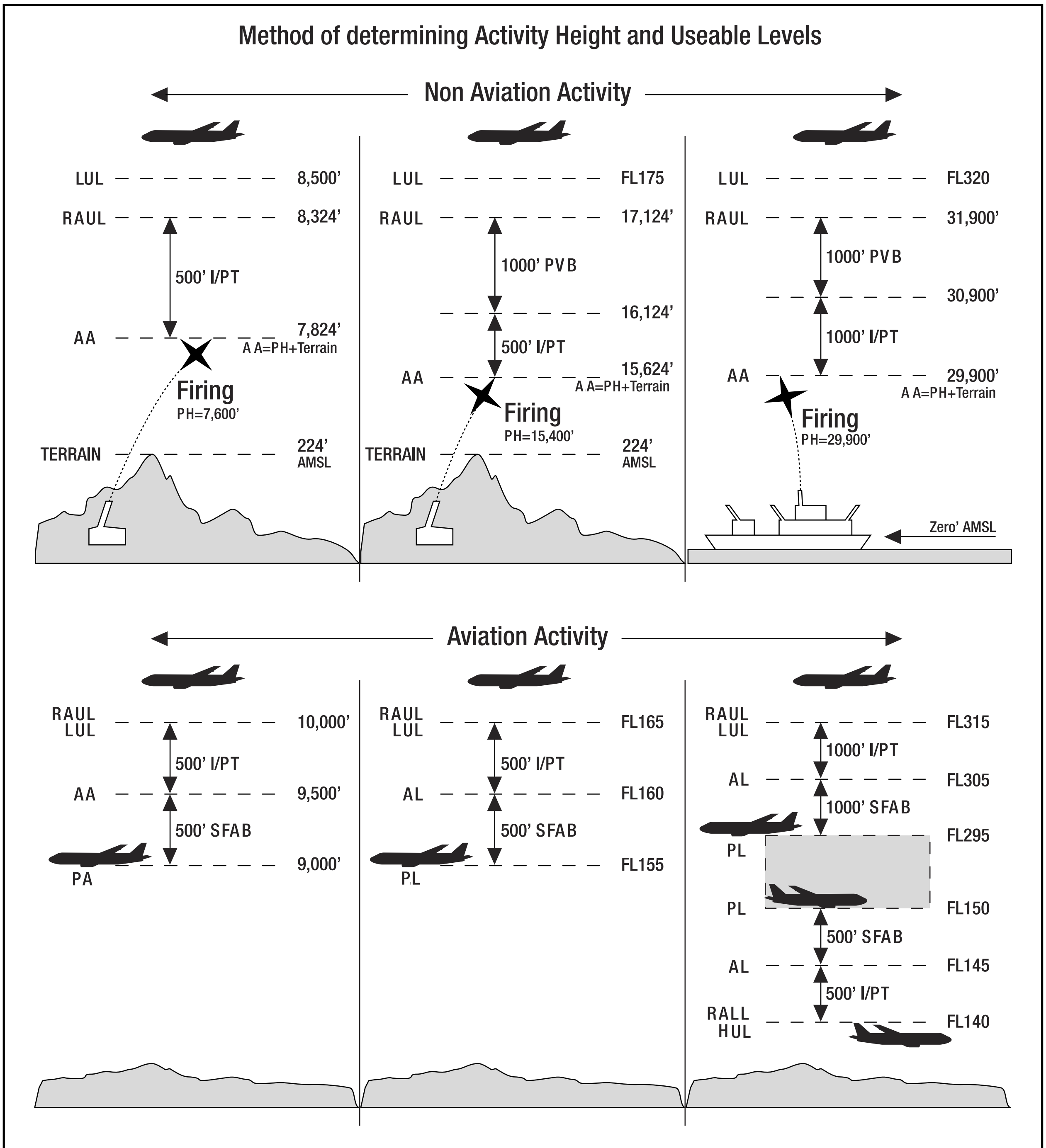
Incorporate coordination of promulgated responsibilities in local instructions as appropriate.

2.4.8.11 Danger Area vertical limits

The vertical limits of Danger Areas are the upper and lower limits of the activities within the airspace.

2.4.8.12 Determining Restricted Area Activity Height and useable levels

Determine Restricted Area Activity Height and useable levels in accordance with the following diagram:



PH	Planned Height	RAUL	Restricted Area Upper Limit	I/PT	Instrument/Pilot Tolerance
PA	Planned Altitude	RALL	Restricted Area Lower Limit	PVB	Pressure Variation Buffer
PL	Planned Level	LUL	Lowest Useable Level	SFAB	Standard Flying Activity Buffer
AA	Activity Altitude	HUL	Highest Useable Level		
AL	Activity Level				

2.4.8.13 Lateral limits of Restricted Areas

When determining the lateral dimensions for Restricted Areas, the airspace proponent determines the lateral limits:

a) for non-flying activities, to include safety buffers inside the lateral limit; and
b) for flying activities, to encompass the extent to which activities may occur.

2.4.8.14 Lateral limit of Danger Areas

When determining the dimensions for Danger Areas the airspace proponent determines the lateral limits to encompass the extent to which activities may occur.

2.4.8.15 Weapons training areas

Defence ATC advises aircraft when a weapons range is active within their area of responsibility.

2.4.8.15.1 Range Standing Orders

Designate a control hand over point in Range Standing Orders when aircraft are to operate on a weapons range under the control of a Range Safety Officer (RSO).

2.4.8.15.2 Active weapons range

Permit only those aircraft specifically authorised to carry out weapons training to enter promulgated range airspace when the weapons range is active.

2.5 Records management

2.5.1 Requirements for record keeping

2.5.1.1 Accurate records

Maintain accurate records of ATS activities and communications to ensure the efficient exchange of information, and for investigation purposes.

2.5.1.2 Legible entries

Write all entries legibly in indelible ink.

2.5.1.3 Errors

Replace non-active forms or strips on which an error or errors are noted.

2.5.1.4 Corrections

Correct errors on active forms or strips, fault reports and journals by:

a) drawing a line through the incorrect data and writing the correct data adjacent thereto; or
b) cancelling and rewriting the record, retaining both the old and new for later reference.

2.5.1.5 Prohibited

Do not:

a) complete records in anticipation of the recorded action being completed;
b) make deletions from communication records;
c) duplicate information – except when forms such as Fault Reports or Incident Reports must also be completed; or
d) insert a working record or a journal entry between earlier entries. Make the entry out of sequence, immediately following the last entry. You may include an explanatory statement.

2.5.1.6 Recording verbal information

Make records of verbal information using one or more of the following methods:

a) voice recording equipment;
b) writing on a flight progress strip;
c) typing on authorised forms;
d) writing in accordance with local requirements;
e) writing on appropriate forms; or
f) entering directly into computer-based equipment.

2.5.1.6.1 Recording POB

Record POB using means that support ready access for SAR purposes.

2.5.1.7 Primary record

The voice recording, when available, is the primary record supplemented by appropriate flight progress strips and/or journal entries.

2.5.1.8 Filing and retaining messages

The addressee unit is responsible for filing, and retaining for 30 days, written messages (hand or type) – including flight files and associated change requests – after actioning.

2.5.2 Maintaining operations journals

2.5.2.1 Responsibilities

Each ATS unit maintains an AOJ.

2.5.2.2 Person responsible

The ATSO holding Operational Command Authority/Military Supervisor is responsible for the correct maintenance of the AOJ.

2.5.2.3 Unit supervisor

The unit supervisor inspects the unit's journal on a regular basis to ensure that any requisite actions and/or notifications are carried out.

2.5.2.4 Record significant occurrences

Use the AOJ to record all significant occurrences and actions relating to operations, facilities, equipment and staff at an ATS unit.

2.5.2.5 Journal entries

Record all journal entries against the time of the occurrence, or time of the journal entry as follows:

Occurrence	Minimum information to be recorded
At the commencement of each day’s operation:	a) UTC date and time; and b) identification of the unit and/or the operating position, where required – these may be incorporated into the date stamp.
On assuming responsibility for a (non-continuous) position:	a) the UTC date and time of commencement and the signature of the officer commencing duty; b) results of equipment checks; and c) result of time check.
During operation of the unit:	a) air safety incidents, including accidents and breaches of the Regulations such as non-compliance with ATC instructions (in addition to the completion of incident reporting actions); b) actions taken in relation to any SAR activity including distress communications; c) general notes concerning essential aerodrome information, such as the results of aerodrome inspections, closure of sections of the manoeuvring area caused by works or natural phenomena; d) times of aerodrome closure and reopening, with reasons for the closure; e) changes in status of facilities, service or procedure including communication difficulties and tests, and changes to ARFF service category; f) short-term changes in staffing or hours of coverage, including variations to required staffing levels; g) any dispensation given against the Regulations; h) permission granted to fireworks operators; and i) changes in status of navigation aids.
Handover/takeover (where a separate form is not provided):	a) a summary of outstanding actions and unusual operations which are current or anticipated, relating to the traffic display and/or SAR activity; b) the status of communications and equipment; and c) the time of handover/takeover against the signatures of the officers involved.
Closure of unit and/or position:	a) the time of closure, and conditions and actions relating to the closure, followed by changes to equipment status, and any outstanding action; and b) the time of intended reopening, and the signature of the officer closing the unit/position.

Note: *'Tower open (or closed), checks complete' meets the AOJ entry requirement for recording checks/tests that are part of the daily opening or closing procedures specified in local instructions.*

2.5.3 Recording voice and data

2.5.3.1 Orally record entries

Where appropriate voice recording facilities are available, orally record handover/takeover and journal entries concerning opening and closing watch.

2.5.3.2 Automatic recording failure

When an automatic voice recording facility fails, maintain a manual record of communications where possible.

2.5.3.3 Isolate recordings

Isolate recordings at the request of the following for air safety accident, incident investigation or SAR action:

a) ATSB;
b) CASA;
c) JRCC Australia;
d) Safety & Risk; or
e) the Unit Manager/FLTCDR.

2.5.4 Use of ATS recorded information

2.5.4.1 Playback

ATSB/Defence Flight Safety Bureau (DFSB) has primary responsibility for investigation of incidents and accidents.

2.5.4.1.1 Playback circumstances

Only play back, duplicate or transcribe recordings containing incident and accident records in the following circumstances:

a) when required for urgent SAR purposes - advise ATSB of action taken as soon as practicable;
b) at unit management/FLTCDR direction, to facilitate preliminary investigation;
c) to provide the ATS Officer(s) concerned the opportunity to hear or view the recording; or
d) to provide post incident counselling.

2.5.4.2 Information for SAR purposes

For SAR purposes, provide an approved AMSA officer with all information relevant to a state of emergency of an aircraft, including copies of journals, flight plans, audio records, recorded ATS surveillance system data plots and all other relevant documentation, as soon as practicable.

Note: *The General Manager, JRCC Australia; Manager Operations, JRCC Australia or the SSAROs have the authority to approve requests for information made on behalf of AMSA.*

2.5.5 Retention of records

2.5.5.1 Records retention

Retain records for the period shown in the table below, unless required for investigation:

Record	Period of retention
Originals or page copy of first transmission (originals in the case of flight notifications)	30 days
Hand or typewritten record	30 days
Voice recordings	30 days
CPDLC	30 days
Inward and outward message check sheets	24 hours
Message tapes monitoring outward traffic	3 hours
ATS surveillance system recordings	30 days
Eurocat/DATS/CMATS data recordings	30 days
INTAS WARP recordings	30 days
NOTAM (NOF only)	30 days
Airways Operations Journal (AOJ)	Permanently
New information register	30 days
Controller duty certification record (Military)	Permanently

2.6 Handover/takeover and Unit opening/closing

2.6.1 Responsibilities

2.6.1.1 New information register

Maintain a new information register daily to ensure content is:

a) operationally relevant; and
b) up to date.

2.6.1.1.1 Register responsibility

Specify the position responsible for maintaining a new information register in local instructions.

2.6.1.2 Staff responsibility

Prior to commencing operational duty for the first time in a shift:

a) ensure that your licence is current and your medical is valid;
b) check your recency;
c) review the new information register and acknowledge each operational item; and
d) review pertinent NOTAM and weather information.

Note: *Where used, signing a handover/takeover sheet that includes or refers to new information also satisfies point c) above.*

2.6.1.2.1 Supervisor responsibility

The Supervisor must remain vigilant to ensure controllers follow the required handover/takeover procedures, and may veto a handover/takeover after considering:

a) traffic and workload complexity;
b) group staffing logistics; and
c) the potential for distraction.

2.6.2 Procedures for handover/takeover and opening/closing

2.6.2.1 Opening/closing non-continuous units

Specify procedures for opening and closing non-continuous units in local instructions.

See MATS 9.1.3.4.3 Non-continuous towers - opening and extension

2.6.2.2 Handover/takeover requirement

Complete a handover/takeover prior to transferring responsibility for any ATC position.

2.6.2.2.1 Airspace release

Prior to transferring responsibility for an airspace release conduct a handover/takeover between releasing and accepting authorities.

2.6.2.2.2 Recording of handover/takeover

Record handover/takeovers for a position via voice, where the facility is available, or by journal entry.

2.6.2.2.3 Information to be recorded

Include:

a) the name of staff taking over responsibility for a position, or responsibility for a unit on opening of a non-continuous unit;
b) the position being taken over and the time of transfer of responsibility unless there is another means of identification; and
c) the information relayed when a voice recorded entry is available.

2.6.2.3 Checklists

Specify in checklists all items to be considered in the transfer of responsibility for any ATC position or the opening and closing of a non-continuous ATS unit.

2.6.2.3.1 Checklist use

A handover/takeover checklist must be:

a) displayed at the operating position; and
b) used to ensure complete transfer of relevant information.

2.6.2.3.2 Items in the checklist

Include the following items in handover/takeover checklists as the minimum information to be considered in the changeover of responsibility:

Mnemonic	Expansion
R	Runways (if applicable)
A	Airspace and airspace releases
W	Present and forecast weather
F	Facilities/frequencies/equipment
N	Navaids and NOTAM
T	Traffic and separation
O	Outstanding instructions/matters

2.6.2.3.3 Local checklists

Specify local checklists and log requirements in local instructions. If not last on a local checklist, repeat all outstanding actions (e.g. coordination, restrictions/requirements for separation) at the end of the checklist.

2.6.2.3.4 Handover confirmation

Where a journal entry is used to record handover/takeovers, both parties must sign any handover checklists used to confirm the contents of the handover.

2.6.2.4 Takeover assistance

After handing over, you must remain available to assist until the accepting controller indicates that assistance is no longer required.

2.7 Equipment testing and monitoring

2.7.1 Routine testing and inspections

2.7.1.1 Technician signals

Note: *Technicians may generate test signals, with ATS agreement when required. Technicians take all possible precautions to avoid harmful interference, including the choice of frequency with time of day and the reduction or suppression of radiation, and choosing signals that will not lead to any confusion, such as signals, abbreviations, etc. with a special meaning.*

2.7.1.2 Equipment checks

Complete periodic checks to test the serviceability and/or accuracy of equipment. Specify in local instructions any additional test requirements and when periodic equipment checks are to be completed.

See MATS 2.5.2.5 Journal entries

2.7.1.2.1 Clocks

Where automated monitoring/synchronisation is not available, perform a daily check of wall and console clocks. Check clocks against an automated source, or by checking with an adjoining unit with an automated source. Specify in local instructions when to perform the checks and the unit to be contacted where applicable. Submit a fault report for variations more than 30 seconds.

Note: *Automated sources include Eurocat, INTAS, CMATS, ADATS, TSAD and a TAR GPS time source.*

See MATS 2.5.2.5 Journal entries

2.7.1.2.2 Test telephone lines

Test telephone lines weekly that would be used to contact '000' in the event of an emergency, if not in regular use - but not by calling '000'.

See MATS 2.5.2.5 Journal entries

2.7.1.2.3 Non-towered frequency checks

Check frequency equipment serviceability weekly at non-towered locations as follows:

Equipment	Test to be undertaken
Standby	Operate for at least one hour
Tertiary	Operate for at least one hour, unless there are operational issues
Other back up air-ground equipment	Test in accordance with local instructions

See MATS 2.5.2.5 Journal entries

2.7.1.2.4 Tower equipment checks

Check tower equipment serviceability as follows:

Equipment	Non-continuous towers	Continuous towers
VHF main transmitters and receivers	Prior to commencing daily operations and prior to major traffic peaks if the facility has not been used for two hours	Prior to major traffic peaks if the facility has not been used for two hours
VHF standby and tertiary transmitters and receivers (where provided)	Prior to commencing daily operations, and once per week selected continuously for at least one hour	Once per week selected continuously for at least one hour
VHF portable or mobile radio (where provided)	Weekly	Weekly
Audio system (where duplicated audio systems are provided)	Once per day Not applicable INTAS	Once per day Not applicable INTAS
Bypass (where provided)	Weekly	Weekly
Non-integrated Training Override Facility (when in use)	Daily, prior to commencing training or familiarisation	Daily, prior to commencing training or familiarisation
Signal Lamp	Prior to commencing the day's operations	Once per day
Crash alarms (or equivalent)	Weekly	Weekly

See MATS 2.5.2.5 Journal entries

2.7.2 Monitoring and checking navaids

2.7.2.1 Monitor aids continuously

While on duty, the approach control unit and/or control tower must continuously monitor local aids required for holding, instrument approaches and departures.

2.7.2.1.1 Navaid status change

The designated tower controller must advise the associated TCU of any change in the status of navaids that are only monitored by the Tower. Provide timely advice consistent with the use of the service(s) involved.

Note: *Navaid monitoring is also conducted by Airservices Technical Operations Centre.*

2.7.2.2 Navaid unserviceable

Consider a navaid unserviceable when it:

a) is not commissioned;

b) has failed; or

c) is radiating with a test transmission e.g. without ident or with ident XP. Consider the facility to be unserviceable until technical staff advise completion of the test.

2.7.2.2.1 NOTAM the unserviceability

Promulgate the unserviceability of instrument approach aids by NOTAM as soon as possible.

2.7.2.3 Pilot advice

Notify pilots by direct transmission or by ATIS broadcast when an aid, associated with an instrument approach to the runway in use for arrivals at controlled aerodromes, is unserviceable. Use the phrases:

Scenario	ATC phraseology
Aid is unserviceable	(*identification of aid*) NOT AVAILABLE
Aid is radiating	(*identification of aid*) NOT AVAILABLE. DO NOT USE. FALSE INDICATIONS POSSIBLE

2.7.2.4 Display to tower

Prominently display advice that an aid for an instrument approach is not available to tower controllers.

2.7.2.5 ILS flight check

Where an ILS flight check is being conducted, ensure meteorological conditions permit continuous visual descent below ILS lowest holding altitude or, if none published, the altitude prescribed for the initial approach fix.

2.7.2.6 Authorisation of test signals

The TCU Supervisor, or OCA holder at a non-surveillance tower, may authorise the radiation of test signals from a localiser, glide path or DME (frequency paired with localiser) provided:

a) prior notification is provided to affected units;
b) a relevant test NOTAM is current;
c) when a localiser radiates test transmissions:
  i) the localiser identification is suppressed;
  ii) the associated glide path is switched off;
  iii) any associated DME is switched off or its identification suppressed; and
  iv) for a runway in operational use for arrivals, meteorological conditions permit continuous visual descent below the ILS lowest holding altitude or, if none published, the altitude prescribed for the initial approach fix, and by night the VASIS/PAPI must be operational;
d) when a glide path radiates test transmissions:
  i) the associated localiser is switched off; and
  ii) any associated DME is switched off or its identification suppressed; and
e) when an ILS associated DME radiates test transmissions, the associated ILS (localiser and glide path) is switched off or its identification suppressed.

Note: *Immediately prior to test radiation, technical staff are required to contact the TCU Supervisor, or non-surveillance tower OCA holder, to obtain approval for the test and advise its anticipated duration.*

2.7.3 Harmful interference

2.7.3.1 Definition

Consider interference to be harmful when it:

a) endangers the functioning of a radio-navigation service or other safety services; or
b) seriously degrades or repeatedly interrupts a radio communication service.

2.7.3.2 Acting on harmful interference

On becoming aware of harmful interference:

a) if possible, identify the specific type or location of the interference;
b) record all available information regarding the type, source and severity of the interference;
c) report the occurrence to the Supervisor for fault reporting; and
d) when interference appears to be malicious:
  i) submit an occurrence report; and
  ii) advise the Office of Transport Security.

2.7.4 Aircraft navigation reporting

2.7.4.1 RVSM height deviation

Submit an occurrence report when RVSM approved aircraft operating within the RVSM flight level band have height deviations from the cleared flight level of more than 300 FT.

2.7.4.2 Report GNSS variations

Notify the Supervisor, for advice to the NOMC, when you become aware of:

a) un-forecast GNSS outage; or
b) interference to GNSS signals.

Note: *Early reporting may assist in locating the source of the interference.*

2.7.4.3 RNP navigation errors

Submit an occurrence report when the following navigation errors occur:

a) A lateral deviation of 15 NM or more from cleared track is observed;
b) Longitudinal navigation errors of three minutes or more between the aircraft's estimated time of arrival at a reporting point and its actual time of arrival; or
c) A navigation system fails.

2.7.4.3.1 Advice of navigation error

Advise the pilot immediately when a reportable navigation error occurs.

3 Meteorology

3.1 Meteorological information to/from pilots

3.1.1 ATIS

3.1.1.1 Pace of recording

Make recordings at a speed that facilitates transcription.

3.1.1.2 Short messages

Record the information twice when a message is less than 20 seconds in duration.

3.1.1.3 Actual QNH not available

Provide the aerodrome forecast (TAF) QNH when the actual aerodrome QNH is not available.

3.1.1.4 Advice on the ATIS

Include information in the ATIS broadcast that the actual QNH is not available and that the aerodrome forecast QNH is provided.

3.1.1.5 Order of ATIS information

Content and Order	**ATC phraseology**
1) Location	(Aerodrome)
2) Code	TERMINAL INFORMATION (*code letter ALFA, BRAVO,* in sequence, as assigned to each separately prepared transmission. Do not use ZULU.)
3) Time of observation, if appropriate	ISSUED AT (*[mmdd]hhmm UTC*)
4) Type of approach expected	EXPECT (*type of approach*) When more than one instrument approach is in general use, EXPECT INSTRUMENT APPROACH may be recorded. At civil locations, only record EXPECT VISUAL APPROACH when it is associated with a specific procedure (e.g. INDEPENDENT VISUAL APPROACH).
5) Runways	When one runway is in use: RUNWAY (*number*) When more than one runway is in use: RUNWAY[S] (*number*) [AND (*number*)] FOR ARRIVALS RUNWAY[S] (*number*) [AND (*number*)] FOR DEPARTURES When two runways are being used for both arrivals and departures: RUNWAYS (*number*) AND (*number*) [FOR ARRIVALS AND DEPARTURES].

Content and Order	ATC phraseology
6) Significant runway, taxiway and apron surface conditions including, as appropriate: a) runway surface condition descriptor (See Clause 12.2.3.4); b) depth and coverage of contaminant (paved runways only) (See Clause 12.2.3.4.2); c) braking action (See Clause 12.2.3.8); and d) significant taxiway or apron conditions (See Clause 12.2.3.3).	[RUNWAY[S] (*number*)] [AND (*number*)] [DRY] [WET] [*part of runway*] [*runway contaminant* e.g. STANDING WATER] [DEPTH ((*number*) MILLIMETRES *or* NOT REPORTED)] [COVERAGE ((*number*) PER CENT *or* NOT REPORTED)] [BRAKING ACTION (*braking action descriptor*)] [TAXIWAY (*identification of taxiway*) (*plain language description*)] [APRON (*identification of apron*) (*plain language description*)] At locations using GRF to report surface conditions, include as appropriate: [*RUNWAY*[*S*] (*number*)] [AND (*number*)], SURFACE CONDITION CODE (*number, number, number*) [*part of runway*] [DRY] [WET] [SLIPPERY WET] [*runway contaminant* e.g. STANDING WATER] [DEPTH ((*number*) MILLIMETRES *or* NOT REPORTED)] [COVERAGE ((*number*) PER CENT *or* NOT REPORTED)] Examples: a) SURFACE CONDITION CODE 5, 5, 5 WHOLE RUNWAY WET; b) SURFACE CONDITION CODE 6, 6, 5 DRY, DRY, WET; c) SURFACE CONDITION CODE 3, 3, 5 FIRST TWO THIRDS SLIPPERY WET, COVERAGE 75 PER CENT, LAST THIRD WET; d) SURFACE CONDITION CODE 2, 2, 2 WHOLE RUNWAY STANDING WATER, DEPTH 5 MILLIMETRES; e) SURFACE CONDITION CODE 2, 2, 5 FIRST TWO THIRDS STANDING WATER, DEPTH 10 MILLIMETRES, LAST THIRD WET; or f) SURFACE CONDITION CODE 5, 2, 5 FIRST THIRD WET, MIDDLE THIRD WET SNOW, DEPTH 6 MILLIMETRES, LAST THIRD WET. Describe runway thirds as 'first/middle/last third' combined with 'first/last two-thirds', or 'whole runway' as applicable. [TAXIWAY (*identification of taxiway*) (*plain language description*)] [APRON (*identification of apron*) (*plain language description*)]
7) Holding delay, if appropriate	
8) Transition level, if appropriate	

Content and Order	ATC phraseology
9) Other essential operational information	LAND AND HOLD SHORT OPERATIONS IN PROGRESS LOW VISIBILITY PROCEDURES IN FORCE RVR/RUNWAY VISIBILITY NOT AVAILABLE RWY 21 DISPLACED THRESHOLD SOUTH OF RWY 24 INTERSECTION [ILS] [LOCALISER] [GLIDE PATH] (as appropriate), PILOT MONITORED (*type of operations, if applicable*) START APPROVAL REQUIRED. WHEN READY FOR PUSHBACK OR ENGINE START, CTC (*position*) ON (*frequency*) FOR START TIME CURFEW RUNWAY NOMINATION (when runway(s) nominated due to noise abatement legislation and the crosswind and/or tailwind component is in excess of that specified in Clause 12.2.1.3). Unserviceability of any ground-based approach aid applicable to the runway(s) in use for arrivals, regardless of any applicable NOTAM.

<table>
<tr><th>Content and Order</th><th>ATC phraseology</th></tr>
<tr><td rowspan="5">10) a) Surface wind direction and speed, including significant variations
or, see 10) b) below</td><td>WIND [DIRECTION]/[SPEED]</td></tr>
<tr><td>Quote WIND DIRECTION as:
a) SINGLE MEAN DIRECTION;
b) TWO VALUES representing variation in wind direction, whenever:
i) the extremes in wind direction vary by 60 degrees or more; or
ii) the variation is operationally significant (e.g. the variation is less than 60 degrees, but the variation from the mean results in either a tailwind, and/or significant crosswind component on a nominated runway) (e.g. WIND VARYING BETWEEN [DIRECTION] AND [DIRECTION]); or
c) VARIABLE, where it is not possible to report a mean wind direction, such as:
i) in light wind conditions (3 kt or less); or
ii) the wind is veering or backing by 180 degrees or more (e.g. passage of thunderstorm, or localised wind effect).</td></tr>
<tr><td>Quote WIND SPEED as:
a) CALM (less than 1 kt e.g. WIND CALM);
b) SINGLE MEAN VALUE whenever the extremes between minimum and maximum are 10 kt or less (e.g. WIND [DIRECTION]/[SPEED]); or
c) TWO VALUES REPRESENTING MINIMUM AND MAXIMUM VALUES whenever the extremes in wind speed vary by more than 10 kt (e.g. WIND [DIRECTION] MINIMUM [SPEED] MAXIMUM [SPEED]).</td></tr>
<tr><td>Quote significant crosswind and any tailwind as:
a) MAXIMUM CROSSWIND (speed) KNOTS [RUNWAY (number), if applicable]; and
b) MAXIMUM TAILWIND (speed) KNOTS [RUNWAY (number), if applicable].
See Clause 9.1.3.7.1</td></tr>
<tr><td>Note 1: When quoting a wind with variations in direction and speed it may be necessary to vary the above criteria in order to indicate the true crosswind and/or tailwind.
Note 2: 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 the criteria specified for the revision of ATIS, threshold winds may be broadcast on the ATIS.</td></tr>
<tr><td>10) b) Threshold wind of duty runway</td><td>THRESHOLD WIND RUNWAY (number), [DIRECTION]/[SPEED], RUNWAY (number), [DIRECTION]/[SPEED]</td></tr>
</table>

Content and Order	ATC phraseology
11) Visibility and, when appropriate, RVR or Runway Visibility (not quoted in CAVOK conditions):	
a) When the visibility is: i) greater than 10 KM; ii) greater than 5 KM and up to and including 10 KM; or iii) up to and including 5000 m; or	a) VISIBILITY ... *followed by:* i) GREATER THAN ONE ZERO KILOMETRES; ii) ... KILOMETRES; or iii) ... METRES; or
b) When the visibility is less than 1500 m	b) (RVR/RUNWAY VISIBILITY) (distance) ... METRES. See also Clause 12.8.2.
12) Present weather	PRESENT WEATHER ... (e.g. showers in area); or CAVOK
13) Cloud (not quoted in CAVOK conditions): a) cloud below 5000 FT or below MSA, whichever is greater, in order from lowest to highest; and b) if the sky is obscured, vertical visibility when available.	CLOUD [FEW] [SCATTERED] [BROKEN] [OVERCAST] (*as appropriate*) (*base*) (*type, if appropriate*) Report the next higher layer or mass when: a) the second layer is at least SCT; b) the third layer is at least BKN; and c) cumulonimbus and/or towering cumulus is observed at any level.
	Note 1: *Only identify cloud types for cumulonimbus and towering cumulus. When an individual layer or mass of cloud is composed of cumulonimbus and towering cumulus clouds with a common base, report the type of cloud as cumulonimbus only.* ***Note 2:*** *You may omit the phraseology CLOUD after the first reported layer.*
14) Air temperature	TEMPERATURE....
15) Altimeter setting(s)	QNH...
	Note: *If aerodrome forecast QNH is used, leave this field blank.*
16) Any available information on significant meteorological phenomena in the approach, take-off and climb-out	ACTUAL QNH NOT AVAILABLE AERODROME FORECAST QNH .... (when the QNH broadcast on the ATIS is obtained from the aerodrome forecast (TAF) due to unavailability of actual QNH). May include FREEZING FOG where the temperature is less than 0°C and fog is present.
17) Contact information	ON FIRST CONTACT WITH.... (e.g. GROUND, TOWER or APPROACH) NOTIFY RECEIPT OF ... (code abbreviation of the ATIS broadcast). If necessary, omit this contact information from the pre-recorded broadcasts if there is insufficient recording space.

Note: *Due to system constraints Defence aerodromes are unable to use TAILWIND or ACTUAL on the ATIS.*

See MATS 3.1.1.5.1 Exceptions - Defence ATIS
See MATS 9.1.3.7.1 Significant crosswind
See MATS 12.2.1.3 Crosswind/tailwind limitations
See MATS 12.2.3.8 Braking action descriptors
See MATS 12.8.2 Runway Visual Range and Runway Visibility

3.1.1.5.1 Exceptions - Defence ATIS

At Defence aerodromes:

a) use DOWNWIND for ATIS and 'TAILWIND' for air-ground transmissions;

b) use CURRENT QNH NOT AVAILABLE for ATIS and 'ACTUAL QNH NOT AVAILABLE' for air-ground transmissions; and

c) describe aerodrome surface conditions and braking action as per local instructions.

3.1.1.6 Runways, supplementary information

Content	ATC phraseology
During runway work resulting in reduced runway lengths, include this information in the other essential operational information/ OPR INFO field:	REDUCED RUNWAY LENGTH(S) IN OPERATION ATIS may include: RUNWAY (*number*), TORA (*or* LANDING DISTANCE AVAILABLE) (*number*) METRES
For Class C aerodromes only, when independent visual approaches and independent parallel approaches are in progress, notify pilots of such advice and expectation of the type of approach or departure on the ATIS:	EXPECT INDEPENDENT VISUAL APPROACH. DO NOT PASS THROUGH ASSIGNED RUNWAY CENTRELINE Or: EXPECT INSTRUMENT APPROACH Include in ATIS: FINALS MONITORING (*or* PRM OPERATIONS) IN PROGRESS INDEPENDENT PARALLEL APPROACHES AND DEPARTURES IN PROGRESS
Broadcast the use of SODPROPS on the ATIS including the runway configuration being used for the procedure:	RUNWAY (*number*) FOR ARRIVALS, RUNWAY (*number*) AVAILABLE FOR DEPARTURES IF OPERATIONALLY REQUIRED OR AS DIRECTED BY ATC. RUNWAY (*number*) FOR ALL OTHER DEPARTURES Include in ATIS: SIMULTANEOUS OPPOSITE DIRECTION PARALLEL RUNWAY OPERATIONS IN PROGRESS
Include general advice on workers using hand tools adjacent (specific location optional) to the runway in use in the other essential operational information/OPR INFO field:	WORKERS WITH HAND TOOLS OPERATING TO THE EDGE OF RUNWAY (*number*)
Include unauthorised laser illumination event(s) information in the other essential operational information/OPR INFO field:	UNAUTHORISED LASER ILLUMINATION EVENT(S) REPORTED (*general position information including location and altitude*)
Include RPAS activity information in the other essential operational information/OPR INFO field:	UNAUTHORISED RPAS ACTIVITY [REPORTED] (*general position information including location and altitude*)

Note: *Due to system constraints Defence aerodromes are unable to use TORA or RPAS on the ATIS.*

3.1.1.6.1 Exception - Defence ATIS

At Defence aerodromes use TAKE-OFF RUN AVAILABLE or UNAUTHORISED UNMANNED AERIAL VEHICLE for ATIS, and 'TORA' or 'RPAS' for air-ground transmissions.

3.1.1.7 Provide threshold wind

At locations where runway threshold wind analysers are installed, provide:

a) to departing aircraft, the wind at the upwind end of the runway if the wind at the upwind end varies by the criteria specified for the revision of ATIS from that broadcast on the ATIS;
b) to arriving aircraft, the wind at the arrival end of the runway if the wind at the arrival end varies by the criteria specified for the revision of ATIS from that broadcast on the ATIS; and
c) the wind at the arrival end of the runway, as part of the landing clearance for arriving jet aircraft.

3.1.1.8 ATIS ZULU

Retain the ATIS ZULU code exclusively in all locations for use only with ATIS broadcasts relating to out of hours operations or when a military control zone or the Restricted Area for a military aerodrome is released or de-activated.

3.1.1.8.1 Information included

ATIS ZULU:

a) must include operational information, of an unchanging nature, that is considered to provide immediately useful information to pilots, such as:
    i) the expected reopening time of the tower;
    ii) CTAF frequency;
    iii) PAL frequency, if a discrete frequency is provided;
    iv) preferred runway or circuit direction;
    v) noise abatement procedures; and
    vi) works in progress; and
b) may include:
    i) airspace classification outside tower hours or airspace configuration during release;
    ii) availability of AFRU + PAL (where available); and
    iii) AWIS frequency (where available).

3.1.1.8.2 Format

Use the following format for ATIS ZULU broadcasts:

Content and order	ATC phraseology
1) Location	(*location*)
2) Code	TERMINAL INFORMATION ZULU
3) a) Activation Hours (Civil) b) Activation Hours (Military)	TOWER CLOSED UNTIL (*time*) (*deactivated airspace description*) REVERTS TO CLASS (*as applicable*) TOWER CLOSED UNTIL (*time*) (*airspace description*) CTR/RESTRICTED AREA(S) (*as applicable*) DE-ACTIVATED/ACTIVE/RELEASED TO (*civil unit*)
4) Frequency Instructions	CTAF (*or if applicable*) BROADCAST INTENTIONS ON...
5) Runway (if applicable)	REFER ERSA FOR PREFERRED RUNWAY/CIRCUIT DIRECTION (*or* PREFERRED RUNWAY (*runway number*) [(*circuit direction*)])
6) Other relevant information (if applicable, during CTAF hours)	PAL (*frequency*) AFRU + PAL (*if provided on CTAF*) REFER AIP FOR NOISE ABATEMENT PROCEDURES (*or noise abatement procedures*) WORKS IN PROGRESS AS PER NOTAM (*number*) AWIS (*frequency*) WATIR (*data*)
7) Location	(*location*) TERMINAL INFORMATION ZULU

3.1.2 Revision of ATIS

3.1.2.1 When to revise ATIS

Revise ATIS information and assign a new code letter when:

a) the requirement for, or type of, instrument approach is changed;
b) changes occur to a traffic management initiative e.g. LAHSO;
c) the take-off or landing runway is changed;
d) the runway condition code, surface condition descriptor or relevant element of a RCR is changed;
e) changes occur in the operational status of the aerodrome or its facilities;
f) changes occur to wind shear status; or
g) current values of meteorological information vary by, or exceed, the values in the table below and are expected to remain that way for at least 15 minutes.

3.1.2.1.1 MET information variation

MET information	Variation
Wind	Direction 10° Speed 5 kt
QNH	1 HPA
Temperature	1°
Cloud (below 5000 FT AGL)	Base 200 FT Amount changes from one descriptor to another
Visibility	Between 1500 m and 10 KM – 1000 m (1 KM) Less than 1500 m – as required

3.1.3 Wind shear advice - controlled aerodromes

3.1.3.1 ATIS requirement

Include moderate, strong or severe wind shear on the ATIS when:

a) reported on the approach or take-off paths; or
b) forecasted.

Type	Example ATC phraseology
Basic report	WIND SHEAR WARNING, BOEING 737 (MEDIUM CATEGORY AIRCRAFT *if military* CATIS) REPORTED MODERATE UNDERSHOOT WIND SHEAR AT 200 FEET ON FINAL RUNWAY 34 AT TIME 0640
Amplified report	WIND SHEAR WARNING, BOEING 737 (MEDIUM CATEGORY AIRCRAFT *if military* CATIS) REPORTED STRONG WIND SHEAR GAINED 20 KNOTS AIRSPEED BETWEEN 300 FEET AND 600 FEET ON DEPARTURE RUNWAY 34 AT TIME 0640

Type	Example ATC phraseology
Forecast	PROBABLE VERTICAL WIND SHEAR FROM 0510 TO 0530, FORECAST WIND AT 400 FEET ABOVE GROUND LEVEL 120 DEGREES 50 KNOTS

3.1.3.2 Low level wind shear - dissemination to MET

When a pilot reports moderate, strong or severe wind shear, advise the MET unit responsible for the origination of special aerodrome weather reports for the aerodrome. Include the aircraft type, the unchanged pilot report and subsequent changes in intensity or cessation.

3.1.3.3 Low level wind shear - dissemination to pilots

Upon receipt of a pilot report and/or a forecast of moderate, strong or severe wind shear, alert all arriving and departing aircraft by ATIS broadcast, and directed transmission where the aircraft is not in receipt of the ATIS information.

3.1.3.3.1 Directed transmissions

Continue directed transmission to other pilots until either two successive aircraft have failed to report shear conditions or the expiry of the forecast period, whichever is the later.

See MATS 9.1 Provision of FIS

3.1.3.4 More favourable runway

When aware of the presence of significant wind shear, nominate a more favourable runway, if available, and provide the appropriate flight information.

3.1.4 Wind shear advice - uncontrolled aerodromes

3.1.4.1 Advising pilots

Advise pilots likely to be affected by moderate, strong or severe wind shear on approach or take-off paths at non-controlled aerodromes e.g. 'WIND SHEAR WARNING CASINO S340 REPORTED MODERATE WIND SHEAR ON APPROACH TO RUNWAY 34 AT 300 FEET AT TIME 0415'.

3.1.4.2 Report validity

In the absence of further advice, pilot reports of wind shear greater than intensity Light will remain valid for a period of one hour.

3.1.4.3 Report dissemination

Send the following pilot reports by AIREP Special message:

a) moderate, strong or severe wind shear;
b) changes in intensity; or
c) cessation.

3.1.5 Transmission of MET data

3.1.5.1 Use plain language

Use plain language when passing forecasts to pilots.

3.1.5.1.1 Transmitting abbreviations and codes

Transmit abbreviations and codes, other than those approved for transmission as spoken words, in plain language.

3.1.5.1.2 Cloud types

Omit cloud types, except for cumulonimbus, when transmitting METAR/SPECI by voice to aircraft.

3.1.5.2 Weather observations

Make weather observations of significant weather and, when required or on request, transmit reports to aircraft so that pilots may determine if the prevailing weather is suitable for VFR flight. Make:

a) general observations over the whole of the visual horizon; and
b) sector observations restricted to the area enclosing the probable flight path of the aircraft.

3.1.5.3 Sector observations

Make sector observations to assist another ATS unit or to assist pilots to determine the suitability of a:

a) particular instrument approach;
b) visual approach;
c) visual departure; or
d) VFR or Special VFR flight.

3.1.5.4 Take-off or landing report items

You may include the following items in a take-off or landing report:

Low cloud:	Amount and height of the base of the main ceiling - the amount may be omitted from a report to an aircraft making a standard instrument approach.
Visibility:	
CAVOK:	When the following conditions are observed to occur simultaneously: a) visibility of 10 KM or more; b) 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 c) nil significant weather.
Wind velocity:	Only report on request or when giving landing or take-off information.
Additional items:	Extent of cloud below the main ceiling, disposition and intensity of rain, reported or known wind shear, turbulence, etc.

3.1.5.4.1 Use of CAVOK

Do not advise the cloud and visibility elements if the term 'CAVOK' is used.

3.1.5.5 Authorised MET systems

For the purpose of airborne weather avoidance, the following systems are authorised:

a) RAPIC; and

b) Weatherwatch.

3.1.5.5.1 Use of authorised MET systems

Do not use information derived solely from authorised MET systems as a basis for ATC procedures for avoidance of adverse weather conditions. For this purpose, use authorised MET systems in conjunction with information on weather conditions derived from airborne and other observations.

3.1.5.6 When within 75 NM of weather radar sites

Only use authorised MET systems information within 75 NM of weather radar sites:

a) for weather avoidance;

b) in conjunction with information on weather conditions derived from airborne and other observations;

c) at pilot request; or

d) to supplement hazard alert information.

3.1.5.7 Authorised MET systems prefix

When providing authorised MET systems information to pilots, either on request or as required, use the prefix: 'MET RADAR DISPLAY INDICATES...etc'.

3.1.5.8 In-flight reports

You may request an in-flight weather report when:

a) there is reason to believe that en route or terminal meteorological conditions are significantly different to those forecast; or

b) a request is received for actual weather conditions in a particular area.

Note: *In-flight weather reports may also be initiated by the pilot.*

See MATS 7.1.7.2 AIREP distribution - general

See MATS 7.1.7.3 AIREP section 3 distribution - AIREP Special

3.2 Information to BoM

3.2.1 Notification

3.2.1.1 Unforecast conditions

Notify BoM of ATC observed weather that may warrant forecast amendment.

3.2.1.2 AIRMET phenomena

Notify BoM of observed AIRMET phenomena.

3.2.1.3 Notification to BoM

Use fixed communication lines between ATS units and BoM if available, or telephone where the lines are not available. Contact details should be specified in local instructions.

3.3 Visual Meteorological Conditions (VMC)

3.3.1 VMC criteria

3.3.1.1 Controlled airspace

Note 1: *the following table displays the VMC criteria for all aeroplanes, helicopters and balloons operating in controlled airspace.*

Note 2: *NVIS may operate with 3000m VIS in any class of airspace with CASA approval.*

Airspace type	Height	VIS	Distance from cloud	Additional conditions
Class A and E	At or above 10 000 FT AMSL	8 KM	1500m horizontal 1000 FT vertical	
	Below 10 000 FT AMSL	5000m	1500m horizontal 1000 FT vertical	
Class C	At or above 10 000 FT AMSL	8 KM	1500m horizontal 1000 FT vertical	
	Below 10 000 FT AMSL	5000m	1500m horizontal 1000 FT vertical	ATC may permit Special VFR operations in weather conditions that do not meet this criteria. ***Note:*** *NVIS may operate with 5000m VIS and clear of cloud.*
Class D	All heights	5000m	600m horizontal, 1000 FT vertically above cloud or 500 FT vertically below cloud	ATC may permit Special VFR operations in weather conditions that do not meet this criteria.

4 Abnormal operations

4.1 Operational deviations and aircraft requisition

4.1.1 Responding to deviation advisories

4.1.1.1 TCAS resolution advisory

Do not issue tracking or level instructions to an aircraft that has reported responding to a 'TCAS RA'.

See MATS 10.1.1.3 Responding to deviation advisories

4.1.1.2 Wind shear escape

Do not issue tracking or level instructions to an aircraft that has advised 'WIND SHEAR ESCAPE'. Where possible issue instructions to conflicting traffic to re-establish or maintain a separation standard.

See MATS 10.1.1.3 Responding to deviation advisories

4.1.1.2.1 Provide traffic

When a pilot reports 'WIND SHEAR ESCAPE' and a separation standard with other aircraft may be infringed, provide traffic information or a safety alert as appropriate to all affected aircraft.

4.1.1.3 Re-establish separation

Following pilot advice of 'CLEAR OF CONFLICT' or 'CLEAR OF WIND SHEAR', issue instructions as necessary to re-establish separation. Resume responsibility for separation after the aircraft has complied with any tracking and level instructions and a separation standard has been established.

4.1.2 Civil aircraft requisition

4.1.2.1 Requisitioning of civil aircraft

The ATMD may requisition a civil aircraft and engage persons to operate it, provided the ATMD is satisfied that the requisition of the aircraft is necessary for the performance of air traffic services and the requisition is made:

a) in writing to the operator; or
b) verbally, if:
   i) the circumstances require urgent action or it is impracticable to make a requisition in writing; and
   ii) the requisition is recorded in writing to the operator within 24 hours after the requisition is made.

4.1.2.1.1 Written requisition

Include the following information on a written requisition:

a) the name of the person making the requisition;

b) the person's authority to make the requisition;

c) details of the aircraft to be requisitioned; and

d) the period for which the aircraft is to be requisitioned.

4.2 Aircraft emergencies

4.2.1 Emergency phases

4.2.1.1 Phases

The three emergency phases used to classify emergencies and indicate the scope of SAR actions required are:

a) INCERFA;
b) ALERFA; and
c) DETRESFA.

4.2.1.2 Responsibility for declaring emergency phase

The ATS Officer first becoming aware of an aircraft operating in other than normal circumstances, and there is uncertainty concerning the aircraft's safety, is responsible for declaration of the phase appropriate to the emergency situation.

See MATS 4.2.3.1 Emergency phases and time sequence

4.2.1.3 SAR notification

Notify JRCC Australia for civil aircraft or HQJOC-AOC for military aircraft if there is any likelihood that a SAR action is required.

4.2.2 Declaration of emergency phases

4.2.2.1 Uncertainty phase (INCERFA)

Declare an INCERFA when:

a) uncertainty exists as to the safety of an aircraft and its occupants;

b) a pilot fails to report:
   - i) DEPARTURE, after a call notifying readiness to taxi or to take-off;
   - ii) POSITION, by the EST at the next reporting point or by the next scheduled time, including NOCOM cancellation time or OPS NORMAL time, having made a previous in-flight report;
   - iii) by the EST at the next landing point, having made a previous in-flight report;
   - iv) ARRIVAL, TAXIING or DEPARTURE, by the SARTIME notified by the pilot, and communications checks required fail to reveal any news of the aircraft; and
   - v) after an ATS directed frequency change where the aircraft is required to maintain continuous communications with ATS

c) an aircraft is known or believed to be subject to irregular operation, namely, when:
   - i) it is not on its proper track or at its proper level;
   - ii) the pilot is not in normal communication;
   - iii) the pilot is unable to use appropriate navaids; or
   - iv) the pilot is experiencing navigational difficulties or is lost

d) a pilot is about to make or has made a landing other than a forced landing:
   - i) where the position is in doubt;
   - ii) on an unprepared surface; or
   - iii) at an aerodrome (in the case of helicopters, a landing area) which is considered by the pilot as being operationally unsuitable

e) information is received that an aircraft, for which flight notification has not been lodged, is missing; or

f) an ADS-C emergency indication is received without an accompanying voice confirmation or CPDLC emergency message.

4.2.2.2 Alert phase (ALERFA)

Declare an ALERFA when:

a) apprehension exists as to the safety of an aircraft and its occupants;

b) a pilot who has been given approach or landing instructions, or information by an ATC unit established at a civil or military control zone, fails to land within five minutes of the estimated landing time and communication with the pilot cannot be re-established before the expiration of this 5 minute period;

c) following an Uncertainty Phase declared because of failure to report, subsequent communications checks or inquiries to other relevant sources fail to reveal any news of the aircraft;

d) information has been received which indicates that the operating efficiency of an aircraft has been impaired, but not to the extent that a forced landing is likely or where the likelihood of a forced landing has not been determined;

e) a flight restricted to VMC is operating in IMC;

f) a flight restricted to daylight operations is operating at night;

g) pending the evaluation of a bomb warning by the aircraft operator or pilot, except when the aircraft is on the ground at an aerodrome where ATC are on duty;

h) an aircraft deviates from its cleared route or track into an active Restricted/ Military Operating Area without a clearance/approval; or

i) an aircraft is known or believed to be the subject of unlawful interference.

See MATS 4.2.21 Deviation into active Restricted/Military Operating Areas

4.2.2.3 Distress phase (DETRESFA)

Declare a DETRESFA when:

a) there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger and require immediate assistance;

b) following the Alert Phase declared because of failure to report, the absence of news from widespread communications checks and unsuccessful inquiries point to the probability that an aircraft is in distress;

c) the fuel on board is considered to be exhausted or to be insufficient to enable an aircraft to reach safety, unless a SARTIME has been notified;

d) information is received which indicates that a pilot is about to make, or has made, a forced landing or has ditched or crashed, unless - in the case of a crashed aircraft - the advice is simply in the form of official notification and the safety of the occupants is assured;

e) a report is received that a radio distress beacon has been activated or other visual distress signals have been observed;

f) information is received which indicates that the operating efficiency of an aircraft has been impaired to the extent that a forced landing is likely;

g) the operator or pilot evaluates a bomb warning as 'genuine' and requires the aircraft to be searched, except when the aircraft is on the ground at an aerodrome where ATC are on duty;

h) a MAYDAY call, or a MAYDAY CPDLC message is received;

i) immediately following any indications of fire in-flight; or

j) activation of an Emergency Autoland (EAL) system.

4.2.3 Emergency phases in time sequence

4.2.3.1 Emergency phases and time sequence

Emergency Condition	Latest time action should be taken			
	Commence communication checks	**Declare Uncertainty phase**	**Declare Alert phase**	**Declare Distress phase**
Uncertainty exists of aircraft's safety	At appropriate time	At appropriate time	-	-
Apprehension exists of aircraft's safety	At appropriate time	-	At appropriate time	-
Reasonable Certainty that the aircraft is in danger	At appropriate time	-	-	At appropriate time
Note: *'Appropriate time' may be related to **Failure To Report** or to reported or suspected irregular operation.*				
Failure To Report:				
Departure after a call notifying readiness to taxi or take-off	10 min after taxiing call	30 min after taxiing call	-	-
Departure after an airborne call	5 min after airborne call	30 min after airborne call	-	-
Position or scheduled report, including NOCOM cancellation time or OPS NORMAL time	3 min after report due	30 min after report due	-	-
After a frequency change	3 min after call due	30 min after call due	-	-
In reply to a call by a ground station, when listening watch is required	3 min after call	30 min after call	-	-
Arrival at a non-controlled aerodrome	10 min after estimate	30 min after estimate	-	-
Arrival or departure having nominated SARTIME	At SARTIME	30 min after SARTIME	-	-
After subsequent communication checks and enquiries to other relevant sources fail to reveal news of the aircraft	-	-	Immediately condition is recognised	-
After widespread communication checks and unsuccessful enquiries indicate probability that the aircraft is in distress	-	-	-	Immediately condition is recognised

4.2.3.2 Emergency phases and time sequence, *continued*

Emergency Condition	**Latest time action should be taken**			
	Commence communication checks	**Declare Uncertainty phase**	**Declare Alert phase**	**Declare Distress phase**
Failure to Land:				
The pilot of a radio-equipped aircraft at a controlled aerodrome after having been given approach or landing instructions or information by ATC at its landing place	At estimated landing time	-	5 min after estimated landing time	-
Irregular Operation:				
Impaired operating efficiency having difficulty in maintaining height, or may have difficulty in making a normal approach and landing	-	-	Immediately condition is recognised	-
Major impaired operating efficiency - forced landing likely	-	-	-	Immediately condition is recognised
VMC flights operating in IMC, or daylight flights operating at night	-	-	Immediately condition is recognised	-
Not on proper track or at proper level	-	Immediately condition is recognised	Immediately there is reason to believe the conduct of the flight is in jeopardy	-
Unable to use appropriate navaids				
Experiencing navigational difficulties or is lost				
Fuel is exhausted (unless SARTIME notified)	-	-	-	Immediately
Bomb Warning	-	-	Pending evaluation by the operator or pilot except on the ground at an aerodrome where ATS is on duty	Immediately on notification of 'genuine' evaluation except on the ground where ATS is on duty

4.2.3.3 Emergency phases and time sequence, *continued*

Emergency Condition	**Latest time action should be taken**			
	Commence communication checks	**Declare Uncertainty phase**	**Declare Alert phase**	**Declare Distress phase**
Information Received:				
That an aircraft for which flight notification has not been lodged is missing	-	Immediately	When communications checks lead to apprehension	When continued absence of news indicates possibility that the aircraft is in distress
That a pilot is about to, or has, force landed, ditched or crashed	-	-	-	Immediately
That a pilot is about to, or has, made a landing other than a forced landing: a) where the position is in doubt; b) on an unprepared surface; or c) at an aerodrome (in the case of helicopters, a landing area) which is considered by the pilot as being operationally unsuitable	-	Immediately condition is recognised	-	-
That a radio survival beacon has been activated for a period greater than 10 seconds	-	-	-	Immediately
That an aircraft has activated an Autonomous Distress Tracking (ADT) transmitter	Immediately condition is recognised	-	-	3 min after communication checks commenced where no response is received
That an aircraft is known or believed to be the subject of unlawful interference	-	-	Immediately	-

4.2.3.4 Communication checks

Where the pilot fails to:

a) report by a SARTIME;
b) submit a report at the prescribed time; or
c) acknowledge a call initiated by the ground station:
   i) attempt to contact the pilot direct by calling on the normal and alternative frequencies, repeating the calls with discretion;
   ii) attempt to contact the aircraft through another pilot in VHF or HF range;
   iii) ascertain whether the report has been received by another unit; and
   iv) arrange for other ground units to call the pilot on normal and alternative frequencies. A unit instructed to call a pilot notifies the originating unit if contact is not established within a period of five minutes.

4.2.3.4.1 Contact pilot by phone

In conjunction with other communication checks, you may arrange for pilots to be contacted by phone on a number nominated in the flight plan.

4.2.3.4.2 Checks completed

Consider communication checks to be completed once it has been determined that the pilot cannot be contacted on ATS frequencies.

Note: *JRCC Australia or HQJOC-AOC are the agencies who may contact an aerodrome operator to ascertain if a missing aircraft arrives safely.*

4.2.4 Phase amendments and cancellations

4.2.4.1 Upgrading phases

You may upgrade a phase on an aircraft when made aware of additional factors that warrant greater apprehension.

Note: *When notified of a phase declaration the IFER manager, JRCC Australia or HQJOC-AOC assesses the situation and amends the phase if appropriate.*

4.2.4.2 Downgrading phases

If the emergency situation of an aircraft subject to an Alert or Distress Phase has been relieved, but not to the extent that normal operations have been resumed, the unit responsible for the phase action may downgrade the Alert or Distress Phase to whichever lesser phase is considered appropriate.

4.2.4.3 Cancellation of phases

If an aircraft subject to an emergency phase has resumed normal operations or is known to have landed safely, the unit responsible for the phase action cancels the phase and advises other relevant units and agencies involved.

4.2.4.3.1 Unspecified aircraft

If an Alert or Distress Phase was declared because an unspecified aircraft was reported to be in a state of emergency, or it was thought, but not witnessed, that an aircraft may have crashed and, after subsequent investigation there is reasonable certainty that the phase is no longer necessary because of failure to locate any aircraft, the phase may be cancelled by JRCC Australia or HQJOC-AOC.

4.2.4.3.2 After extensive search

If an aircraft cannot be located after extensive search efforts, JRCC Australia or HQJOC-AOC in the case of military aircraft, may suspend the search and cancel the phase.

4.2.5 Responding to in-flight emergencies

4.2.5.1 Irregular operation

When a pilot advises a condition of irregular operation, or the total failure or intentional shut down of an engine, ask the pilot if emergency conditions exist that indicate the inability to maintain a safe cruising altitude or the need to make an emergency landing.

4.2.5.1.1 ATS notification

Notify all subsequent ATS units of the aircraft's condition.

4.2.5.1.2 ARFF notification by tower

Notify ARFF of any situation described in Clause 4.2.5.1 including those situations that do not result in an AEP.

See MATS 4.2.5.1 Irregular operation

4.2.5.2 Acknowledge distress/urgency communications

Acknowledge distress or urgency communications by:

a) callsign;
b) station identification; and
c) ROGER MAYDAY (*or* PAN).

Note: *Aircraft equipped with ADS-B and/or ADS-C equipment may send the emergency and/or urgency signal by all available means.*

4.2.5.2.1 Acknowledgement on first contact

Acknowledge the distress or urgency communications on first contact with an aircraft that has declared an emergency to a previous unit by use of the appropriate phrase 'MAYDAY (*or* PAN) [(type of emergency)] ACKNOWLEDGED'.

4.2.5.2.2 Initial message to an aircraft

You may include in the initial message to an aircraft subject to an emergency:

a) reassurance that positive action for assistance is underway;

b) indication of the lowest safe altitude; and

c) a request for the pilot to notify any change to the situation or intentions.

4.2.5.2.3 Pass information

Pass information appropriate to the situation but do not overload the pilot.

4.2.5.2.4 Ascertain basic information

In all situations, ascertain basic information to indicate any time constraints on response, including:

a) total fuel endurance remaining;

b) remaining duration of daylight at the scene of the incident and at any aerodrome being considered for a diversion;

c) flight conditions;

d) pilot’s rating and if the aircraft is equipped for instrument or night flight;

e) structural integrity of the aircraft; and

f) whether the aircraft is over land, water or cloud.

See MATS 4.2.3.1 Emergency phases and time sequence

4.2.5.3 General IFER procedures

Use the IFER Checklist for general actions to be carried out in the event of an in-flight emergency.

See In-Flight Emergency Response Checklist

4.2.5.4 Handover of IFER management

Management of an IFER may need to be handed over to another ATS unit. To ensure a comprehensive briefing to the agency accepting responsibility, you may use the 'Urgent SAR Message'.

See MATS 13.1.1.1 Access to forms

4.2.5.5 Transferring responsibility

When an aircraft declares an emergency and responsibility for the aircraft is in the process of being transferred to another ATS position, provide initial response and assistance from the ATS position where the emergency was declared.

See MATS 4.2.19.3 CPDLC connection and 4.2.19.4 Transfer of CPDLC connection

4.2.5.6 Pilots not visual

Provide information on the lowest safe altitude or highest terrain to pilots who may not be able to remain visual.

4.2.5.7 Assistance available

Make available to an aircraft in an emergency situation any of the following assistance:

a) Advice on alternate aerodromes;
b) Position fixes for lost aircraft;
c) Advice on known weather conditions;
d) Interception of aircraft in distress or in need of navigation assistance;
e) Airspace and air traffic priorities;
f) Provision of alerting services;
g) Ditching forecasts; and
h) Advice on terrain clearance (LSALT).

4.2.5.8 Directing aircraft to assist

Obtain ATMD approval before directing aircraft to assist in an emergency.

4.2.5.8.1 ATMD unavailable

If an ATMD is not immediately available, you may request, but not instruct, an airborne aircraft to divert for the purpose of providing assistance. Refer any such action taken to an ATMD at the earliest opportunity.

See MATS 4.1.2 Civil aircraft requisition

4.2.5.9 Initial action during distress state

Initiate the following actions upon acknowledgement of an aircraft in distress:

a) Immediately acknowledge the distress message and declare a Distress Phase;
b) Take control of the communications, or specifically and clearly transfer that responsibility, advising the aircraft of the transfer;
c) If necessary, impose radio silence;
d) Take immediate action to ensure that all necessary information is made available to the ATS units concerned;
e) Warn other units, as appropriate, to prevent the transfer of traffic to the frequency of the distress communication;
f) Follow local instructions for alerting:
    i) SAR authorities;
    ii) aircraft operating agency concerned; and
    iii) ARFF;
g) Continue to listen on the frequency on which the distress call or message was transmitted and other frequencies, if appropriate;
h) Clear the instrument approach path, if necessary;
i) Make available navaids and lighting facilities; and
j) Issue instructions or pass information necessary to assist a safe recovery and landing, to the extent of suspending traffic that could conflict.

4.2.5.10 Initial actions during urgency state

The unit addressed by an aircraft reporting an urgency condition, or the first unit acknowledging the urgency message, initiates the following actions:

a) acknowledges the urgency message and declares the appropriate emergency phase;
b) takes action to ensure that all information is made available to:
    i) the ATS unit concerned;
    ii) the aircraft operating agency, if applicable; and
    iii) SAR authorities, if applicable; and
c) exercises control of communications as required.

4.2.5.11 Urgency communication has priority

Urgency communication has priority over all other communications, except distress.

4.2.5.11.1 Do not interfere with transmission

Do not interfere with transmissions of urgency traffic.

4.2.6 SSR Emergency Codes

4.2.6.1 Controller actions

Act in accordance with:

a) RPAS Lost Link procedures upon observing Transponder Code 7400;
b) Unlawful Interference procedures upon receiving an alert associated with Transponder Code 7500;
c) Aircraft Radio/Communications Failure procedures upon receiving an alert associated with Transponder Code 7600; and
d) Emergency procedures upon receiving an alert associated with Transponder Code 7700.

See MATS 4.2.22.1 Lost Link

See MATS 4.2.8 Unlawful interference (hijack)

See MATS 4.2.9 Aircraft communications failure

4.2.6.1.1 Code 7700

Implement the following actions on receipt of Transponder Code 7700:

a) When not in receipt of distress or urgency communication (e.g. MAYDAY or PAN call), use the phrase '(*callsign*) CONFIRM SQUAWKING ASSIGNED CODE';
b) Ascertain the nature of the emergency;
c) Regard failure to respond to these requests as positive evidence of an emergency which may also involve radio failure and/or partial electrical failure;
d) Determine the extent of the radio failure by use of the relevant procedures;
e) Declare the appropriate phase;
f) Advise the supervisor;
g) Provide the aircraft with priority in all respects;
h) Transmit all information pertinent to the conduct of the flight;
i) Record the last observed/known position, altitude, track and speed - a plot using system tools may be initiated;
j) Coordinate transfer of control as appropriate to other ATS units; and
k) Relay messages as required between aircraft and appropriate authorities.

4.2.7 Unlawful interference (bomb warnings)

4.2.7.1 Notification of a bomb warning

On receiving notification of a bomb warning directed against an aircraft:

a) immediately advise the supervisor;
b) declare an Alert Phase, pending evaluation of the threat by the operator or pilot, except when the aircraft is on the ground at an aerodrome where ATS are on duty;
c) advise JRCC Australia if the aircraft is airborne; and
d) advise the Department of Home Affairs, Australian Government National Situation Room.

4.2.7.1.1 Supervisor actions - controlled aerodromes

Implement the requirements of AEPs and/or local instructions.

4.2.7.1.2 Supervisor actions - uncontrolled aerodromes

When notified of a bomb warning directed at an aircraft at an aerodrome where ATC are not on duty, advise the operator or agent (or pilot, in their absence).

4.2.7.2 Pilot notification, aircraft in flight

For aircraft in flight, only notify the pilot when the threat:

a) has not been assessed after 30 minutes from the time of notification, in which case, the threat will be treated as 'genuine' until the threat is assessed as otherwise; or

b) has been assessed as 'genuine' by the aircraft operator.

Note: *When an aircraft is subject to a genuine threat, the decision to continue to destination or to divert to a more suitable aerodrome is the responsibility of the operator or the pilot (including consideration of any incident control directions from the Department of Home Affairs).*

4.2.7.3 Pilot notification, aircraft on the ground

For aircraft on the ground, only notify the pilot when the warning is assessed as genuine.

4.2.7.4 Withhold take-off clearance

Do not issue a take-off clearance to an aircraft which is the subject of a bomb threat.

Note: *When an aircraft is to be searched, you may assist in providing necessary information regarding suitable isolation areas.*

4.2.7.5 Vague warnings

Advise the Department of Home Affairs, Australian Government National Situation Room when in receipt of a vague or general threat.

4.2.8 Unlawful interference (hijack)

4.2.8.1 IFER Checklist

Use the IFER Checklist when an aircraft is known or believed to be the subject of unlawful interference.

Note: *If there is unlawful interference with an aircraft in flight, the pilot will attempt to set the transponder to Code 7500, in order to indicate the situation. If the aircraft is threatened by grave and imminent danger and requires immediate assistance, the pilot may select Code 7700.*

4.2.8.2 Do not transmit reference to the emergency

Do not transmit reference to the nature of the emergency unless:

a) it has first been referred to by the pilot of the aircraft involved; and

b) you are certain that such reference will not aggravate the situation.

4.2.9 Aircraft communications failure

4.2.9.1 Follow ERSA and IFER

Base control on the understanding that aircraft will follow the ERSA emergency procedure unless:

a) it is determined that the aircraft is following a different procedure;
b) the use of electronic or other aids enables the position of each aircraft to be accurately determined, when control is to be based on this position data; and
c) information is received that the aircraft has landed or has resumed normal communication.

4.2.9.2 Issuing instructions

Where appropriate, you may issue instructions or information via one or both of:

a) voice modulated navaids; and
b) the ATIS.

4.2.9.3 Maintain en route separation

Maintain suitable en route separation in control areas on the understanding that the aircraft with radio failure proceeds to the aerodrome of intended landing in accordance with the Emergency Procedures.

4.2.9.4 Plotting aircraft in a state of emergency

If it is apparent that an identified aircraft has suffered a complete radio failure:

a) record the last observed/known position, altitude, track and speed; and
b) initiate a plot using system tools.

4.2.9.5 Apply ATS surveillance system separation

You may apply ATS surveillance system separation between other identified aircraft under control and the identified aircraft which has suffered radio failure, based on the latter's course of action, as observed on the situation display.

4.2.9.6 Estimating time intervals

Do not base the control of aircraft with communication failure on the assumption that estimated time intervals are accurate - vary aircraft separation accordingly.

4.2.9.7 Next intended landing point

Keep the controlled airspace at the next intended landing point of unreported aircraft following IMC procedures vacant:

a) for a 30 minute period from the later of EAT or ETA (ETA for this purpose is defined as five minutes after the estimate over the emergency aid); and
b) when the aerodrome is closed, and communication with a holding aircraft is lost – from the time communication is lost until 15 minutes after the unreported aircraft is expected to set course for the alternate.

4.2.9.8 Airspace en route to alternate aerodrome

Keep controlled airspace en route to the alternate aerodrome vacant from the earliest arrival time calculated on the understanding that the aircraft will set course for the alternate aerodrome climbing or descending to the flight-planned level at any time during the period specified in Clause 4.2.9.7.

See MATS 4.2.9.7 Next intended landing point

4.2.9.8.1 Apply separation

Apply separation on this route based on this understanding and the unreported aircraft's flight-planned time intervals.

4.2.9.9 Airspace at alternate aerodrome

Keep controlled airspace at the alternate aerodrome, which might be used by the unreported aircraft, vacant from the earliest arrival time calculated from the understanding of departure time set out in Clause 4.2.9.7, and application of flight-planned time intervals, until 30 minutes after the latest arrival time.

See MATS 4.2.9.7 Next intended landing point

4.2.9.10 Advise aircraft and companies

Advise other aircraft and operating companies if the aircraft is unreported at the conclusion of the periods specified in Clauses 4.2.9.7 and 4.2.9.9.

Note: *It is the responsibility of the aircraft operators/designated representative and the pilots to determine whether they will resume normal operations or take other actions.*

See MATS 4.2.9.7 Next intended landing point
See MATS 4.2.9.9 Airspace at alternate aerodrome

4.2.9.11 Continuous listening watch

The unit responsible for the aircraft ensures a continuous listening watch on:

a) the frequency the aircraft was last heard;
b) the frequencies likely to be used by the aircraft; and
c) available international distress frequencies.

4.2.9.12 Assistance by other aircraft

Inform other aircraft in the vicinity when they could be of assistance by:

a) maintaining a listening watch on a particular frequency;
b) calling the subject aircraft;
c) acting as a radio message relay; and
d) maintaining watch on emergency frequencies 121.5, 243.0 and/or 406.0 MHz.

4.2.9.12.1 Maintain a listening watch

If an aircraft has only one receiver and it is acceptable to the responsible communication unit, you may request the aircraft to maintain a listening watch on another frequency.

4.2.9.12.2 Operations normal report

Nominate scheduled reporting times for OPERATIONS NORMAL reports – normally at 15 minute intervals.

4.2.9.13 Speechless radar approach

On receipt of a pilot request for a speechless radar approach, reply with the following phraseology: 'SPEECHLESS AIRCRAFT THIS IS (*identification*), STEER (*heading*) FOR (*airfield*)'.

4.2.9.13.1 Vectoring procedures

Vector the aircraft to the aerodrome and conduct normal controlled descent procedures.

4.2.9.13.2 Actions during approach

During approach ask for answers, in the affirmative or negative, to the following questions:

a) Is the aircraft experiencing a state of emergency? If affirmative, ask further questions to ascertain the nature of the emergency;
b) Type of aircraft (jet or piston) and callsign if it is suspected to be an aircraft about which there is prior knowledge; and
c) Any other information such as:
    i) fuel state;
    ii) altitude;
    iii) ability to carry out normal controlled descent; and
    iv) familiarity with descent procedures.

4.2.10 Fuel shortage

4.2.10.1 Fuel shortage checklist

Use the IFER Checklist for detailed procedures regarding aircraft with fuel shortages.

4.2.10.2 Considerations

Provide assistance to enable the pilot to reach an aerodrome for a safe landing.

4.2.10.3 Minimum fuel

When an aircraft has declared 'MINIMUM FUEL':

a) coordinate this with the next ATC unit; and

b) advise the flight crew of any additional delays.

See MATS 6.3.5.2 Coordination exchanges

4.2.10.4 Mayday fuel

When an aircraft has declared 'MAYDAY FUEL', if the pilot does not specify, request what services are required.

4.2.11 Fuel dumping

4.2.11.1 Vapour zone

Airspace affected by the fuel dumped from an aircraft in flight is known as the 'vapour zone'. It is defined as that airspace 1000 FT above, 2000 FT below, 5 NM horizontally behind, and ½ NM on each side of the aircraft.

4.2.11.1.1 Reserved airspace

Treat all airspace in which dumping takes place as reserved airspace from the time dumping is expected to commence until five minutes after it has been completed.

4.2.11.2 Emergency fuel dumping

If fuel is dumped in an emergency, or fuel must be dumped without adequate warning or delay:

a) make every effort to keep other aircraft clear of the vapour zone;
b) record the area where the fuel was dumped;
c) record the weather conditions; and
d) report the incident to the appropriate authority without delay.

4.2.11.2.1 Do not use circular race track pattern

For safety reasons, do not permit fuel to be dumped in a circular or race track pattern.

4.2.11.3 Non-emergency fuel dumping

If fuel is to be dumped in other than emergency situations:

a) specify the section of a nominated track that may be used for dumping of fuel; and
b) recommend the aircraft maintain a minimum height of 6000 FT AGL.

4.2.11.4 Fuel dumping broadcast

Issue a Broadcast advice to aircraft specifying:

a) a warning of fuel dumping; and
b) the approximate location of the 'vapour zone'.

4.2.11.5 Radio silence

When approving pilot radio silence during fuel dumping, specify the frequency to be monitored and a scheduled report time.

4.2.12 Strayed or unidentified aircraft

4.2.12.1 Strayed aircraft

As soon as you become aware of a strayed aircraft, apply the following procedures.

4.2.12.1.1 Position not known

If the aircraft's position is not known:

a) attempt to establish two-way communication with the aircraft, unless communication already exists;
b) determine its position;
c) inform other units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstance;
d) inform appropriate military units and provide flight plan and other data; and
e) request from the units at c) and d), and from other aircraft in flight, assistance in establishing a) and b).

4.2.12.1.2 Position established

Where the aircraft's position is established:

a) advise the aircraft of its position and corrective action to be taken; and
b) provide relevant information and any advice given to the aircraft to other ATS units and appropriate military units.

Note: *A strayed or unidentified aircraft may be suspected as being the subject of unlawful interference.*

See MATS 4.2.8 Unlawful interference (hijack)

4.2.12.2 Unidentified aircraft

Establish the identity of the unidentified aircraft by:

a) attempting to establish two-way communication;
b) inquiring of other units within the FIR, and in adjacent FIRs, about the flight and request their assistance; and
c) attempting to obtain information from other aircraft in the area.

4.2.12.2.1 Advice to military

If necessary, inform the appropriate military unit as soon as the identity of the aircraft is known.

4.2.12.3 Interception

If an aircraft is being intercepted, take the following steps, as appropriate:

a) Attempt to establish two-way communication;
b) Inform the pilot of the intercepted aircraft of the interception;
c) Contact the intercept control unit and provide available information;
d) Relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;
e) Ensure the safety of the intercepted aircraft, in close coordination with the intercept control unit; and
f) Inform the unit serving adjacent FIRs if it appears that the aircraft has strayed from such adjacent FIRs.

4.2.13 In-flight emergencies - interception and escort

4.2.13.1 Forced landing or ditching

Consider the use of an escort if there is a possibility of a forced landing or ditching.

4.2.13.2 Selection of escort aircraft

In selecting an escort aircraft, consider the following factors:

a) suitability of airborne aircraft;
b) assistance from military if suitable civil aircraft are not available;
c) aircraft and pilot have navigational capability to effect an interception either with or without the assistance of ground or airborne surveillance systems;
d) speed of escort aircraft is capable of matching distressed aircraft; and
e) aircraft has sufficient fuel endurance for the task.

4.2.13.3 Planning interception

When planning an interception, do not give the interceptor a prolonged tail chase.

4.2.13.3.1 Locate the interceptor on track

Locate the interceptor on a track ahead of the distressed aircraft to determine their relative positions.

Note: *The interceptor, if equipped with radar or DF, will home onto the distressed aircraft.*

4.2.13.3.2 Assistance in making visual interception

To assist in making a visual interception:

a) request activation of landing lights or other devices on both aircraft;
b) ensure that both aircraft are operating on the same communication frequency as the ground station; and
c) ensure that both aircraft are using the same altimeter setting.

4.2.13.4 Altitude of interceptor

Vertically position the interceptor, relative to the distressed aircraft, to make the most of the primary method of interception being employed i.e. visual or electronic.

4.2.13.4.1 Exceptions

Except for high altitude emergencies.

4.2.13.5 Interception

Visual interception is flown as follows:

Visual interception	
Time	**Intercepting aircraft**
By day	Is flown at 1000 FT below the distressed aircraft, to silhouette the distressed aircraft against the sky and achieve maximum sighting distance.
By night	On clear nights, is flown 1000 FT above the distressed aircraft to eliminate confusion between stars and lights of the distressed aircraft.
	When over land, where lights of cities could cause confusion, the intercepting aircraft is flown at 1000 FT below the distressed aircraft.
Electronic interception	
By day and night	An aircraft flying an electronic interception is to be flown at 1000 FT above the distressed aircraft.
	Note: *This provides best utilisation of the radar and clears lower altitudes should the distressed aircraft be unable to hold altitude.*

4.2.14 VFR flights in IMC

4.2.14.1 VMC but operating IMC

For flights confined to VMC but operating in IMC, be aware that the pilot in this situation will have difficulty with the following:

a) maintaining heading;

b) maintaining altitude; and

c) perceiving aircraft attitude.

4.2.14.2 Reassurance and communications

Provide reassurance to the pilot in initial communications and limit communications to prevent diversion of the pilot’s attention from flying the aircraft.

4.2.14.3 Descent through cloud

When it is unavoidable that an inexperienced pilot descends through cloud to establish visual reference with the ground, and assistance using an ATS surveillance system cannot be obtained, address the following factors:

a) Maximum and/or general terrain elevations in the area; and
b) Maintain the aircraft on a steady heading (keep wings level) and trimmed, with respect to airspeed and flap settings, to achieve a shallow but constant rate of descent.

4.2.14.4 When providing assistance

Points to remember when providing assistance to a pilot operating in IMC, are:

a) positive identification;
b) check fuel reserves;
c) check of nearest available aerodrome;
d) instil confidence in the pilot;
e) keep instructions simple; and
f) avoid transponder code changes as they can lead to disorientation.

4.2.14.5 Exercise caution

Exercise extreme caution so that turns and manoeuvres do not disorientate the aircrew.

4.2.14.6 Conditions of failing light

When failing light is a factor and doubt exists as to the ability of the pilot to continue in IMC, or in VMC by night, ask the pilot if a precautionary landing has been considered while there is sufficient light.

4.2.14.7 IFER Checklist

Use the IFER Checklist for detailed procedures for VFR flights in IMC.

4.2.15 Medical emergencies

4.2.15.1 Priority request

When a pilot declares 'PAN PAN, MEDICAL PRIORITY REQUIRED':

a) provide MEDEVAC priority;
b) advise the supervisor or coordinate as necessary to arrange requested services; and
c) submit an occurrence report.

4.2.15.1.1 Service requirements

If the pilot does not specify, request what services are required.

Note 1: *Pilots are responsible for biosecurity reporting.*

Note 2: *Pilots may request ATC to arrange ARFF attendance or ambulance services.*

4.2.15.1.2 Emergency phase

Do not declare an emergency phase unless other circumstances indicate the aircraft may require assistance.

4.2.16 Hung bombs

4.2.16.1 IFER Checklist

Use the IFER Checklist for detailed procedures regarding aircraft with hung ordnance/unsafe weapons.

4.2.17 Emergency change of level

4.2.17.1 Likely loss of separation

Where an emergency level change involves likely loss of separation, pass traffic information on the subject aircraft to other affected aircraft.

See MATS 10.1.6.1 Reduction of vertical standard

4.2.17.2 In Class G airspace

Provide traffic information to conflicting flights when an emergency change of level occurs in Class G airspace.

4.2.18 ADS-C emergency mode

4.2.18.1 Declare an INCERFA

Declare an INCERFA and verify a covert or inadvertent activation of an ADS-C emergency mode when an indication is received without an accompanying voice confirmation or CPDLC emergency message.

4.2.18.1.1 Additional ADS-C requirements

Update the ADS-C periodic reporting rate to five minutes. Do not send a Demand Contract Request.

4.2.18.2 Continuation of ADS-C emergency indication

Act on the basis that the aircraft is subject to unlawful interference if the aircraft continues with the ADS-C emergency mode activated and no voice or CPDLC confirmation of the type of emergency, or that activation was in error, is received.

4.2.19 CPDLC emergency/urgency messages

4.2.19.1 Close dialogue

Close an emergency CPDLC dialogue containing a free text message with ROGER.

4.2.19.2 Acknowledge receipt of CPDLC emergency/urgency message

Use the phrase 'ROGER MAYDAY' or 'ROGER PAN' to acknowledge receipt of a CPDLC emergency/urgency message.

4.2.19.2.1 Voice or CPDLC free text message

Depending on the nature of the message, use the most efficient means either by voice or free text CPDLC message.

Note 1: *Depending on the situation the free text uplink message may or may not be closed by the pilot's ROGER response.*

Note 2: *If CPDLC is the best or only communications available between the aircraft and any unit, the unit with active connection maintains that connection until assistance can be provided by another means.*

4.2.19.3 CPDLC connection

To improve the chances of the CPDLC connection being retained:

a) do not manually transfer the connection to another unit; and

b) disable any automatic transfer capability.

4.2.19.4 Transfer of CPDLC connection

If a transfer of the CPDLC connection does not occur, then the responsibility for maintaining communications with the aircraft is retained by the current unit. However, the executive control responsibility rests with the unit within whose airspace the aircraft is operating.

4.2.20 In-flight contingencies in oceanic airspace

4.2.20.1 Deviation from ATC clearance

When an aircraft requires a deviation from its ATC clearance and you cannot issue the clearance due to conflicting traffic:

a) advise the pilot that clearance for the deviation is not available;

b) provide traffic information to the pilot; and

c) request the pilot's intentions.

Note 1: *Under the provisions of the rules of the air a pilot may deviate from any clearance provided the circumstances render such departure absolutely necessary in the interests of safety.*

Note 2: *See AIP ENR 2.2.*

4.2.21 Deviation into active Restricted/Military Operating Areas

4.2.21.1 Entering an active Restricted/Military Operating Area

If, by deviating from its cleared route or track, an aircraft will enter an active Restricted/Military Operating Area:

a) issue a Safety Alert immediately the situation is recognised; and

b) if possible, provide an alternative clearance.

4.2.21.1.1 Alternative clearance

Whenever possible, provide an alternate clearance to ensure traffic remains clear of active Restricted/Military Operating Areas. Alternate clearances may include:

a) deviation around, under or over active Restricted/Military Operating Areas;

b) a return to the aerodrome of departure; or

c) cancellation of an existing clearance and holding on the ground at the aerodrome of departure.

4.2.21.1.2 Deviation unavoidable

When deviation into active Restricted/Military Operating Area is unavoidable:

a) Upon entry, advise the pilot that they are not operating under a clearance, are proceeding at their own risk and to squawk 7700;
b) Terminate control services;
c) Continue to provide Flight Information and Alerting services; and
d) Declare an Alert Phase.

4.2.22 RPAS abnormal operations

4.2.22.1 Lost Link

When there is a Lost Link between the RP and RPA:

a) ascertain from the RP (VHF or phone), the programmed Lost Link profile and expected landing time of the RPA;
b) request advice from the RP when the:
    i) control link is recovered; or
    ii) RPA has landed;
c) advise the supervisor; and
d) provide hazard alerting, as required.

Note 1: *A Lost Link may be indicated verbally by the RP or when the RPA squawks 7400.*

Note 2: *In the event of a Lost Link, RPA tracking may not be consistent with either its plan or anticipated Lost Link tracking.*

See MATS 9.1.3.4 Hazard alert

4.2.22.2 Unauthorised RPAS

Use the IFER Checklist to the degree required by the circumstance and location.

4.2.23 Emergency Autoland system

4.2.23.1 Emergency Autoland system activation

When an Emergency Autoland (EAL) system broadcasts MAYDAY:

a) advise relevant aircraft on frequency of the EAL activation and the EAL aircraft's position and direction of travel, or intended destination;
b) declare a DETRESFA;
c) advise adjacent affected units;
d) advise the supervisor/OCA holder; and
e) provide safety and hazard alerting, as required.

4.2.23.2 Emergency Autoland activation response

Use the IFER Checklist to the degree required by the circumstance and location.

4.2.24 Distress beacon signals

4.2.24.1 Distress beacon more than 10 seconds

Declare a distress phase when a distress beacon has been heard on 121.5, 243.0 and/or 406.0 MHz for a period in excess of 10 seconds.

4.2.24.1.1 Phase reporting

Report the phase to JRCC Australia detailing:

a) position;

b) route;

c) height;

d) time signal was first received; and

e) description of signal characteristics.

4.2.24.2 Unscreened beacon tests

Refer all requests for unscreened beacon tests to JRCC Australia.

4.2.24.3 Pass on test information

Pass information on tests to affected units (including military).

4.2.24.4 Distress beacon signal report form

Send a Distress Beacon Signal Report Form following initial advice to JRCC Australia.

See MATS 13.1.1.1 Access to forms.

4.2.24.4.1 Distress beacon signals on other frequencies

Report signals, having the characteristics of distress beacon signals, heard on frequencies other than 121.5, 243.0 and/or 406.0 MHz to JRCC Australia. Do not declare a phase regarding these signals unless other information indicates that an emergency exists.

4.2.24.5 Emergency Locator Transmitter (Distress Tracking)

When notified that an aircraft has activated an ELT(DT):

1) commence communication checks;

2) if communications cannot be established after three minutes, declare a Distress Phase;

3) if communications are established, determine any impairment to operating efficiency and follow the relevant IFER checklist; and

4) advise JRCC Australia of pertinent information.

4.3 Aerodrome emergencies

4.3.1 Aerodrome emergency classifications

4.3.1.1 Local standby

Declare a local standby when:

a) only the involvement of airport-based agencies in the AEP is warranted;

b) an approaching aircraft is known or suspected to have a defect, but is not expected to experience any serious difficulty in effecting a safe landing; or

c) a 'PAN' call is received, unless the pilot states otherwise.

See MATS 4.3.2.4 Medical priority response

4.3.1.2 Full emergency

Declare a full emergency when:

a) activation of more than just airport-based responding agencies is required;

b) an aircraft approaching the airport is known or suspected to be in such trouble that there is danger of an accident;

c) there is a crash on the airport; or

d) a 'MAYDAY' call is received, unless the pilot states otherwise.

See MATS 4.2.10.4 Mayday fuel

4.3.1.2.1 Emergency levels

Declare a full emergency at the appropriate level as follows:

Level I	Level II	Level III
Up to 18 seats	Up to 215 seats	Up to 560 seats
(ATC - Light)	(ATC - Medium)	(ATC - Super or Heavy)

4.3.2 Activating the AEP

4.3.2.1 Activate AEP

Activate the AEP by declaring a 'LOCAL STANDBY' or 'FULL EMERGENCY, LEVEL (I, II, or III)'.

4.3.2.2 Escalate AEP

Escalate local standby to full emergency as required.

4.3.2.3 Confirm AEP required

When doubt exists, confirm the pilot's requirements e.g. 'DO YOU WANT THE AIRPORT TO BE PLACED ON LOCAL STANDBY?'.

4.3.2.4 Medical priority response

Do not activate AEP for medical priority unless requested.

See MATS 4.2.15.1 Priority request

4.3.2.5 Absence of airport fire service

At aerodromes where there is no on-airport fire service or when the airport fire service has been stood down, advise the pilot e.g. 'THERE IS NO ON-AIRPORT FIRE SERVICE AT YOUR INTENDED AERODROME. WHAT SERVICES DO YOU REQUIRE?'.

4.3.2.5.1 AEP activation

Depending upon the response from the pilot, activate the appropriate AEP.

4.3.2.6 Notification requirements

Advise pilots when they are subject to local standby or full emergency.

4.3.3 Irregular occurrences

4.3.3.1 Notify ARFF

Notify ARFF of any irregular occurrence on or inbound to the aerodrome where their attendance may be beneficial, including those situations that do not result in activation of AEP.

4.3.3.1.1 Collisions on the airport

Unless a higher level of response is required, notify ARFF of any collision that occurs between aircraft, or between an aircraft and a moving or stationary object.

4.3.3.2 Response type phraseology

Notify ARFF of occurrences not requiring activation of AEP as follows:

a) 'IRREGULAR OCCURRENCE, (*details as required*)' when pilot request or ATC assessment indicates ARFF attendance is warranted e.g. any collision involving an aircraft; or

b) 'FOR INFORMATION ONLY, (*details as required*)' for other occurrences when an ARFF response is not specifically required.

Note: *ARFF will always respond to a notification of 'IRREGULAR OCCURRENCE'.*

4.3.4 ARFF alerting

4.3.4.1 Use of crash alarm

Select an aerodrome crash alarm for an aircraft crash, an imminent crash or in any circumstance where an immediate response from ARFF is required. If in doubt, select the crash alarm.

4.3.4.1.1 Crash alarm details

As soon as possible following activation of the crash alarm, advise ARFF of the details of the incident by intercom or radio. As a minimum, provide the:

a) aircraft type or building/facility affected;

b) nature of the incident; and

c) location of the incident.

4.3.4.2 ARFF intercom lines

Limit use of ARFF intercom lines to emergency or irregular situations and immediate operational needs.

4.3.4.3 ARFF AEP standby positions

Detail ARFF vehicle AEP standby positions in local instructions.

4.3.4.4 Civil ARFF response area

Provide the appropriate notification to ARFF for incidents on or in the vicinity of the aerodrome.

Note: *Airservices ARFF have a regulatory obligation to provide a response to aviation related incidents in the 'vicinity' of the aerodrome. Priority will be given to incidents at the aerodrome and within 1000 m of the boundary.*

4.3.5 ARFF communications

4.3.5.1 Pilot initiation

Advise ARFF of a pilot request to initiate communications on 131.0 MHz.

Note 1: *A national ARFF emergency frequency (131.0 MHz) is available, at designated aerodromes, for direct communication between the Fire Commander/Controller and pilot of an affected aircraft during an airport emergency. Primary use of the frequency is to coordinate the emergency response when an aircraft is on the ground. However in exceptional circumstances or at pilot initiation, communication may occur whilst the aircraft is airborne.*

See ERSA for designated aerodromes

Note 2: *All communications on 131.0 MHz are at pilot discretion.*

Note 3: *Pilots will communicate with ATC during an airport emergency on the normal ATC frequencies.*

4.3.6 Landing gear observations at night

4.3.6.1 Conduct observations

Conduct landing gear observations at night using ARFF personnel and equipment.

4.3.6.1.1 Advise Fire Commander/Controller

Advise the Fire Commander/Controller of:

a) aircraft type;
b) callsign; and
c) runway to be used.

4.3.6.1.2 Position ARFF vehicle

Direct ARFF vehicle to take up position at a distance from the runway centre line that will correspond with the altitude at which the aircraft will fly through the searchlight.

4.3.6.1.3 Aircraft line up

Instruct the aircraft to line up with and fly along the runway once the ARFF vehicle is in position.

4.3.7 Airfield closure

4.3.7.1 Advise of obstruction

In the event of an obstruction causing unserviceability of the manoeuvring area to the extent that closure of the airfield is necessary, advise all affected aircraft of:

a) the nature of the unserviceability;
b) the estimated time of airfield closure; and
c) details of facilities not available for any subsequent landing.

4.3.7.2 Aircraft diversions

If airfield closure causes aircraft diversions, the ATSO holding Operational Command Authority/Military Supervisor:

a) provides details to the agencies nominated in local instructions;
b) arranges for details of the diverting aircraft to be coordinated with affected units; and
c) confirms that a NOTAM has been issued by the responsible authority where required.

4.4 SAR alerting

4.4.1 SAR responsibilities

4.4.1.1 Alerting posts

All ATS units are designated as 'Alerting Posts' and are responsible for:

a) declaring emergency phases;
b) responding to in-flight emergencies;
c) notifying appropriate authorities; and
d) assisting such authorities as required.

4.4.1.2 ATS responsibilities

ATS responsibilities include:

a) SAR alerting of:
    i) overdue aircraft following the completion of communications checks;
    ii) imminent or known aircraft crashes;
    iii) missing aircraft;
    iv) distress beacon interceptions by ATS units or reported by aircraft; and
    v) all emergency phases declared by aircraft where continued safety of flight is in doubt; and
b) assistance with the provision of aeronautical communications services for aircraft engaged in SAR operations.

4.4.1.3 Maintaining SARWATCH

Maintain SARWATCH for all aircraft subject to:

a) an air traffic control service in Class A, C, D or E airspace;
b) IFR in Class G airspace;
c) VFR on request; and
d) TIBA where capability permits.

4.4.1.3.1 Methods

Maintain SARWATCH via:

a) continuous visual or surveillance monitoring; or
b) a time nominated by ATS or a pilot which may include:
    i) an estimate;
    ii) a NOCOM time; or
    iii) a time to report, such as a SKED or an operations normal time.

4.4.1.4 SARTIME

SARTIMEs for arrival or departure must be held in CENSAR.

4.4.1.4.1 Exception - SARTIME for departure

When an IFR aircraft nominates a SARTIME for departure 60 minutes or less from the time of receipt, SARTIME for departure may be held locally by the executive controller.

See MATS 8.3.1 Maintaining the SARTIME database

4.4.2 SAR response areas

4.4.2.1 Area of responsibility

ATS centres and units act as collecting points for information concerning an aircraft emergency within their area of responsibility.

4.4.2.1.1 Coordination between Centres and JRCC Australia

Within the Brisbane and Melbourne Centres, the relevant SM, System Supervisor or other specifically nominated person will coordinate with JRCC Australia.

4.4.2.1.2 Coordination between Tower/TCU and JRCC Australia

Effect Tower/TCU coordination with JRCC Australia:

a) when there is no effect on the adjacent centre; or

b) via the relevant SM, or System Supervisor when it may affect the adjacent centre or due to workload considerations.

4.4.2.2 Defence ATS units

Defence ATS units collate information regarding civil aircraft emergencies within their area of responsibility.

4.4.2.3 Other FIRs

Within other FIRs administered by Airservices, civil aviation SAR services are defined in the LoA for the airspace.

4.4.3 SAR notifications and liaison

4.4.3.1 Alerting service notifications

In the provision of an alerting service, notify:

a) JRCC Australia of:
   i) aircraft for which an uncertainty phase has been declared because of a failure to report;
   ii) information concerning imminent or known aircraft crashes, or missing aircraft; and
   iii) distress beacon activations heard or reported by third parties;

b) the operator, prior to notifying JRCC Australia and when practicable, for aircraft subject to an uncertainty or alert phase;

c) emergency services at ATS staffed aerodromes;

d) the Police to activate emergency services at non-ATS staffed aerodromes (unless the Department of Home Affairs has had prior notification as part of the IFER checklist); and

e) the Australian Government National Situation Room for acts of unlawful interference.

Note: *AMSA is responsible for civil aviation and marine SAR services within the Australian SRR. JRCC Australia is responsible for coordinating the aviation and maritime SAR response on behalf of AMSA.*

4.4.3.2 Ongoing advice to operator

Update the operator with relevant information that has been passed to JRCC Australia.

4.4.3.3 Operator advice to pilot

When relaying advice from the operator to the pilot, prefix the advice with the phrase YOUR COMPANY ADVISES.

4.4.3.4 JRCC Australia and other units

Inform JRCC Australia and, as appropriate, other units, of action taken and results of inquiries, etc. Units take such action as may be requested by JRCC Australia including:

a) accepting amended flight details on search aircraft;

b) relaying urgent SAR briefings via air-ground communications; or

c) communications and distress frequency monitoring.

4.4.4 SAR messages

4.4.4.1 SAR message

Despatch the 'Urgent SAR Message' form or ALR message as an alerting message.

Note: *The Urgent SAR Message form is contained in 'Urgent SAR Message'. The format for the ALR message is prescribed by ICAO Doc 4444-PANS ATM; however, a form able to be used to represent the ALR message during non-AFTN communication is contained in the 'International ALR Message Form'.*

See MATS 13.1.1.1 Access to forms

4.4.4.1.1 Use designator YSARYCYX

Address the international and/or domestic Alerting Message to JRCC Australia and ATS units which may be able to assist. JRCC Australia will be notified by using the designator YSARYCYX.

4.4.4.1.2 Other addressees

Include in the 'Other Information' section on the International Alerting Message the words ALSO ADDRESSED TO followed by the other addressees.

4.4.4.2 Appropriateness of message

If an Alerting Message is inappropriate, notify other ATS units and JRCC Australia by other available channels, and as the urgency of the situation dictates.

4.4.4.3 Initial alerting message

Anticipate the declaration of a phase and prepare an alerting message for prompt despatch.

Note: *If the operational situation indicates, you may confine the initial alerting message to the preliminary emergency phase advice.*

4.4.4.4 RCF messages

Only use RCF messages in the international service as described in the ICAO Doc 4444-PANS ATM.

4.4.4.4.1 Complete communication checks

Do not consider a radio communication failure to exist until the communications checks have been completed. In practice, particularly on international HF networks, this action can take up to 10 minutes or more to complete.

4.4.4.5 RCF versus ALR messages

When it is apparent that an RCF message will shortly be followed by an ALR message, do not originate the RCF message.

4.4.5 Information from third parties

4.4.5.1 Pilot reports of visual emergency signals

Report to the State or Territory Police, or as directed by local instructions, pilot reports of visual emergency signals, such as flares or ground signals.

4.4.5.1.1 Reports from aircraft engaged in SAR operations

Report to the tasking authority e.g. JRCC Australia, HQJOC-AOC, the Police or other SAR coordinating authority, reports of visual emergency signals from aircraft engaged in SAR operations.

4.4.5.2 Aircraft reported missing

Refer or transfer a caller to JRCC Australia if the information received advises that an aircraft for which flight notification has not been lodged, is missing.

4.4.5.2.1 Obtain details to pass to JRCC Australia

If the information is received by radio, obtain as many of the following details as practicable and promptly pass on information to JRCC Australia:

a) Name and contact details of person reporting;
b) Details of the missing aircraft including type, colour, registration, callsign and markings;
c) Known details of aircraft movement, including pilot’s intentions and the number of persons on board;
d) Radio communications equipment, radio navaids and survival equipment normally carried on the aircraft;
e) The pilot's name and address;
f) Aircraft owner's name and address;
g) Local action taken; and
h) Names and contacts of people who may have known the aircraft’s movements.

4.4.5.3 Reports of distressed or crashed aircraft

If information is received that an aircraft is in distress or has crashed, obtain as many of the following details as practicable:

a) Name, address and telephone number of person reporting;
b) Location and time of observation;
c) Full directions on how to reach the scene of the crash emergency;
d) Details of the incident, including type, colour, registration, markings and heading of aircraft;
e) Condition of passengers and crew;
f) Weather conditions;
g) Local action taken; and
h) Names and addresses of witnesses.

4.4.5.3.1 Declare distress phase

Upon receiving information regarding aircraft in distress or aircraft that may have crashed:

1) declare a Distress phase;
2) notify JRCC Australia; and
3) take any local action which may be possible.

4.4.5.4 Reports from the public

Reports can be received from the public regarding a particular SAR action. Record the caller's name and contact number and direct the caller to contact JRCC Australia.

4.4.6 Handover of SAR responsibility

4.4.6.1 Handover to Joint Rescue Coordination Centre, Australia (JRCC Australia)

When responsibility for SAR action is being transferred to JRCC Australia, make formal advice of the transfer:

a) verbally by the relevant SM, System Supervisor or Military Supervisor by stating: 'REQUEST JRCC AUSTRALIA ACCEPTS RESPONSIBILITY FOR SAR ACTION ON (callsign)';
b) as necessary, in writing:
   i) by completion of an Urgent SAR Message form (See Clause 13.1.1.1); or
   ii) by other means such as email or fax; and
c) by JRCC Australia confirming acceptance of responsibility for SAR action by stating: 'JRCC AUSTRALIA ACCEPTS SAR RESPONSIBILITY FOR (*callsign*)'.

Note: *When transfer is completed by other SAR alerting agencies, JRCC Australia will advise if there are any other requirements.*

See MATS 13.1.1.1 Access to forms

4.4.6.2 Handover to HQJOC-AOC

When responsibility for SAR action on any military aircraft is being transferred to HQJOC-AOC, make formal advice of the transfer:

a) verbally using the phrase 'REQUEST HQJOC-AOC ACCEPTS RESPONSIBILITY FOR SAR ACTION ON (*callsign*)';

b) as necessary, in writing:

   i) by completion of an Urgent SAR Message form (See Clause 13.1.1.1); or

   ii) by other means such as email or fax; and

c) by HQJOC-AOC confirming acceptance of responsibility for SAR action by stating: 'HQJOC-AOC ACCEPTS SAR RESPONSIBILITY FOR (*callsign*)'.

See MATS 13.1.1.1 Access to forms

4.4.6.2.1 Contact numbers

Contact HQJOC-AOC using the following:

Details	**Number**
Primary Joint Personnel Recovery (JPR) (Business hours)	02 6128 4849 or 02 6128 4850
Secondary Air and Space Operations Centre (AOC)	02 6128 4810
Tertiary HQJOC - JOR Watch Commander (24 hours/7 days)	02 6128 4333
Primary Email	aocwatch@defence.gov.au
AFTN	Not available

4.5 Reporting

4.5.1 Report requirements

4.5.1.1 Submitting report

If you are aware that an accident, incident or event has occurred, ensure that applicable immediate notification requirements are met and an appropriate report is submitted.

See AIP ENR 1.14.

4.5.1.1.1 Report as soon after occurrence

The ATSO holding Operational Command Authority/Military Supervisor responsibility, being aware of an occurrence, ensures that it is reported as soon as possible (but no later than the end of shift).

Note 1: *Occurrence reporting by an agent outside ATS, such as a pilot, an airline company representative or a military unit does not negate ATS responsibility to report.*

Note 2: *An awareness that an occurrence has been or will be reported by another ATS Unit does not preclude any ATS Unit from additional reporting when it is considered warranted.*

4.5.2 Miscellaneous reports

4.5.2.1 Bushfires

On receiving a report of a bushfire that you believe is not known to the appropriate authority, pass the information:

a) to the authority specified in local instructions by the most expeditious method, assigning the priority indicator DD to the message; and
b) to the appropriate Meteorological Watch Office (MWO).

4.5.2.2 Marine incidents

Pass all details of a marine emergency e.g. sighting of a vessel in distress, to JRCC Australia or as directed in local instructions.

4.5.2.3 Malicious radio transmissions

Report unauthorised (malicious) radio transmissions to aircraft as detailed in local instructions.

4.5.2.4 Oil spill notification

Notify maritime oil spill reports to AMSA.

4.6 Department of Home Affairs Incident Control Directions

4.6.1 Responsibilities

4.6.1.1 Relaying controller

Relaying controllers may transmit Department of Home Affairs Incident Control Directions with less formal phraseology than specified by the Department of Home Affairs (e.g. when there are language difficulties), taking care not to alter the intent of the direction.

Note: *ATS is not responsible for ensuring that a pilot complies with the direction.*

4.6.1.2 Communication

Use fixed communication lines between ATS units, or telephone where the lines are not available.

4.6.1.3 Confirm authority

If in doubt about the identity of the duty ATMD relaying the direction, call back to confirm the authority of the direction.

5 Special operations

5.1 Special operations

5.1.1 Release of meteorological balloons within 3 NM of a controlled aerodrome

5.1.1.1 BoM - Letter of Agreement

For BoM meteorological balloon releases within 3 NM of a controlled aerodrome, detail specific coordination procedures and responsibilities in a Letter of Agreement (LoA) between ATS and BoM.

Note: *For non-automatic balloon launches, the LoA may vary the time interval required for extra coordination following a delayed release to account for local circumstances.*

5.1.1.2 Delay non-automatic balloon launch

You may delay a non-automatic balloon launch when there is a possibility of conflict with aircraft taking off, landing or conducting a go-around.

5.1.1.3 Directed advice

Advise aircraft that may be operating in close proximity to the balloon below 2000 FT AGL.

See also MATS 9.1 Provision of FIS

5.1.1.3.1 Automatic meteorological balloon launching system (AMBLS)

For automatic balloon launches, specify in local instructions any procedures required to ensure this directed advice is provided to affected aircraft.

5.1.2 Customs surveillance flights

5.1.2.1 Pass messages

Pass messages originated by Customs to surveillance aircraft in flight.

Note: *Messages originated by Customs and intended for surveillance aircraft in flight are addressed to the ATS unit in communication with the aircraft.*

5.1.2.2 Report suspicious circumstances

Report aircraft considered to be operating in suspicious circumstances to Customs.

Note: *The precise meaning of 'suspicious circumstances' is left to the discretion of the ATSO becoming aware of a particular occurrence.*

5.1.2.2.1 Examples of suspicious circumstances

Examples of activities which should be notified include reports of:

a) aircraft signalling to the ground;
b) objects seen to be dropped from aircraft;
c) aircraft operating at night without navigation lights;
d) unusual activity at aerodromes e.g. operation of aircraft not normally seen in the area, and thefts of aviation fuel;
e) recent activity at remote airstrips e.g. fire breaks, recent grading, grass cutting, and positioning of fuel drums;
f) movements of unidentified itinerant aircraft, especially if there is a suggestion that they are travelling from or to an overseas destination;
g) unexplained activity at remote airstrips;
h) aircraft operating from sites not recognised as aerodromes e.g. beaches, roads, etc; and
i) any other matters indicating the likelihood of illegal activity gained in the course of an ATS unit’s normal functions, for example:
    i) unexplained elements in a flight plan;
    ii) aircraft making unscheduled landings or diversions from route without adequate explanation; and
    iii) marked discrepancies in flight times.

5.1.2.2.2 Other unusual or suspicious activities

Report any other unusual or suspicious activities to Customs, including:

a) illegal fishing in the 200 NM Australian Fishing Zone;
b) smuggling of drugs and other prohibited goods;
c) unauthorised landings (by sea or air) that could introduce diseases or pests;
d) illegal immigrants entering Australia without authority;
e) threats to the well-being of the Great Barrier Reef including pollution, illegal fishing and removal of species; and
f) unusual activities in remote areas (including habitation, camp-sites, new coastal airstrips, wrecks, isolated vehicles, wheel tracks and changes to permanent features).

5.1.2.3 Surveillance report (SURVEREP) procedure

Relay SURVEREP from Customs or RAAF aircraft engaged in surveillance flights to the Australian Maritime Security Operations Centre:

a) on 1800 041 800; or
b) to YSCBCUST DD priority.

5.1.2.3.1 Identifier

Insert the identifier SURVEREP in the text immediately following the aircraft identification.

5.1.2.3.2 Reports from other sources

Use the SURVEREP procedure to notify Customs of reports originated by non-Customs aircraft or ATS units.

5.1.3 Police operations

5.1.3.1 POLAIR RED

Give police aircraft priority when they are engaged in situations where life is threatened. In such cases the police will use the POLAIR RED (or FEDPOL RED) callsign.

5.1.3.2 When POLAIR RED (or FEDPOL RED) is inappropriate

Where, due to the type of operation, the use of the POLAIR RED (or FEDPOL RED) callsign is inappropriate, Police Operations Centres may negotiate special procedures with ATC. Where possible, these procedures are promulgated in local instructions.

5.1.3.3 Callsigns

The following table lists callsigns used by the Police and Federal Police:

Police or Federal Police	Situation	Pilot phraseology
Police		POLAIR (*number*)
	Police in life threatening situations	POLAIR RED PRIORITY on first contact, then POLAIR RED POLAIR RED (*number*)
Federal Police		FEDPOL (*number*)
	Federal Police in life threatening situations	FEDPOL RED PRIORITY on first contact, then FEDPOL RED FEDPOL RED (*number*)

5.1.4 Unlit or masked external lighting on military aircraft

5.1.4.1 Responsibility and action

Pilot and ATS actions for unlit or masked external lighting on military aircraft:

Responsibility	Action
Pilot	Advises the area of operations (including the operating band of levels) in the flight notification.
ATC	Advise aircraft in a controlled airspace environment of the unusual military activity.
ATC	Separate according to local procedures determined by the night vision device user and the airspace controlling authority.
NOF	Issue NOTAM, as directed, to advise other airspace users of unusual military activity outside controlled airspace.

5.1.5 Military Non-Continuous Communication (NOCOM) flights

5.1.5.1 Situation

Certain military flights may be unable to maintain continuous communications and make normal position reports.

5.1.5.2 Flight planning

Pilots are required to annotate Item 18 of the flight plan using the abbreviation NOCOM for flights intending to operate NOCOM and include:

a) the number of minutes after ATD that NOCOM will commence to the number of minutes after ATD that NOCOM will cease;

b) the agency for NOCOM cancellation; and

c) the associated frequency.

See AIP

Note: *NOCOM aircraft normally attempt to monitor the appropriate frequency including HF.*

5.1.5.3 Cancellation time

Regard the NOCOM cancellation time as a scheduled report time for SAR purposes, not a SARTIME.

5.1.5.4 SAR responsibility

The unit nominated in the NOCOM advice is responsible for SAR.

5.1.5.5 Area of operation

Military aircraft normally operate NOCOM in military Restricted/Military Operating Areas and Class G airspace only. ATC approval is required prior to flight planning NOCOM in controlled airspace.

See MATS 10.2.1.2 Maintain direct communications

5.1.5.6 Reporting requirement

NOCOM details and requests may be passed while the aircraft is still in controlled airspace. The requirement for normal reporting remains until the aircraft is in Class G airspace (or other airspace as approved) and reports going NOCOM. Where possible, meet pilot requests for early transfer.

5.1.6 Military Maritime Surveillance flights

5.1.6.1 Flight information

Refer to Flight Information Handbook Australia (FIHA).

5.1.7 Military Special Requirements flight

5.1.7.1 Applicability

Special requirements flights apply to operations of military aircraft with:

a) limited COM/NAV equipment;
b) limited fuel endurance; or
c) requirements as decided by the military authority.

Note: *In all cases, the flight plan will indicate 'MILSPECREQ'.*

5.1.7.2 Flight clearances

Issue clearances to special requirements flights that, as far as possible, permit the operation to proceed in accordance with the submitted flight notification, including:

a) planned routing or prescribed alternative routing;
b) pilot-selected cruising levels; and
c) unrestricted climb to cruising level, with no level restrictions.

5.1.7.2.1 Start approval

Start approval is required.

5.1.7.2.2 Approval for initial climb

Coordinate with all ATC units affected by the aircraft's initial unrestricted climb before approving the aircraft to start.

See MATS 6.3.4.2 All ATS units to all ATS units

5.1.7.3 Occurrence Report

Submit an Occurrence Report if, after engine start, there are any ATC initiated instructions requiring changes to the MILSPECREQ aircraft’s route or cruising level.

5.1.7.4 Conflictions

When a MILSPECREQ aircraft conflicts with higher priority operations, negotiate with the pilots to determine who can accommodate an amendment or restriction. Where possible, give the other aircraft the necessary instructions to maintain separation.

5.1.7.5 Pilot advice cancelling MILSPECREQ

Provide standard priority on pilot advice that MILSPECREQ priority is no longer required.

5.1.7.6 Deviations

Avoid issuing instructions requiring an aircraft, cleared to proceed according to flight notification, to deviate from its plan unless aircraft safety may be compromised.

5.1.8 Military Authority Assumes Responsibility for Separation of Military Aircraft

5.1.8.1 Overview

Certain military operations require separation standards or procedures not generally available for routine civil and military flights (e.g. aerial refuelling and towed banner operations). MARSA is a procedure whereby military pilots undertake to self-separate where it would normally be the responsibility of ATC.

5.1.8.2 MARSA initiation

Do not initiate MARSA.

5.1.8.3 MARSA approval

Approve initiation of MARSA procedures when ready to permit pilot self-separation and there are no conflictions with non-participating traffic.

5.1.8.4 Separation

Provide standard separation between aircraft engaged in MARSA operations and all non-participating aircraft.

5.1.8.4.1 At completion of operations

MARSA continues to apply to participating aircraft until a level separated from the MARSA limits has been assigned and reached, unless it is known that all aircraft operating within MARSA are separated by an ATC standard that can be maintained.

5.1.8.4.2 MARSA block levels

Where a required block level extends beyond the limits of controlled airspace issue a clearance to include only that portion within controlled airspace.

5.1.8.5 Rendezvous assistance

On request, you may provide advisory ATS surveillance system derived information to assist participating MARSA aircraft to rendezvous.

Note: *The ultimate responsibility for separation remains with the pilots.*

5.1.8.6 MARSA clearances

Ensure MARSA participants are aware of the operating limits when issuing clearances to commence and terminate. To achieve this, include the phrase 'MARSA (*callsign*)' in the clearance for any aircraft to participate in MARSA, and during termination of the procedure, as shown in the following table:

Situation	Example ATC phraseology
To commence MARSA operations (each aircraft)	MAINTAIN BLOCK FL270 TO FL290, MARSA (*callsign*)
When MARSA operations are complete	CLIMB TO FL330, MARSA (*callsign*)
At conclusion of MARSA operations and when standard separation is being applied between aircraft	MARSA TERMINATED

5.1.9 Due regard operations

5.1.9.1 ATS not responsible

ATS is not responsible for:

a) ATS to due regard aircraft; and
b) separation between due regard aircraft and other aircraft.

5.1.9.2 Pass information

Notify other affected ATS units and aircraft when first becoming aware of due regard operations.

5.1.9.3 Notification

Do not expect that due regard operations will always be notified.

Note 1: *State aircraft that are operating with due regard are not complying with Air Traffic Control rules and procedures but rather undertaking responsibility for collision avoidance with other traffic complying with Air Traffic Control rules and procedures.*

Note 2: *State aircraft of any country may operate due regard outside the territorial limit of Australia. Australian territory is defined as that area over land and sea out to 12 NM from the coast.*

Note 3: *Australian state aircraft may operate due regard and foreign state aircraft must operate in accordance with their authorisation which may include due regard operations.*

Note 4: *Military aircraft operating due regard may squawk 7300.*

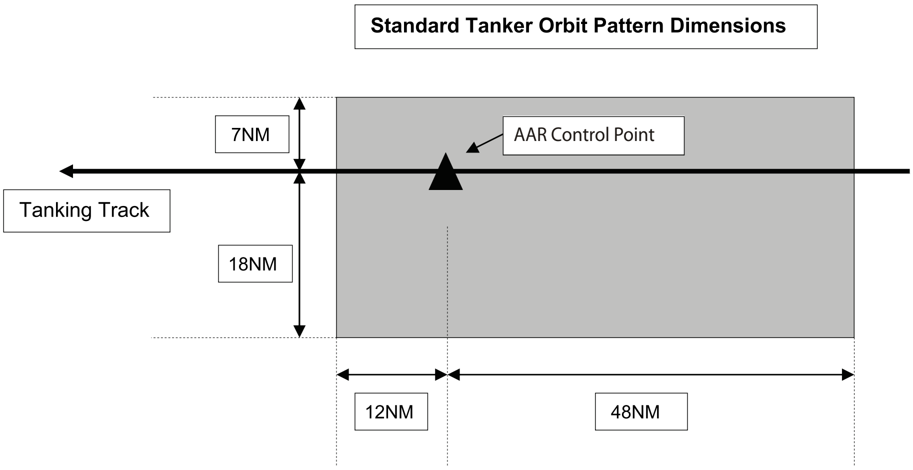
5.1.10 Military Air-to-air refuelling

5.1.10.1 Use tanker approvals

When calculating lateral separation, apply tolerances to the defined areas or routes based on the navigation approvals of the tanker.

5.1.10.1.1 Standard tanker orbit pattern

A standard tanker orbit pattern is defined by the following dimensions:



5.1.10.2 Adjusting heading or level

When AAR has commenced, obtain agreement from the tanker before adjusting the aircraft's heading or level.

5.1.10.3 Priority once AAR is complete

For AAR involving MILSPECREQ aircraft, confirm the MILSPECREQ status with the pilot when AAR is complete.

See MATS 5.1.7.5 Pilot advice cancelling MILSPECREQ

5.1.11 Electronic interference

5.1.11.1 Suspected interference

Advise the supervisor if Defence activities are suspected of causing electronic interference to other airspace users. The supervisor is responsible to assess the situation and, if necessary, authorise the Cease Buzzer procedure.

5.1.11.1.1 Cease Buzzer - aircraft activities

When authorised by the supervisor, transmit the phrase '(*callsign*) CEASE BUZZER, CEASE BUZZER, CEASE BUZZER' to the suspected aircraft. Coordinate with the responsible agency where the suspected aircraft is not in direct communications.

5.1.11.1.2 Cease Buzzer - ground-based activities

For ground-based GNSS jamming activities contact the responsible Defence agency with the Cease Buzzer request.

5.1.11.1.3 Submit a report

Submit an Occurrence Report when the Cease Buzzer procedure is applied.

5.1.12 Flight Inspection aircraft

5.1.12.1 Compliance and planning

Note: *Flight Inspection aircraft may plan and operate contrary to CAOs and AIP.*

5.1.13 Fireworks

5.1.13.1 Planning for firework activities

When consulted for planning of firework activities that will occur within controlled airspace, complete a risk assessment to determine the impact on ATS. Considerations may include whether:

a) the activity will affect traffic flow or traffic management; and

b) ATC permission is required.

Note 1: *ATC permission is required for firework activity that may affect the movement area or the approach/departure path of a runway at a controlled aerodrome.*

Note 2: *CASA approval is required for firework activities above 400 FT AGL in any airspace.*

5.1.13.1.1 Fireworks operator requests

If contacted directly by a fireworks operator at the planning stage, refer the operator to CASA.

5.1.13.2 Providing permission

When granting permission for firework activities to commence, ensure the following has occurred or will occur prior to commencement of the display:

a) Advice to affected pilots of pending activity; and

b) The facilitation of pilot requests to exit or avoid the area.

Note: *ATC are not responsible to separate or segregate aircraft from firework activities.*

See MATS 9.1.3 Transmission of information

See MATS 2.5.2.5 Journal entries

5.1.14 Model aircraft

5.1.14.1 Model aircraft approvals

Approve Model aircraft operations in accordance with the RPAS approval process.

See MATS 5.3.1 RPAS Approvals

5.1.14.1.1 Additional contact

Consider placing an additional requirement on model aircraft operators to contact the tower:

a) at least 15 minutes before the intended operation; and

b) on completion.

5.2 Parachuting

5.2.1 PJE clearances and traffic information

5.2.1.1 Clearance

Provide clearances authorising parachute descents through Restricted/Military Operating Areas, or Classes A, C or D airspace.

5.2.1.1.1 Individual clearances

Unless operating under a blanket clearance specified in a Letter of Agreement, issue an individual clearance for each drop.

5.2.1.2 Drop clearance cancellation

Check if any parachutists have left the aircraft prior to cancelling a drop clearance.

Note: *A drop clearance cannot be cancelled once parachutists have left the aircraft.*

5.2.1.3 Traffic information at the same drop zone

Provide traffic information between PJE aircraft operating in controlled airspace at the same drop zone.

Note: *Pilots of PJE aircraft at the same drop zone are responsible for separation between their aircraft and are solely responsible for separation between PJE aircraft and parachutists.*

5.2.1.4 Traffic information at drop zones in close proximity

Pass traffic information to participating PJE aircraft in controlled airspace where:

a) two or more drop zones are located in close proximity;

b) the participating PJE aircraft have agreed to self-separate; and

c) parachute operator agreements are documented in local instructions.

5.2.1.4.1 Separation at pilot request

On pilot request, separate a PJE aircraft from other parachute operators at drop zones located in close proximity.

Note: *The participating pilot will continue to self-separate until a separation standard is established and can be maintained.*

5.2.1.5 Traffic information for parachute drop

Provide traffic information for parachute descents through Class E and Class G airspace:

a) to PJE aircraft on IFR, known VFR and observed ATS surveillance system position symbols; and

b) to non-PJE IFR aircraft and aircraft using IFR Pick-up about PJE aircraft.

5.2.2 Separation during PJE

5.2.2.1 Lateral limit of parachutist operations

Base separation on a requirement for parachutists to be dropped and remain within 1 NM of the centre of the drop zone.

5.2.2.1.1 Non-standard drop area dimensions

When a drop area of non-standard dimensions is requested by the PJE pilot and approved by ATC, define the new dimensions in a clearance and assign responsibility to the parachutists to remain within the non-standard drop area.

5.2.2.1.2 Drop area - Letter of Agreement

You may define the drop area in a Letter of Agreement between ATS and the PJE operator.

5.2.2.2 Separation

Separate parachutists and non-PJE aircraft except in Class E or Class G airspace.

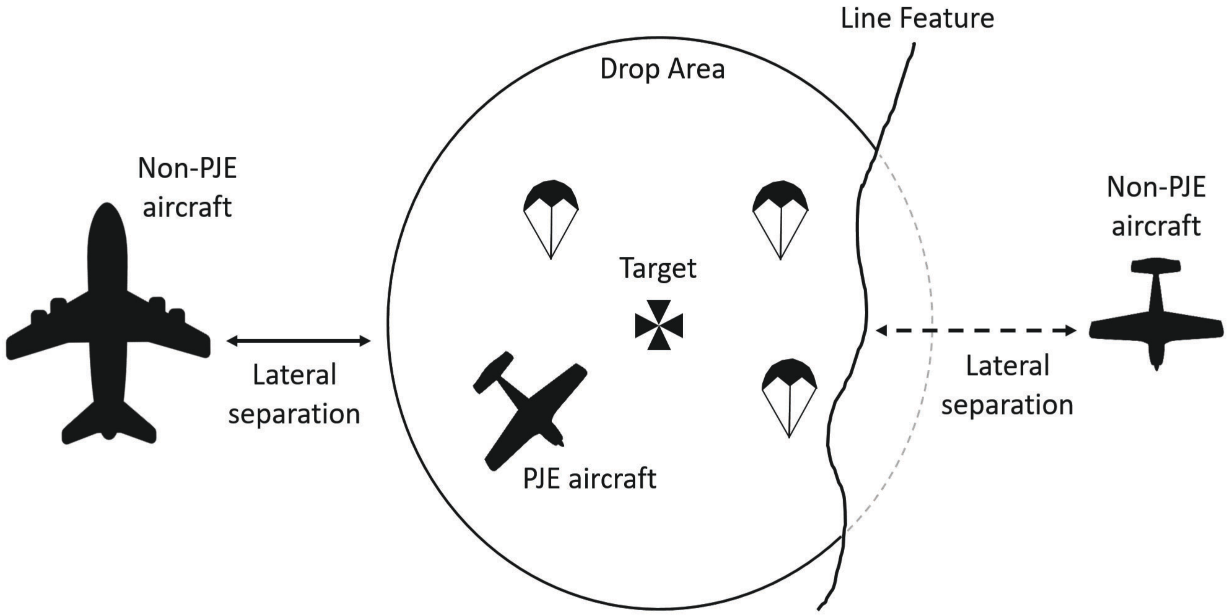
Note 1: *Pilots are responsible for making sure airspace below CTA is clear before dropping parachutists.*

Note 2: *Pilots are required to notify ATC when all parachutists are on the ground.*

5.2.2.3 Drop area separation

Except as specified in Clause 5.2.2.3.1, separate non-PJE aircraft from the drop area until:

a) receipt of advice that all parachutists are on the ground; or
b) the PJE pilot reports that all parachutists are clear of controlled airspace.



See MATS 10 Separation

See MATS 5.2.2.4 Use of a line feature

See MATS 5.2.2.3.1 Parachutists below an altitude

5.2.2.3.1 Parachutists below an altitude

ATC may separate non-PJE aircraft from parachutists that have been established below an altitude:

a) as reported by the PJE pilot; or
b) based on the verified pressure altitude of the PJE aircraft provided that:
   i) the PJE aircraft is cleared to operate not below the highest parachutist using the phrase '(*callsign*) CLEAR TO DROP, DESCEND TO (*level*) (*or* LEAVE CONTROLLED AIRSPACE DESCENDING), NOT BELOW PARACHUTISTS [UNTIL OUTSIDE CLASS (*letter*) AIRSPACE (*or* UNTIL BELOW (*level*))]'; and
   ii) this is specified in a Letter of Agreement between ATS and the PJE operator.

5.2.2.4 Use of a line feature

You may separate non-PJE aircraft from a drop area defined by a line feature provided:

a) the target is at least 200 m away from the closest point of the line feature;

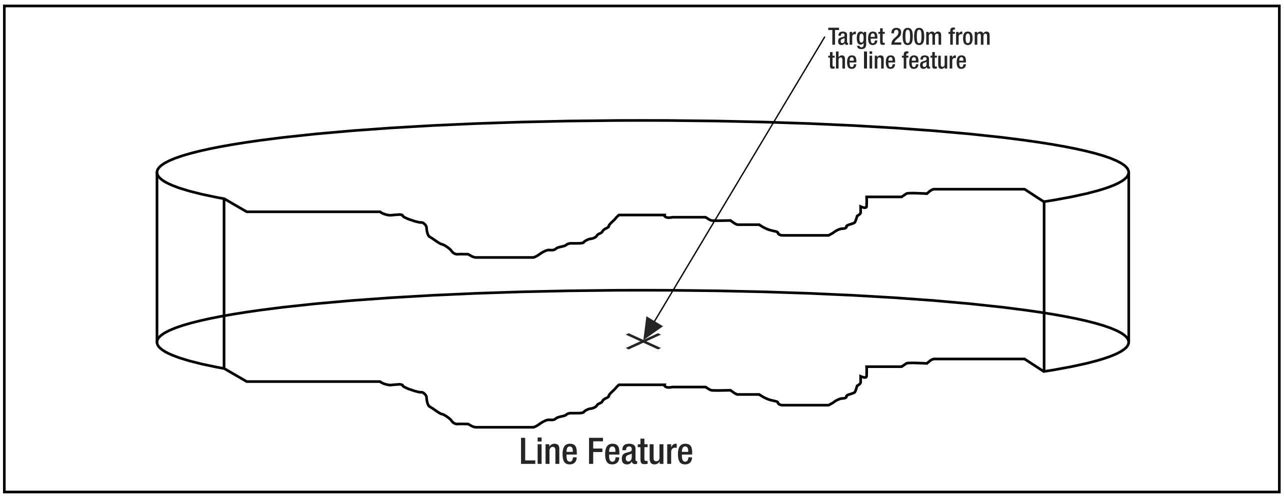
b) the drop commences from 10 000 FT or below;

c) the drop occurs by day in VMC; and

d) the parachutists and service provider agree and the procedure is detailed in a Letter of Agreement between ATS and the PJE operator.

5.2.2.4.1 Use of geographical fix

You may assign responsibility to parachutists to remain within certain limits of and on a particular side of a geographical fix e.g. 'PARACHUTISTS REMAIN WITHIN (*distance*) OF THE TARGET AND TO THE NORTH OF (*line feature*)'.



5.2.2.4.2 Briefing

Brief parachutists on the use of the line feature:

a) prior to the exercise (preferred); or

b) through the PJE aircraft pilot.

5.2.2.5 PJE aircraft not entering a Restricted Area

You may assign a PJE pilot responsibility for not entering an adjacent active Restricted Area(s) when:

a) the Restricted Area is classified as:
   i) non-flying; or
   ii) flying, when no ATC services are provided;
b) the PJE aircraft is:
   i) a VFR flight under its own navigation;
   ii) conducting PJE operations; and
   iii) at or below FL150;
c) the PJE pilot requests clearance including the phrase 'CLEAR OF RESTRICTED AREA (*number*(*s*)), VISUAL';
d) you include the phrase 'RESTRICTED AREA (*number*(*s*)) ACTIVE, REMAIN CLEAR' with the clearance; and
e) the procedure is detailed in a Letter of Agreement between ATS and the PJE operator.

Note: *The PJE aircraft is not required to maintain a minimum distance from the Restricted Area.*

5.2.2.5.1 Vectoring prohibited

Unless separated from the Restricted Area, do not vector a PJE aircraft when the PJE pilot is responsible for not entering the Restricted Area.

5.2.2.5.2 MATS Supp entries

Detail in MATS Supps:

a) locations where Airservices may assign a PJE pilot responsibility for not entering an adjacent active Restricted Area where Defence is the controlling authority; and
b) the procedure for determining when ATC services are provided within Restricted Areas designated as military flying or military flying/non-flying.

See MATS 2.4.3.4 Non-participating aircraft

See MATS 10.2.2.1 Half the applicable standard

5.2.2.5.3 PJE not entering other airspaces

You may also apply the standards and/or conditions for PJE not entering a Restricted Area to Military Operating Areas.

5.2.2.6 Visual separation - PJE aircraft for parachutists

Only assign the PJE aircraft responsibility for separation between the parachutists and a non-PJE aircraft. Due to wake turbulence, the non-PJE aircraft must be 7000 kg MTOW or less.

5.2.2.7 Visual separation with parachutists - Tower

Tower may provide visual separation, between parachutists and non-PJE aircraft:

a) when the non-PJE aircraft is 7000 kg MTOW or less; or

b) in the circuit area, provided ATC are satisfied that parachutists will remain clear of wake turbulence.

5.3 Remotely Piloted Aircraft Systems (RPAS)

5.3.1 RPAS Approvals

5.3.1.1 RPAS authority

The following authorities provide permission for RPAS operations. More than one authority may apply:

RPA operating location	Authority
A location where the RPAS could capture images of a Defence establishment	The relevant Defence base authority
Within Restricted areas	Controlling Authority
Above 400 FT in controlled airspace, or within the 'no-fly zone' of a controlled aerodrome	Responsible ATC unit

Note 1: *Permission for RPAS operations within Restricted area or controlled airspace may be granted as part of an automatic approval issued through a CASA-verified drone safety app.*

Note 2: *A CASA area approval may also be required.*

5.3.1.2 Approving RPAS operations

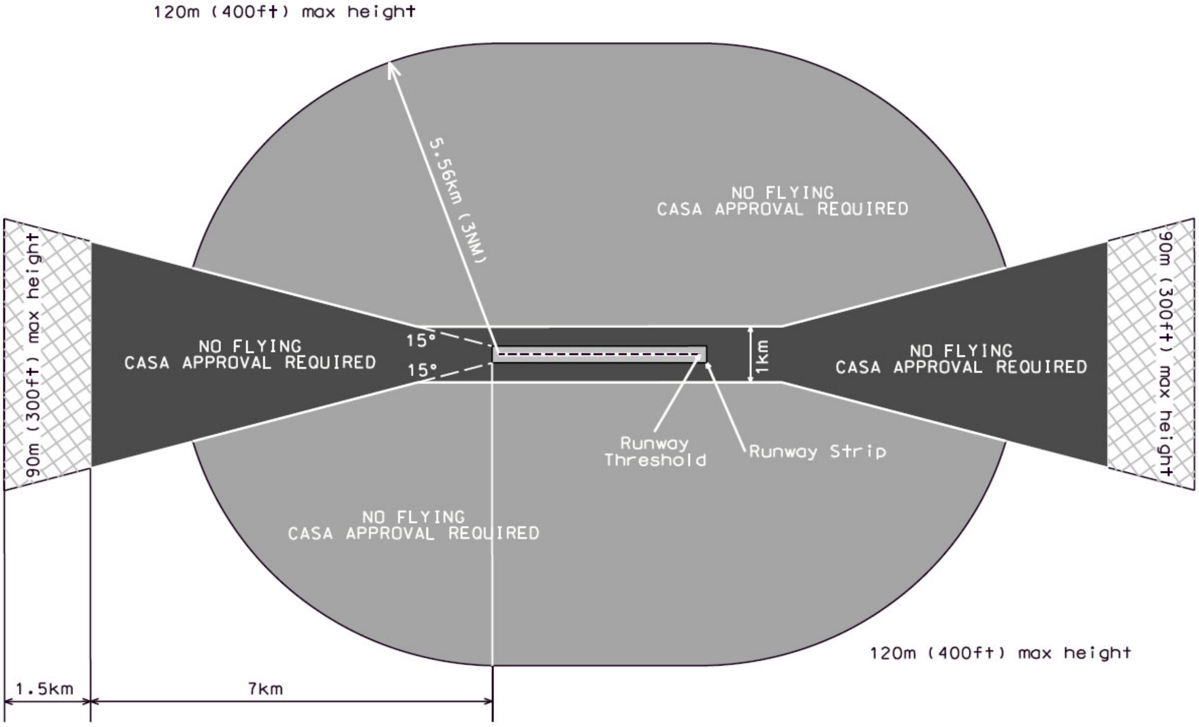
Subject to this section, the relevant ATC unit may provide permission to an RPAS operator when the RPA will operate within controlled airspace:

a) above 400 FT; or

b) within the 'no-fly zone' of a controlled aerodrome.

Note: *The RPAS operator is responsible to obtain the required instrument of approval from CASA.*

See MATS 5.3.1.3 RPAS approval process



5.3.1.2.1 Exception - outside flight paths

ATC approval is not required for RPAS operations in controlled airspace that are:

a) at or below 400 FT and outside the 'no fly zone'; or

b) tethered in accordance with CASR Part 101 MOS.

5.3.1.2.2 Exception - model aircraft and micro RPA

A micro RPA or a model aircraft that weighs 250 g or less may operate within 3 NM of the runway centreline without an approval, provided the operation is below 400 FT and does not enter the approach and departure paths without ATC permission.

5.3.1.3 RPAS approval process

Process applications to operate an RPA within the 'no-fly zone' of a controlled aerodrome as follows:

1) CASA or the relevant Defence unit will forward the application and supporting documentation to the relevant Tower and/or TCU; and
2) The responsible ATC unit must:
   i) assess the RPAS operation;
   ii) where the operation will affect adjacent airspace, coordinate with other affected units prior to approval; and
   iii) advise CASA or the Defence unit of conditions or constraints required for the RPAS operation, including advice of any operation that cannot be facilitated.

Note 1: *Where required, you may request additional supporting information, explanation or detail from CASA or the Defence unit.*

Note 2: *Defence RPAS are defined as 'State aircraft' and do not require a CASA approval or instrument to operate.*

Note 3: *Defence RPAS operations on Defence establishments have established procedures and agreements with Defence ATC.*

5.3.1.3.1 Defence exemption

Defence ATC units may issue approvals directly to RPAS operators in accordance with Defence Instructions and an associated signed CASA Instrument. Clause 5.3.1.5 does not apply to this approval process.

See MATS 5.3.1.5 Signed Instrument from CASA

5.3.1.4 Approval format

Permission may be granted in the form of:

a) a Letter of Agreement (LoA) with each RPAS operator in the case of enduring or complex operations; or
b) an email with, and/or attachment to, the CASA application form.

5.3.1.4.1 Approval content

Regardless of format, the permission must include sufficient detail to ensure operational safety, including relevant items from the following:

a) operator details and contact information (primary and secondary phone, plus email);
b) RPAS details (type, weight and brief description);
c) date, times/validity periods with alternatives if applicable;
d) a description of the area of operations (AO) using lat/long, feature, geographic location etc., and preferably with a map;
e) operating height (FT AGL or AMSL);
f) any specific operating conditions or restrictions;
g) ATC frequency/broadcast requirements; and
h) procedures for abnormal operations (lost link, escaped RPAS, communication failure).

5.3.1.5 Signed Instrument from CASA

Except for RPAS operations that have been issued an automatic approval through a CASA-verified drone safety app, do not allow a civil RPAS operation to proceed until CASA has forwarded a signed Instrument with the matching application reference number to the relevant Tower/TCU.

Note 1: *CASA will also provide the Instrument to the RPAS operator.*

Note 2: *Automatically approved RPAS operations act under a generic CASA Instrument and are not notified to ATC.*

5.3.1.6 ATC clearance for RPAS operations

Only issue a clearance for RPA:

a) subject to separation;
b) operating within controlled airspace above 400 FT; or
c) operating within an active Restricted Area.

5.3.2 RPAS surveillance

5.3.2.1 RPAS codes

When surveillance is required, instruct transponder equipped RPAS to squawk:

a) 7000 (generic); or
b) discrete code.

Note: *When there is a Lost Link between the RP and RPA, the RPA may automatically select 7400.*

See MATS 4.2.22.1 Lost Link

5.3.3 RPAS separation

5.3.3.1 Separate RPAS

Separate RPAS from other aircraft, using the separation standards applicable to manned aircraft when:

a) the RPA operation is subject to ATC permission;
b) the RPAS is capable of presenting real time navigational information using approved navigation systems; and
c) continuous two-way communication is maintained between the RP and the ATC unit.

5.3.4 RPAS segregation

5.3.4.1 Segregate RPAS

Segregate RPAS from other aircraft when the RPAS is subject to ATC permission but does not meet the separation requirements of Clause 5.3.3.1.

See MATS 5.3.3.1 Separate RPAS

See MATS 5.3.1.2 Approving RPAS operations

5.3.4.1.1 Segregation methods for RPAS

Segregate RPAS using methods in this section or otherwise approved by ATMSL (civil) or SO1 CM ANSP (Defence).

5.3.4.1.2 Exception - automatically approved operations

Do not apply ATC segregation to RPAS operations that have been issued automatic approval through a CASA-verified drone safety app.

Note: *Automatically approved RPAS operations are segregated from other operations using collision risk modelling and are not notified to ATC.*

5.3.4.2 Segregation methods for RPAS

Segregate manned aircraft from RPAS operating within Visual Line of Sight (VLOS) using the following methods:

Segregation method	Conditions
Visual (ATC)	a) The RPAS is operating at or below 400 FT AGL; b) The distance to which the RPAS is visible has been established and can be maintained; and c) Segregation is in accordance with the requirements of MATS 10.7 Visual - ATC.
Lateral	When applying the lateral segregation methods below, the RPAS must be operating at or below 400 FT AGL: a) Use geographic features provided: i) RPAS operating area is laterally contained within defined geographical limits; ii) the geographic feature provided to the RPAS operator is within 800 m of the operation; iii) the geographic feature used by the RPAS operator, or geographic features clear of the RPAS operating area, are available or displayed to the ATC; and iv) the geographic feature for the manned aircraft is applied in accordance with MATS 10.4.2.1, 10.4.6.3 or 10.4.6.4a); or b) Apply the relevant ATS surveillance system separation minimum to the RPAS operating area.

<table>
<tr><th>Segregation method</th><th>Conditions</th></tr>
<tr><td>Vertical</td><td>When applying the vertical segregation methods below, the RPAS must be operating at or below 400 FT AGL and the manned aircraft must always be above the RPAS:
a) For DJI RPAS using on board altimetry, apply a buffer of 500 FT between the manned aircraft and the RPAS; or
b) Restrict the RPAS to a height below an object of known fixed elevation AMSL and within 800 m horizontally of the RPAS operation e.g. a crane or building, and apply a buffer of 500 FT between the manned aircraft and the object elevation.</td></tr>
<tr><td>Containment below aerodrome Obstacle Limitation Surface (OLS)</td><td>The RPAS is operating at or below 400 FT AGL, and is:
a) tethered and below the relevant OLS height;
b) restricted to a height below an object of known fixed elevation, within close proximity, which is below the OLS; or
c) restricted to a height AMSL or AGL that is below the OLS, using on-board altimetry from:
i) laser or RTK/D-RTK systems, (any manufacturer); or
ii) DJI non RTK systems only, corrected from the table below. Apply the correction to the permitted AGL height of the operation:
<table>
<tr><th colspan="3">Corrections</th></tr>
<tr><th>Flight duration (mins)</th><th>Correction (metres)</th><th>Correction (feet)</th></tr>
<tr><td>≤10</td><td>5.5</td><td>17</td></tr>
<tr><td>11-15</td><td>8</td><td>26</td></tr>
<tr><td>>15</td><td>10</td><td>32</td></tr>
</table>
Note: Operation of an RPAS below the OLS, ensures that the RPAS is segregated from all arrivals and departures for the runways</td></tr>
<tr><td>Shielded Operation - above OLS</td><td>a) Within inner horizontal or conical surfaces: Operation of an RPAS within 100 m horizontally, and below the top, of a natural or man-made object; or
b) Within approach, departure or transitional surfaces: Operation of an RPAS within 100 m horizontally, and below the top, of a natural or man-made object between the RPAS and the aerodrome.
Apply an alternate segregation method when a manned aircraft requires operations within the shielded operation area e.g. operations to a helipad on top of the building around which the RPAS is operating</td></tr>
</table>

6 Coordination and communication

6.1 Communication procedures

6.1.1 Communication priorities

6.1.1.1 Preferred means

The priority, in descending order, of the preferred means of communicating with an aircraft is:

1) direct controller-pilot voice communication (VHF/UHF);
2) direct controller-pilot data link communication (CPDLC); and
3) third party HF communications.

6.1.1.1.1 Use of SATCOM voice

SATCOM voice may only be used for communications for non-routine situations where other communication means are either not available or are inappropriate for the situation.

6.1.1.1.2 Same communication means

Except for emergency messages, when a controller or pilot communicates via one communication means, the response should be via the same communication means. Acknowledge emergency message receipt by the most efficient means available.

6.1.1.2 Priority of voice and CPDLC messages

Establish communications and transmit the following categories of messages, in order of priority:

a) distress calls, distress messages and distress traffic;
b) urgency messages;
c) flight safety messages;
d) meteorological messages;
e) flight regularity messages; and
f) bushfire reports.

Note: *A NOTAM may qualify for any of the categories from c) to f) above depending on contents of the NOTAM and its importance to the aircraft concerned.*

6.1.2 Control and communication responsibility

6.1.2.1 Responsible sector

The control and communication responsibility for an aircraft entering or within airspace assigned to a specific sector or unit should be held by that sector or unit.

6.1.2.1.1 Exception - other unit communicating

A specific Controller or unit may maintain communications responsibility for aircraft:

a) crossing airspace divisions within a TCU/TMA; or

b) as otherwise described in local instructions.

See MATS 6.1.2.1 Responsible sector

See MATS 10.2.1.2 Maintain direct communications

6.1.2.2 Airspace operating frequency

Aircraft are required to remain on the frequency for the airspace in which they are operating, except:

a) in certain aspects of SAR alerting services;

b) when approved to leave the frequency; or

c) when significant operational advantage will be gained and workload, communications and equipment capabilities permit the responsible Controller to take such action as is necessary to preserve separation (if required).

See MATS 10.2.1.2 Maintain direct communications

6.1.2.3 Aircraft in another unit's airspace

If you are responsible for communication with an aircraft in another unit's airspace, coordinate all information, regarding that aircraft, with the airspace owner.

6.1.2.4 Unusual situations

For unusual situations, such as weather deviations, where an aircraft will enter the airspace of an adjacent sector for a significant duration, but control responsibility will not be transferred, an airspace release or other agreement must be negotiated between the affected sectors or units.

6.1.2.5 Responsibility for receipt of reports

The unit responsible for the FIA in which the aerodrome is located obtains arrival and departure reports.

6.1.2.5.1 Exception - aerodrome on boundary

Where an aerodrome is on the boundary, the unit responsible for the FIA where the aircraft:

a) has been operating, obtains the arrival report; or

b) will operate, obtains the departure report.

6.1.2.6 Hand-off acceptance

Workload permitting, it is the responsibility of all Controllers to accept a hand-off within a reasonable time period of the hand-off proposal.

6.1.2.6.1 Unable to accept

Where workload permits, notify the transferring Controller:

a) of any inability to accept a hand-off prior to the hand-off proposal being initiated; or

b) when there will be a delay at the sector boundary.

6.1.3 Transfer of communications

6.1.3.1 Airspace boundaries

Manage frequency changes for transiting aircraft to enable pilot communication with the unit responsible for the airspace in which the aircraft is operating.

6.1.3.1.1 Transfer point

Complete the frequency transfer:

Situation	Transfer point	Conditions
Aircraft entering controlled airspace	On or within 10 NM prior to the boundary	Applies to: a) IFR aircraft; b) aircraft using IFR Pick-up; and c) MLJ aircraft.
All other transfers	On or within 10 NM either side of the boundary	

6.1.3.2 Frequency change instruction

Instruct pilots to change frequency at the time the change is required.

6.1.3.2.1 Exception - anticipate the requirement

You may anticipate the requirement for a frequency change and relate the instruction to a place, level or time yet to be reached. In this case keep the notice to a reasonable minimum.

6.1.3.2.2 Allow for seamless transfer

As far as possible, transfer aircraft in sufficient time to permit continuous climb or descent, and to issue clearances, e.g. at least 10 NM prior to a controlled airspace lateral boundary.

6.1.3.3 Departing aircraft frequency change

Where there is no conflict between the departing aircraft and other ADC traffic, you may issue frequency change instructions preceding the take-off clearance.

6.1.3.4 Nominated departure frequency

When the departure frequency has been previously nominated (e.g. with clearance), you need only nominate the unit to be contacted in the frequency change instruction.

6.1.3.5 Transfer to issue clearances

Issue clearances on the appropriate ATC frequencies unless:

a) communications are limited; or
b) the issuing of traffic information requires the aircraft to be on a non-ATC frequency.

6.1.3.5.1 Using another ATS frequency

You may issue a clearance via another ATS frequency provided that appropriate coordination is completed.

6.1.3.5.2 Aircraft performance

Consider aircraft performance when issuing frequency change instructions to assist pilots avoid unauthorised penetration of controlled airspace.

6.1.3.6 Transferring aircraft to report in Class G airspace

Prior to an aircraft leaving controlled airspace, whenever possible facilitate early transfer to the unit providing services in Class G airspace. When control requirements make the frequency change impractical, approve the transfer as soon as possible.

6.1.4 Telephony protocols

6.1.4.1 Establishing communications

Use full radiotelephony callsigns when establishing communications.

6.1.4.2 General broadcasts

Preface general broadcasts with the words 'ALL STATIONS'.

6.1.4.3 Reply to an initial voice call

Reply to an initial voice call with:

a) identification of the calling unit;
b) identification of the called unit; and
c) STANDBY when appropriate.

6.1.4.3.1 Exception - Class D airspace

Reply to an initial voice call from an aircraft advising their intentions to enter Class D airspace with the appropriate phraseology for the circumstances.

See MATS 9.2.9.1 Clearance by establishing two-way communication

See also AIP

6.1.4.4 Initial contact with super or heavy aircraft

When responding to an aircraft's initial radiotelephony contact with each ADC and TMA controller, include the word 'SUPER' or 'HEAVY' following the aircraft callsign.

6.1.4.5 When contact is established

Once contact is established, continue communication:

a) in the mobile service, by both the ground unit and the aircraft using the aircraft identification; and

b) on other voice channels, without further identification provided there is no possibility of mistaken identity.

6.1.4.6 Avoid test interference

Avoid interfering with other frequency users when making test transmissions. Keep test transmissions to a minimum.

6.1.4.7 Test transmission format

Format test transmissions as follows:

a) identification of the station being called;

b) identification of the calling station;

c) words 'RADIO CHECK';

d) frequency if more than one frequency in use; and

e) spoken numerals, if required i.e. short count or long count, to a maximum of 10 seconds.

6.1.4.7.1 ATS test calls

When making test transmissions without another station:

a) omit the identification of the station being called; and

b) repeat the name of the calling station at the end.

6.1.4.8 Response format

Respond to a test transmission with:

a) identification of the station making the initial test transmission;

b) identification of the responding station; and

c) assessment of the readability of the test transmission.

6.1.4.9 Advising transcription requirements

When the message for the called unit requires transcription, alert the receiver to the information that will be received. Precede messages by a word identifying the type of information to be passed, for example:

a) CLEARANCE (*aircraft identification*);

b) POSITION (*aircraft identification*);

c) ROUTINE FORECAST FOR (*aircraft identification*);

d) TAXIING (*aircraft identification*); and

e) CHANGE OF LEVEL (*aircraft identification*).

6.1.4.10 Emergency messages

Precede an emergency message by a word identifying the urgency of information, for example:

a) DISTRESS..........; or

b) URGENT............

6.1.4.11 Acknowledge receipt

Add to the identification of the aircraft, the word 'ROGER' followed by the identification of the acknowledging unit if not the called unit or communication conditions are difficult e.g. 'ABC ROGER BRISBANE CENTRE'.

6.1.4.11.1 Incorrect use of ROGER

Do not use 'ROGER' to acknowledge a clearance or in lieu of 'SARWATCH TERMINATED'.

6.1.4.12 Omitting phraseology

Phraseology such as 'STANDBY', 'OVER', and 'ROGER' may be omitted when confusion is not likely.

6.1.4.13 Phrase for change of runway

Use the phrase 'CHANGE OF RUNWAY (*discrete runway designator*)' when a runway change is initiated or approved.

6.1.4.14 Classified flights and covert operations

Do not divulge information other than that which is essential for the provision of Air Traffic Services when handling classified flights and covert operations.

6.1.5 Flight progress reports

6.1.5.1 Pilot reported level

Check that the pilot reported level is consistent with the cleared level.

6.1.5.1.1 Level differences

If the reported level differs to the cleared level:

a) seek confirmation immediately; and

b) take action to ensure the accuracy of information used for ATS.

6.1.5.2 Consistency of information

Ensure that information contained in aircraft reports is consistent with information coordinated by the transferring sector or unit.

6.1.5.3 Report verification

Unless modified procedures are approved, ensure required position reports are received within expected time parameters and verified as follows:

a) Check report details and the pilot's estimate for the next position report;

b) Ensure it is consistent with the time of receipt as a whole;

c) Compare the time interval used by the pilot with a time interval based on the ground speed made good between the reporting point just passed and the previous reporting point;

d) If the variation of time intervals varies by no more than two minutes, you may accept the pilot's estimate for control purposes; and

e) If the variation is more than two minutes:

    i) ask the pilot to check and advise ground speed;

    ii) use an estimate based on advised ground speed for control purposes; and

    iii) amend subsequent reporting points accordingly.

6.2 Callsigns

6.2.1 Aircraft

6.2.1.1 Callsign confusion

When similar callsigns may cause confusion you may take action to minimise errors including:

a) emphasising certain numbers/letters;

b) repeating the entire callsign e.g. QANTAS451 QANTAS451;

c) repeating the prefix e.g. QANTAS451 QANTAS;

d) advising pilots that there are aircraft with similar callsigns on frequency; or

e) instructing pilots to use a different callsign either temporarily or for the duration of the flight.

6.2.1.2 ICAO designators

ICAO approved designators are available in the ICAO Doc. 8585 - Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services.

6.2.1.3 Airservices approved designators

The following table lists the flight plan and telephony designators approved by Airservices for use by aircraft operating agencies within the Brisbane and Melbourne FIRs.

Flight plan designator	Telephony designator	Aircraft operating agency
AE	AIRMED	Aviation Logistics Operations
AN	AEROVAN	GippsAero
CT	CONNECT	Nexus Airlines Pty Ltd
FD	FLYDOC	Royal Flying Doctor Service
FX	FOX	Fox Helicopters Pty Ltd
GX	GOLDFIELDS	Goldfields Air Services
HM	HEMS	Babcock Mission Critical Services
HT	HEAVY LIFT	Hevilift Australia (Fixed Wing) Pty Ltd
HY	HARDY	Hardy Aviation (NT) Pty Ltd
LR	LINK AIR	Vee H Aviation Pty Ltd
MB	MAROOMBA	Maroomba Airlines
MC	MACK FLIGHT	Machjet International Pty Ltd
NV	NAVAIR	Navair Flight Operations Pty Ltd
PE	PELICAN	Pelican Airlines Pty Ltd
PM	PACMED	Pacific Flight Services Pty Ltd
PP	PEARLING	Paspaley Pearling Company Pty Ltd
SH	SHARP	Sharp Aviation

Flight plan designator	Telephony designator	Aircraft operating agency
PY	SKIPPY	Skippers Aviation Pty Ltd
SP	SPARKY	Jetstream Electrical
WA	WAGGA AIR	Wagga Air Centre
WP	WESTPAC	Surf Life Saving Australia
ZD	ZEDAIR	ZephAir Australia
QJE*	Q-JET	Cobham Airline Services
RXA*	REX	Regional Express
* *Indicates ICAO approved flight plan designator.*		

6.2.1.4 Special task designators

Australian special task designators are detailed in AIP.

6.2.2 Callsigns for military aircraft

6.2.2.1 Air Force callsigns

Unit/location	Aircraft type	Single aircraft designator	Flight plan designator	Formation designator	Flight plan designator
CAF		Chieftain	CHIEF		
HQAC		Huntsman	HTMN		
HQALG Richmond		Safari	SFRI		
HQACG Williamtown		Goshawk	GHWK	Fairway	FWAY
1FTS East Sale	PC21	Roller (dual training)	ROLR	Avon Garret Gypsy Merlin	AVON GART GYPS MERL
		Charlie (student solo)	CHLE		
		Check (test flight)	CHCK		
		Ember Cygnet (student solo)	EMBR CYGT	Flashlight Lantern	FLGT LTRN
78 WG Williamtown	HAWK	Republic	RPLC	Eureka Stockade	ERKA STKD
81 WG Williamtown	F35	Empire	EMPR	Hotfoot Searcher	HTFT SRCH
82 WG Amberley		Falcon Ramrod	FALC RAMD	Demon Sonic Sword	DEMN SONC SWRD
84 WG Richmond		Atlas	ATLS		
86 WG Amberley		Titan	TITN		

Unit/location	Aircraft type	Single aircraft designator	Flight plan designator	Formation designator	Flight plan designator
92 WG Edinburgh	P3	Striker	STKR	Neptune	NPTN
	P8	Blackcat	BLKT	Trident	TRDT
1 SQN Amberley	F18S	Buckshot	BUCK	Cannon Carbine Carnage Colt Pistol	CANN CARB CRNG COLT PSTL
2FTS Pearce	PC21	Viper Sierra (trainee solo)	VIPR SIRA	Dugite Sabot Salvo Samba Slingshot Snake eye Stinger Vampire Voodoo Vortex Vulcan Valiant Vanguard Vantage Vengeance Vixen	DUGT SBOT SLVO SAMB SLNG SNKE STGR VAMP VODO VORT VULC VALT VNGD VANT VENG VIXN
		Tango (test sortie)	TANG	Tattler Tawny Teal Terek Triller	TATT TWNY TEAL TREK TRIL
2 OCU Williamtown	F35	Maple	MAPL	Ambush Hawkeye Hipshot Homberg Hoodoo Hornet	ABSH HEYE HPST HOBG HDDO HORN
				Hunter Hydrant Streak Talon Toxin Tripod	HUTR HYDT STRE TALN TOXN TRPD

Unit/location	Aircraft type	Single aircraft designator	Flight plan designator	Formation designator	Flight plan designator
2 SQN Williamtown	E737	Dogtail Highrise Mitchell Preacher Surfer Wedgetail	DGTL HIRS MTCH PRER SRFR WGTL		
3 SQN Williamtown	F35	Baron	BARN	Apache Cobra Lancer Raider	APCH CBRA LNCR RADR
				Adder Mamba Zulu	ADDR MAMB ZULU
4 SQN Williamtown	PC21	Raven	RAVN	Mayhem Rake Reaper Snoopy	MYHM RAKE REPR SNPY
6 SQN Amberley	F18S	Wolf	WOLF	Brutal Ruthless Sabre Savage	BRUT RUTH SABR SAVG
10 SQN Edinburgh	P3	Striker	STKR		
11 SQN Edinburgh	P8	Blackcat	BLKT		
32 SQN East Sale	B350	Beaufort Dingo Hudson Torch (mission aircrew training)	BFRT DNGO HDSN TRCH	Draggie Howlette Turbo	DRAG HLTE TRBO
33 SQN Amberley	A332	Dragon Gasser Windsor	DRGN GASR WNSR	Brimstone Thumper	BRIM THUM
34 SQN Fairbairn	B737 FA7X	Envoy	EVY		
	Various	Regent Wisdom	RGNT WSDM		
35 SQN Amberley	C27J	Chaos Valour Wallaby	KAOS VALO WLBY	Mongrel Samurai Warlord	MNGL SMRI WLRD
36 SQN Amberley	C17	Stallion	STAL	Canter Charger Pacer Thunder	CANT CHGR PACR TNDR

Unit/location	Aircraft type	Single aircraft designator	Flight plan designator	Formation designator	Flight plan designator
37 SQN Richmond	C130	Trojan	TROJ	Archer Arrow Odyssey Warrior	ACHR ARRW ODSY WARR
75 SQN Tindal	F35	Classic	CLAS	Blackbird Buzzard Condor Magpie Sparrow	BKBD BZRD CNDR MPIE SPRW
76 SQN Williamtown	HAWK	Panther	PTHR	Bobcat Cheetah Cougar	BBCT CHET COGR
				Leopard Lynx Puma Tiger	LEPD LYNX PUMA TIGR
77 SQN Williamtown	F35	Despot	DPOT	Odin Pirate Shogun	ODIN PRTE SHOG
				Spectre Tyrant Viking Warlock	SPCT TRNT VIKG WRLK
79 SQN Pearce	HAWK	Phoenix	PHNX	Devil Fury Ghost Phantom Raptor	DEVL FURY GHST PHTM RAPT
100 SQN Point Cook/ Temora	Various	**Single aircraft or formation designator**		**Optional suffix**	
		Century Heritage	CTRY HRTG	For formations BLACK BLUE GOLD RED WHITE YELLOW For single aircraft UNIT ASSIGNED NUMBER	 BLK BLU GLD RED WTE YLW

Unit/location	Aircraft type	Single aircraft designator	Flight plan designator	Formation designator	Flight plan designator
285 SQN Richmond	C130	Mentor	MNTR	Kongo Wizard	KNGO WZRD
292 SQN Edinburgh	P8	Mariner	MRNR		
ARDU Edinburgh	Various	Tester	TEST	Delta Lambda Omega Sigma Theta	DLTA LMDA OMGA SGMA THAT
Australian Air Force Cadets	All	Joey Astra	JOEY ASTR		
CFS East Sale	PC21	Aladdin	ALDN	Bearcat Mustang Spitfire Tempest Typhoon	BRCT MUST SPIT TMPS TYPN
				Roulettes Roulettes Black Roulettes Blue Roulettes Red Roulettes White	RLTS RLTK RLTU RLTR RLTW
		Central	CTRL	Camel Corsair Oxford	CAML COSR OXFD
RAAF International	All	Aussie	ASY		
RSAF Flight Screening Jandakot	CT4B	Harrier	HARR		
RSAF Oakey Detachment	H64	Redhawk	RHWK	Aspen	ASPN
	EC25	Starling	STRL	Opal Topaz	OPAL TOPZ
	H47	Cyclops Diamond	CYCP DIAM	Concorde Celtic Cyclops Ruby	CNCD CELT CYCP RUBY
130 SQN RSAF Pearce	PC21	Eagle Tango (test flight)	EGLE TANG	Cyclone Lightning Monsoon Storm Twister	CYCN LTNG MONS STRM TWST

Note 1: *RAAF aircraft formations are identified by a single word callsign drawn from the list of suffixes for the operating squadron or unit. Individual aircraft within a formation are identified numerically using the formation position number prefixed with a daily task number e.g. formation callsign CANN contain individual elements CANN11, CANN12, CANN13, etc. Aircraft*

broken from a formation do not use the group form radio telephony e.g. CANN11 would be pronounced 'CANNON ONE ONE'.

Note 2: *When two or more military aircraft (single or formation) join in formation, the lead aircraft may append COMBINE to their single or formation callsign to become the newly joined formation callsign e.g. 'DRGN10 COMBINE'.*

6.2.2.2 Army callsigns

<table>
<tr><th>Unit/location</th><th>Aircraft type</th><th>Single aircraft or formation designator</th><th>Flight plan designator</th><th>Optional suffix all units</th><th>Suffix designator all units</th></tr>
<tr><td>HQ AVNCOMD/ OAKEY</td><td>Various</td><td>Kestrel
Salty</td><td>KSTL
SALT</td><td rowspan="7">For formations
BLACK
BLUE
GOLD
RED
WHITE
YELLOW

For single aircraft
TAIL NUMBER or
SQN/UNIT ASSIGNED NUMBER</td><td rowspan="7">
BLK
BLU
GLD
RED
WTE
YLW</td></tr>
<tr><td>HQ 16 AVN BDE/TOWNSVILLE</td><td>Various</td><td>Husky
Vigilance</td><td>HUSK
VIGL</td></tr>
<tr><td>HQ 1 AVN REGT/ DARWIN</td><td>TIGR</td><td>Griffin</td><td>GRFN</td></tr>
<tr><td>161 RECCE SQN/ DARWIN</td><td>TIGR</td><td>Angry
Ghost
Possum
Overlord
Warthog</td><td>AGRY
GHST
PSSM
OVER
WTHG</td></tr>
<tr><td>162 RECCE SQN/ DARWIN</td><td>TIGR</td><td>Blade
Marlin
Mohawk
Sniper
Shade
Tropic</td><td>BADE
MRLN
MHWK
SNPR
SHDE
TROP</td></tr>
<tr><td>HQ 5 AVN REGT/ TOWNSVILLE</td><td>CH47/NH90/ A139</td><td>Pegasus</td><td>PEGS</td></tr>
</table>

Unit/location	Aircraft type	Single aircraft or formation designator	Flight plan designator	Optional suffix all units	Suffix designator all units
A SQN/OAKEY	C208/PC12	Broadsword Brolga Cormorant Cowboy Curlew Destrier Dropbear Sandy	BSWD BROL CORM CWBY CURL DEST DPBR SNDY	For formations BLACK BLUE GOLD RED WHITE YELLOW For single aircraft TAIL NUMBER or SQN/UNIT ASSIGNED NUMBER	 BLK BLU GLD RED WTE YLW
B SQN/TOWNSVILLE	A139	Angel Halo Jackal Liberty Magic Prodigy Warhorse Wombat	ANGL HALO JAKL LBTY MGIC PRDG WHSE WMBT		
C SQN/TOWNSVILLE	CH47	Bikpela Brahman Caveman Chainsaw Fatboy Madcow Stampede Stockman	BIKP BRMN CVMN CHSW FTBY MDCW STPD SKMN		
HQ 6 AVN REGT/ HOLSWORTHY	H60	Asgard Cavalier Centurion Heimdal Thor	ASGD CAVA CTRN HEIM THOR		
171 SOA SQN/ HOLSWORTHY	H60/NH90	Disco Duke Judge Justice Phalanx Prophet	DSCO DUKE JUDG JUST PHLX PRPH		
173 SQN/ HOLSWORTHY	H60/H135	Bayonet Bushman Claymore Enfield Redback Valkyrie Venom	BAYN BSMN CLAY ENFD RDBK VALK VENM		
HQ AAvnTC/OAKEY	Various	Breaker Monarch	BRKR MRCH		

<table>
<tr><th>Unit/location</th><th>Aircraft type</th><th>Single aircraft or formation designator</th><th>Flight plan designator</th><th>Optional suffix all units</th><th>Suffix designator all units</th></tr>
<tr><td>SAA/OAKEY</td><td>Various</td><td>Finch
Firetail
Knight
Legion
Shrike
Trooper
Waler</td><td>FNCH
FRTL
KNGT
LGON
SHRK
TRPR
WALR</td><td rowspan="4">For formations
BLACK
BLUE
GOLD
RED
WHITE
YELLOW

For single aircraft
TAIL NUMBER or SQN/UNIT ASSIGNED NUMBER</td><td rowspan="4">
BLK
BLU
GLD
RED
WTE
YLW</td></tr>
<tr><td>SAA TTW/
TOWNSVILLE</td><td>CH47</td><td>Crowe
Easy
Patriot
Tornado</td><td>CROW
EASY
PATR
TORN</td></tr>
<tr><td>AATES/OAKEY</td><td>Various</td><td>Eightball
Billiard
Snooker
Checker</td><td>EBAL
BLRD
SNKR
CHKR</td></tr>
<tr><td>AWES/OAKEY</td><td>Various</td><td>Scimitar
Scout
Keystone</td><td>SCIM
SCOT
KSTN</td></tr>
</table>

6.2.2.3 Navy callsigns

Unit	Telephony designator	Flight plan designator	Suffix	Suffix designator
	Navy	NAVY		
RAN HISTORIC FLIGHT	Albatross	ALBT		
AMFTU	Cobra	COBR		
808 SQN	Poseidon Cutlass Gaul Hat-trick Midnight Swordfish	PSDN CUTL GAUL HTRK MDNT SWFH		
723 SQN	Emu Medusa Reptile Serpent Squirrel Taipan	EMYU MDSA REPT SERP SQRL TAIP		
725 SQN	Gauntlet	GLET		
816 SQN	Drifter	DRFT		
	Tiger	TIGR	CUB	CUB
Applicable to all Navy aircraft in conjunction with the telephony designator			BLACK	BLK
			BLUE	BLU
			RED	RED
			WHITE	WTE
			YELLOW	YLW

6.2.2.4 Callsigns of civil aircraft involved in ADF support

Operator/Task	Telephony designator	Flight plan designator
Air Affairs Australia	Ajax	AJAX
	Beagle	BEGL
- Logistic Tasks	(*Aircraft tail number*)	
- Fighter Role	Fencer	FNCR
	Fishbed	FBED
	Flogger	FLOG
	Fresco	FRSC
- Strike Role	Blackjack	BCJK
	Bosun	BOSN
- Target Tug	Baldock	BLDK
Raytheon Australia	Lyrebird	LYBD
- RAN Operations	Badger	BDGR
	Shadow	SHDW
- RAAF Operations	Kraken	KRKN
	Sledgehammer	SHMR
- Other Operations	Enigma	ENGA
	Stalker	SLKR
- ADF Task	HI-Edge	HIDG
- DSTO Task	Deep-View	DPVU
ADF PTS	Nadzab	NDZB
Australian Helicopters Pty Ltd	Lody	LODY
Military SAR Operations CHC Helicopters	Chopper	CHOP

6.2.2.5 Reserved callsigns

The following callsigns are reserved for future use:

Telephony designator	Flight plan designator
CARIBOU	CBOU
DAGGER	DAGR
MIRAGE	MIRG
OUTBACK	OBAK

6.2.3 Unit callsigns

6.2.3.1 ATS unit

ATS unit	Unit callsign when communicating with aircraft/ ground vehicles	Inter-unit callsigns	Intra-unit callsigns
HF (International and Domestic)	(*Name of the unit*) RADIO	(*Position Name*)	(*Position Name*)
Flight Information Service	FLIGHTWATCH	(*Position Name*)	(*Position Name*)
NOTAM Office	-	NOTAM Office	NOTAM Office
Flight Planning Office	-	(*Name of the unit*) PLANNING	PLANNING
Briefing Office	-	(*Name of centre*) BRIEFING	BRIEFING
Area Control SIS and FIS	(*Name of the unit*) CENTRE	(*Name of the unit*) CENTRE	(*Sector name*)
Aerodrome or Aerodrome/ Approach Control	(*Name of the unit*) TOWER	(*Name of the unit*) TOWER	TOWER or FLIGHT DATA or GROUND
Surface Movement Control	(*Name of the unit*) GROUND	(*Name of the unit*) TOWER	TOWER or GROUND
Approach Control (on a frequency separate from Aerodrome Control)	(*Name of the unit*) APPROACH	(*Name of the unit*) APPROACH	APPROACH
Final Control (civil) (on a frequency separate from Approach Control)	(*Name of the unit*) DIRECTOR	(*Name of the unit*) DIRECTOR	DIRECTOR
Departure Control (on a frequency separate from Aerodrome Control)	(*Name of the unit*) DEPARTURES	(*Name of the unit*) DEPARTURES	DEPARTURES
Final: Used when the ground installation provides a dedicated final control facility e.g. Amberley Final	(*Name of the unit*) FINAL	(*Name of the unit*) FINAL	FINAL
Clearance Delivery	(*Name of the unit*) DELIVERY	As per local instructions	As per local instructions
AFIS/SFIS	(*Name of the unit*) INFORMATION	(*Position Name*)	(*Position Name*)

6.2.4 Vehicle callsigns

6.2.4.1 Vehicles

Vehicle	Vehicle callsign when communicating with units, aircraft, ground vehicles
Marine SAR Unit (*civil*)	SAR Launch (*name of the unit*)
Land SAR Unit	Land Rescue (*name of the unit*)
Launch	Launch (*one, two, three etc.*)
ARFF Incident Scene Commander (*civil*)	Fire Commander
ARFF	Tender (*name of the unit*)
Fire Truck (*military*)	Truck (*name of the unit*)
Truck Early Rescue (TER) (*military*)	Rescue (*name of the unit*)
Truck Fire General Purpose (TFGP) (*military*)	GP/Domestic
Tractor	Tractor (*one, two, three etc.*)
Vehicle (van, utility or truck - *civil*)	Car
Ambulance (*military*)	Ambulance (*name of the unit*)
ATS Vehicle (*military*)	Ranger (*name of the unit*)

6.2.4.1.1 Other radio-controlled vehicles

Identify other radio-controlled vehicles authorised to use the movement area by callsigns appropriate to their tasks.

6.3 ATS coordination

6.3.1 Coordination principles

6.3.1.1 Exchange of information

Exchange information, as necessary, between ATS officers and/or external agencies, to ensure the safe and efficient conduct of flight.

6.3.1.2 Standard coordination

Coordination, or part of coordination, may be effected using standard agreement or system means that meet the requirements of this section. Coordination effected in this way must be specified in local instructions or letters of agreement.

6.3.1.3 Coordination principles

Conduct coordination:

a) on a point-to-point basis, whenever possible;
b) so that traffic coordination takes precedence over non-traffic coordination requirements;
c) on intercom or liaison channels; and
d) on public telephone channels when c) is not available.

6.3.1.4 When to coordinate aircraft

Coordinate with the next ATS unit when an aircraft under your service responsibility will cross, or infringe the boundary coordination parameter of, an adjacent ATS unit boundary and a service is required to be provided by that unit.

See MATS 9.4.1.14 Level assignment with vertically adjoined airspace

See MATS 10.4.1.1 Lateral separation buffer

6.3.1.5 Changes to coordination

When coordination has been conducted, including where standard transfer agreements exist, conduct further coordination prior to amendment of coordinated items.

6.3.1.6 Special circumstances

Where special circumstances require different minimum coordination requirements, you may promulgate those requirements individually within local instructions.

6.3.2 General coordination procedures

6.3.2.1 Aircraft in emergency

If an aircraft subject to an emergency will be transferred to another sector, perform voice coordination prior to the hand-off proposal being initiated.

6.3.2.2 Coordinating ADS-C emergency reports

When in receipt of an ADS-C emergency report from an aircraft operating in another FIR, coordinate to confirm that the other FIR has received the ADS-C emergency.

6.3.2.3 JRCC Australia

Report all available information on unreported aircraft, and matters involving SAR to JRCC Australia.

6.3.2.4 Changes to estimates

Advise the receiving unit when a previously coordinated estimate has varied by more than two minutes.

6.3.2.5 Boundary positions

Consider a position reporting point or positive radio fix located 10 NM or less from an ATC unit boundary to be at the boundary for the purposes of determining coordination requirements.

6.3.2.6 Assigned level

In any coordination, prefix the cleared level as 'ASSIGNED' or 'ON CLIMB' or 'ON DESCENT' except when the:

a) aircraft is maintaining or will maintain the coordinated level by the relevant coordination parameter; or
b) the coordination is a taxi or departure advice.

6.3.2.7 Standard assignable coordination

Except where specifically stated, coordination of a standard assignable level is not required.

See MATS 9.4.1.14 Level assignment with vertically adjoined airspace

6.3.2.8 Changes to flight plan details

Coordinate any change to flight plan details involving flight into another unit's airspace with that unit. Send a change message where other units may also be affected.

6.3.2.9 FIO coordination of flight plan information

FIO pass essential data to the affected unit, by intercom or telephone, when flight plan information cannot be delivered to the position responsible for affected airspace at least 10 minutes before the EOBT. Subsequently distribute the information by AFTN. Detail guidance as to the latest acceptable notification time in local instructions.

6.3.2.10 Changing IFR/VFR procedure

When an aircraft is operating, or intending to operate, using IFR Pick-up, VFR-on-top, VFR climb/descent or VFR departure – and in doing so will affect another unit's airspace – coordinate the aircraft with that unit.

6.3.2.11 VFR-on-top at vertical boundary

Where the vertical boundary between units is a VFR level – and an aircraft is maintaining VFR-on-top at that level – coordinate the aircraft with the adjacent unit.

6.3.2.12 Formation or in-company flights

When coordinating formation or in-company flights, include the type of formation and dimensions if appropriate. For block formations or in-company flights, include the disposition of group members in the coordination.

6.3.2.13 International and non-scheduled flights

Notify the Supervisor, for advice to the NOMC, when:

a) an inbound or outbound international flight diverts to an alternate aerodrome or makes an emergency landing elsewhere;
b) a flight entering Australia will land at an airport not listed in AIP as a designated international airport;
c) information about a non-scheduled inbound international flight is received; or
d) you receive advice that an international flight has infectious diseases or serious illnesses onboard.

Note: *The NOMC is responsible for all further actions to notify the appropriate Customs and Immigration or medical authorities.*

6.3.2.13.1 Information for relay

Notify the following information regarding the flight:

a) Callsign;
b) Departure aerodrome;
c) Destination aerodrome and ETA; and
d) Relevant information concerning any illness, cancellations, diversions or delays.

6.3.3 Acknowledging receipt of coordination

6.3.3.1 Fixed service channel (voice)

Acknowledge receipt of a message over a fixed service channel (voice) by the:

a) callsign of the aircraft involved in the message; and
b) identification of the acknowledging unit when replying to a call addressed to more than one position/unit, or when communicating on HF in conditions where misunderstanding is likely.

6.3.3.2 Readback requirements

Read back the key elements of any received coordination, clearance or instruction from another ATSO.

6.3.3.2.1 Additional requirements

Read back QNH and the words 'VISUAL', 'AMENDED', 'RECLEARED' or 'CANCEL CLEARANCE' in addition to the pilots-to-ATS readback requirements.

See MATS 9.2.2.13.1 ATC route clearance

See MATS 9.2.2.13.2 Key elements

6.3.3.3 Position reports

Acknowledge receipt of a position report (including departure report), a level check or a change of level from another ATSO, with:

a) aircraft callsign; and
b) advised level.

6.3.3.4 Receiving operator

Do not:

a) give an acknowledgment until you are satisfied that the transmitted information has been received correctly; and
b) acknowledge receipt of a message by using only the callsign of your unit.

6.3.4 Coordination

6.3.4.1 Coordination requirements

The following tables indicate the requirements for conducting coordination between the units specified.

6.3.4.2 All ATS units to all ATS units

Coordination item	Parameter	Conditions and exceptions
Any information regarding: a) navaid failures; b) communication failures or difficulties; c) changes to lateral separation points; d) specification of separation responsibility; e) conditions of control e.g. pilot visual separation, wake turbulence waiver, separation restrictions etc; f) airways facilities; g) ATFM requirements, revisions or requests; and h) any other significant information.	In sufficient time to allow the receiving ATC unit to take any action required	Required when the condition is likely to have an effect on the: a) operations of the other unit; and b) aircraft operating within the adjacent unit's area of responsibility.
Approach expectation	If nominated approach is not specified on ATIS/ CATIS/DATIS	Advice of actual approach to be used, at or prior to the sequence being coordinated
Details of released airspace (as applicable): a) Description of airspace lateral boundary, or Restricted/Military Operating Area; b) Highest and lowest useable levels; and c) Expected airspace resumption.	In sufficient time to allow the receiving ATC unit to take any action required	Where no airspace resumption time is agreed, provide 30 min notice to resume the airspace release
Details of airspace deactivation: a) Restricted Area number(s) or MOA number(s) or airspace descriptors as listed in MATS SUPPS/LoA; and b) New deactivation time.	In sufficient time to allow the receiving ATC unit to take any action required	
Details of MILSPECREQ flights including: a) planned routing or proposed alternative routing; and b) planned level or proposed alternative level.	In sufficient time to allow the receiving ATC units to take any action required	Required to ATC units affected by the aircraft's initial unrestricted climb before approving the aircraft to start. ***Note:*** *Coordination is done point to point*

6.3.4.3 Entering or exiting Restricted/Military Operating Area (surveillance); or en route control (surveillance) to en route control (surveillance)

Coordination item	Parameter
Transfer conditions: a) same FIR and same system.	Prior to 20 NM of the ATC unit boundary
Transfer conditions: a) cross FIR; or b) different system.	Prior to the aircraft being within 50 NM or 10 minutes of the ATC unit boundary, whichever is the later

Note: *This table pertains to coordination for aircraft in controlled airspace. Aircraft entering or exiting Restricted/Military Operating Areas from Class G airspace are subject to coordination requirements of Clauses 6.3.4.16 and 6.3.4.17.*

See MATS 6.3.4.16 ATS units providing Class G airspace services to ATC units

See MATS 6.3.4.17 All ATS units to ATS unit providing Class G airspace services

6.3.4.4 To or from en route control (procedural)

Coordination item	Parameter	Conditions and exceptions
Estimate for the boundary position and the assigned level	15 minutes before ATC unit boundary estimate	A boundary position exists
a) The estimate and assigned level for the position report prior to the ATC unit boundary; and b) The position report prior to reaching the boundary.	15 minutes before ATC unit boundary estimate	Required when the last position report prior to the boundary is less than 15 minutes from the boundary
a) The position report prior to reaching the boundary; or b) The departure time, assigned level and boundary estimate.	15 minutes before ATC unit boundary estimate	Where no boundary position exists on or within 15 minutes of the boundary
a) Taxi advice, where appropriate; and b) Proposed clearance.	At taxi or prior to issue	Required when: a) the estimated time interval from the departure point to the ATC unit boundary is less than 15 minutes; or b) the required coordination cannot be completed 15 minutes before the ATC unit boundary estimate.

6.3.4.5 En route control (surveillance or procedural) to Approach/ Tower (procedural)

Coordination item	Parameter	Conditions and Exceptions
Details for aircraft entering approach/tower airspace, which includes the: a) destination estimate or information required for the control of transiting flights as appropriate; b) assigned route, tracking point or arrival procedure as appropriate; c) assigned level; and d) sequence number, if applicable (the aircraft assigned the lowest level is number one, the next assigned level number two, etc).	For aircraft in a sequence, prior to transfer to approach For aircraft not part of a sequence, at least 10 minutes prior to the boundary	As far as practicable, transfer aircraft with no restrictions, other than aircraft lower in the coordinated sequence
Where applicable, also include the following information: a) Vertical restrictions for descent, other than aircraft arriving in the same sequence that are assigned a lower level; b) Clearance limit (if other than normal); c) EAT if issued; d) Frequency transfer time or point (if not standard); and e) Where holding is required, the pilot's estimate of the latest diversion time.		

6.3.4.6 Approach/Tower (procedural) to en route control (surveillance or procedural)

Coordination Item	Parameter	Conditions and Exceptions
Taxi advice including: a) destination aerodrome; b) assigned route, tracking point or departure procedure as appropriate; and c) assigned level.	At or prior to taxi	See MATS 6.3.1.4 When to coordinate aircraft
Next call	When a departing aircraft approaches the runway-holding position/ departure position	Only required for aircraft that will depart into en route controlled airspace En route must issue an assigned level, including the standard assignable level
Departure time	As soon as possible after departure	Not required where a Next call is completed and the aircraft will enter surveillance coverage prior to entering en route airspace
Where applicable, provide the following information: a) Restrictions for an aircraft's climb; b) Lowest level vacant for use by sector; c) Average time interval between successive approaches; d) Type of approach in use; and e) Information necessary for control of a local flight.	In sufficient time to provide information to arriving aircraft	As far as practicable, transfer aircraft with no vertical restrictions for climb
Revision of any EAT issued by sector which varies from that calculated by APP	As soon as possible after the variation becomes apparent	
ATIS/CATIS information	Minimum of: a) code; b) instrument approach expectation; c) duty RWY; and d) QNH.	a) At commencement of operations; and b) When a change to these conditions occurs.

See MATS 12.4.1.1.2 Next call from Procedural Tower

6.3.4.7 Approach (surveillance) to en route control (surveillance)

Coordination item	Parameter	Conditions and exceptions
a) Taxi advice; b) Assigned route, tracking point or departure procedure as appropriate; c) Assigned level; and d) SSR code.	At taxi	Not required where departure is more than 5 min from the ATC unit boundary
a) Departure advice or information required for control of transiting flights as appropriate; b) Assigned route, tracking point or departure procedure as appropriate; c) Assigned level; and d) SSR code.	At departure or in sufficient time for the control of transiting flights	Not required where taxi advice is provided
a) Runway and type of approach in use; b) When runway changes are required; c) TMA configuration changes; or d) Flow changes the assigned runway for an aircraft.	In sufficient time to provide information to arriving aircraft	

6.3.4.8 En route control (surveillance) to approach (surveillance)

Coordination item	Parameter	Conditions and exceptions
a) Taxi advice; b) Assigned route, tracking point or departure procedure as appropriate; c) Assigned level; and d) SSR code.	At taxi	When departure aerodrome is less than 50 NM from the ATC unit boundary
a) Destination estimate or information required for control of transiting flights as appropriate; b) Assigned route, tracking point or arrival procedure as appropriate; c) Assigned level; and d) SSR code.	30 NM or 5 min prior to the ATC unit boundary, whichever is the later	

6.3.4.9 En route control (surveillance) to Flow controller

Coordination item	Parameter	Conditions and exceptions
Runway requirements: a) If other than the assigned runway is required including any specific purpose such as a practice ILS or Autoland; b) Flight crew advice regarding PRM capability; or c) Requests for instrument approaches.	As soon as possible after the advice or request is received	
Sequence: a) When the sequence cannot be met; b) Speed changes; c) Changes to the sequence are being made via a flow management system; d) Undue workload that would result from Flow controller instructions; or e) Any actions taken to meter inbound traffic.	As soon as possible after the variation becomes apparent	
Route: a) When route changes affect the TMA; b) When an aircraft has been re-cleared via a different route or waypoint than planned; c) Any deviations; or d) Advice of significant weather deviations affect the sequence.	As soon as possible after the variation becomes apparent	

6.3.4.10 Approach to Tower

Coordination item	Parameter
a) Sequence of arriving aircraft in landing order; b) Disposition of arriving traffic; c) Any proposal to vary the basic runway usage and circuit direction plan; d) Approach instruction issued unless coordinated on a blanket basis; e) ETA if not available from other sources; f) Level last assigned (if single aircraft or lowest in sequence) or position in vertical sequence at time of transfer; g) Route assigned; h) Clearance limit (if other than normal); i) EAT if issued; and j) Where holding is required, the pilot’s estimate of the latest diversion time.	Prior to transfer to the Tower
Cancellation of approaches	Prior to issue

6.3.4.11 Tower to Approach

Coordination item	Parameter
a) General and appropriate sector weather; b) Any intention to/or closure of manoeuvring area or airspace to specified operations; and c) Any proposal to vary the basic runway usage and circuit direction plan.	
Next call	When a departing aircraft approaches the runway-holding position/departure position

6.3.4.12 Intra-Tower coordination

Coordination Item	Parameter	Conditions and Exceptions
ADC to ADC Details of aircraft operating between the runway centrelines ***Note:*** *The airspace between the runway centrelines is shared*	Prior to issue	During parallel runway operations when more than one ADC is operating
ADC to SMC Details of any aircraft landing on, or taking off from, any location on the movement area under the jurisdiction of the SMC	Prior to issue	
SMC to ADC a) Runway crossing; or b) Air transit of a helicopter.	Prior to issue	Visually check for approaching or departing aircraft before coordinating with the ADC

Note: *Coordination between tower positions is not limited to the above. Refer to unit local instructions, training documentation or competency criteria for additional techniques and requirements.*

6.3.4.13 Back coordination

Coordination item	Parameter	Conditions and exceptions
Any amendment to clearance - controlled airspace	Prior to issue	When the aircraft is on a two-way route Back coordination is not required when an aircraft is: a) established by the applicable separation standard inside the relevant sector's airspace; b) under surveillance control and subject to a clean hand-off; or c) under procedural control and: i) has passed a positive radio fix at the boundary; or ii) has been assigned a standard assignable level by the preceding ATC, and is issued further climb or descent in the expected direction by the receiving ATC. Prior coordinate clearance changes that will cause an aircraft to enter another controller's airspace

6.3.4.14 Boundary coordination - lateral

Coordination item	Conditions and exceptions
Traffic information and aircraft intentions, if relevant - surveillance control	Required when the aircraft is within 50 NM of the ATC unit boundary and will subsequently operate within half of the applicable radar standard of that boundary When different radar standards are applicable on either side of an ATC unit boundary, use the larger of the two standards
Traffic information and aircraft intentions, if relevant - procedural control	a) *Lateral:* When the nominal track of an aircraft plus the applicable navigation tolerances would infringe within 1 NM of an adjacent ATC unit's airspace; or b) *Longitudinal:* When a 15 minute buffer will be infringed prior to establishing either a vertical separation standard or vertical buffer as per MATS Clause 9.4.1.14, from the adjacent unit's airspace.
Traffic information and aircraft intentions if relevant - Class G airspace	When the nominal track of an aircraft would infringe within 7.5 NM of an adjacent FIS unit's airspace

See MATS 9.4.1.14 Level assignment with vertically adjoined airspace

6.3.4.15 Boundary coordination - vertical

Apply a boundary coordination parameter to the vertical boundary level, to facilitate separation between operations in adjacent airspaces. Coordinate aircraft that will operate with less than the boundary parameter, as follows:

Between ATC units	Boundary level	Standard boundary parameter	Separation
To or from ENR control (surveillance or procedural)	VFR	500 FT above and below	1000 FT
	IFR	Unit above - 1000 FT Unit below may operate up to the boundary	1000 FT
APP - TWR (Class C or Class D)	As per LoA	As per LoA	1000 FT or as per LoA

6.3.4.15.1 Exception - more than the allowed separation

When more than the allowed separation is required, e.g. for non-RVSM or supersonic aircraft, increase the boundary parameter or coordinate to ensure the required separation can be applied between adjoining airspace operations.

6.3.4.15.2 When to coordinate vertical boundary traffic

Provide advice to the adjacent unit by the distance or time that would apply if that aircraft was crossing the boundary, or prior to clearance issue.

See MATS 9.4.1.14 Level assignment with vertically adjoined airspace.

6.3.4.16 ATS units providing Class G airspace services to ATC units

Coordination item	Conditions and exceptions
a) The position report prior to reaching the boundary; or b) The departure time.	
a) The estimate and cruising level for the position report prior to the CTA or CTR boundary; and b) The position report prior to reaching the boundary.	Required when the position report prior to the CTA or CTR boundary is less than 50 NM from the boundary
a) Departure time; and b) Cruising level if other than flight planned.	Required where due to the nearness of the departure point to the boundary, there will be no report prior to the boundary

6.3.4.17 All ATS units to ATS unit providing Class G airspace services

Coordination item	Parameter	Conditions and exceptions
a) The position report prior to reaching the ATS unit boundary; or b) departure advice.	5 min before the ATS unit boundary estimate	Required for IFR or MLJ traffic only
a) The estimate and cruising level for the position report prior to the ATS unit boundary; and b) The position report prior to reaching the boundary.	5 min before the ATS unit boundary estimate	Required for IFR or MLJ traffic when the last position report prior to the boundary is less than 5 min from the boundary
Advice that an aircraft has left its cruising level	As soon as possible after receipt	Required when the aircraft will enter another FIA on descent or climb
a) Departure time; and b) cruising level if other than flight planned.		Required when due to the nearness of the departure point to the boundary, there will be no report prior to the boundary
Taxiing reports		Required for IFR or MLJ departure where the aerodrome is located within 10 NM of the FIA boundary (or greater distance may be appropriate for jet aircraft)

6.3.5 Coordination phraseology

6.3.5.1 Prefix coordination

When data entry or transcription may be required by the responding unit, prefix coordination with a key word to prompt the message content, e.g. 'POSITION', 'ESTIMATE', 'ARRIVAL' etc.

6.3.5.2 Coordination exchanges

Situation	Originating unit	Responding unit
1) Change request	(*callsign*) REQUESTING (*level/ amended clearance*)	(*callsign*) CLIMB/DESCEND TO (*level*) or (*callsign*) CONCUR (*level*) or (*callsign*) (*level/amended clearance*) APPROVED or (*callsign*) (*level/amended clearance*) NOT AVAILABLE DUE (*reason*)
2) Relaying position report	POSITION (*callsign*) (*position*) (*time*) FL....., (*next position*) (*time*)	(*callsign*) FL.....
3) Level check	LEVEL CHECK (*callsign*) ASSIGNED FL..... or if aircraft cruising .....(*callsign*) FL.....	(*callsign*) FL.....
4) Traffic adjacent to boundary	BOUNDARY TRAFFIC, (*callsign*)..... (*movement report*)	(*callsign*)
5) In response to a request to cross/enter a runway	SMC/ADC ....[BEHIND (*aircraft type*) (*position of aircraft causing condition*)] [*number*] (*aircraft type or description of vehicle*) ON...(*location*) [TO] CROSS/ ENTER...(RWY *number*) [BEHIND]	ADC ...[BEHIND (*aircraft type*) (*position of aircraft causing condition*)] [*number*] (*aircraft type or description of vehicle*) ON...(*location*) CROSS/ENTER...(RWY *number*) [BEHIND] or NEGATIVE. HOLD SHORT SMC [BEHIND] CROSS/ENTER/HOLD SHORT [ON (*location*)] Include the point of crossing in the readback when coordination is originated by the ADC. Do not abbreviate the above phraseologies to responses such as AFFIRM, YES or OK, which can be heard out of context.
6) In response to a request to use a helipad	SMC/ADC REQUEST DEPARTURE (*specify location*).....HELIPAD	ADC EXPECT TO DEPART (*specify location e.g. southern helipad*) The above phraseologies replace responses AFFIRM, YES or OK, which can be heard out of context.

Situation	Originating unit	Responding unit
7) Departing aircraft approaches the runway-holding position	ADC to DEP, or procedural TWR to ENR: NEXT [ADD …(*number of minutes*) or AT (*time*)] (*callsign*), [RUNWAY (*number*)] [*sequence information*]. e.g. NEXT ADD ONE, ABC, BEHIND THE ARRIVAL ***Note:*** *NEXT means the aircraft is expected to be airborne within two minutes. NEXT ADD ONE means the aircraft is expected to be airborne within three minutes*	DEP to ADC: a) callsign; b) heading or tracking instructions, including turn requirements where applicable; and c) any altitude restrictions or the word UNRESTRICTED if there is no altitude restriction. ***Note:*** *UNRESTRICTED is not required to be read back* ENR to procedural TWR: a) callsign; b) must issue an assigned level, including the standard assignable level; and c) any altitude restrictions.
	When amending a previous NEXT call: (*callsign*), ADD (*number of minutes*) (*or* AT (*time*)) e.g. ABC ADD ONE, or ABC AT TWO-THREE ***Note:*** *The number of minutes is in addition to the previously coordinated time*	DEP to ADC: a) callsign only, where the departure instruction is unchanged; b) (*amended departure instruction*) (*callsign*); or c) CANCEL DEPARTURE INSTRUCTIONS (*callsign*). ENR to procedural TWR: a) callsign only, where the level instruction is unchanged; or b) (*amended level or any altitude restrictions*) (*callsign*).
8) Receiving unit is unable to deal with the call immediately	Originating unit has called to coordinate information	STANDBY or CALL YOU BACK
9) Coordinating the transfer of aircraft with a declared emergency or fuel shortage	Advise receiving Controller details of the emergency e.g. (*callsign*), MINIMUM FUEL	(*callsign*), MINIMUM FUEL ACKNOWLEDGED
10) Coordinating separation responsibility	YOUR (*or* MY) (*or (ATC unit*)) SEPARATION WITH (*callsign*)	MY (*or* YOUR) (*or* (*ATC unit*)) SEPARATION WITH (*callsign*)
11) To coordinate any restrictions to aircraft being transferred between units	RESTRICTION IS (*restriction*)	(*restriction*)
12) An aircraft's track or level may be changed without further coordination	NO RESTRICTIONS	A readback is not required
13) An aircraft's level may be changed, but the track may not be changed without further coordination	NO VERTICAL RESTRICTIONS	A readback is not required

Situation	Originating unit	Responding unit
14) An aircraft's track may be changed, but the assigned level may not be changed without further coordination	NO LATERAL RESTRICTIONS	A readback is not required
15) An aircraft can be issued descent, but the track may not be changed without further coordination	NO RESTRICTIONS ON DESCENT	A readback is not required
16) An aircraft can be issued climb, but the track may not be changed without further coordination	NO RESTRICTIONS ON CLIMB	A readback is not required
17) Where coordination is required in respect of aircraft which have become no longer RVSM compliant and are operating in or planning to operate in the RVSM flight level band	(*callsign*) NEGATIVE RVSM	(*callsign*) NEGATIVE RVSM
18) Non-ADS-B equipped aircraft within or entering CTA where ATS surveillance system separation is provided exclusively by ADS-B at and above FL290	(*callsign*) NEGATIVE ADS-B	(*callsign*) NEGATIVE ADS-B
19) IFR Pick-up	(*callsign*) REQUESTING IFR PICK-UP	(*callsign*) FL......
20) VFR-on-top Requesting Maintaining	 (*callsign*) REQUESTING VFR-ON-TOP (*callsign*) VFR-ON-TOP	 (*callsign*) (*level, if required*) (*callsign*) (*level*)
21) VFR climb/descent	(*callsign*) VFR CLIMB (*or descent*)	(*callsign*) (*level*)
22) SIS	(*callsign*), (*appropriate information*), REQUESTING FLIGHT FOLLOWING	(*callsign*) (*level*) or ATS SURVEILLANCE SERVICE NOT AVAILABLE
23) Requesting communications checks	REQUEST COMMUNICATIONS CHECKS (*callsign*) (*nature of overdue report*) AT (*location*)	(*callsign*)
24) In response to an aircraft's failure to transfer to the required frequency	NO CONTACT (*callsign*)	(*callsign*)
25) Coordinating unmanned free balloon operations	ESTIMATE UNMANNED FREE BALLOON (*callsign*) (*position*) AT (*time*) OPERATING (*level*) OR ABOVE, MOVING (*direction*) ESTIMATED GROUND SPEED (*number*) (*other pertinent information, if any*)	(*callsign*) (*level*)

Situation	Originating unit	Responding unit
26) To request another ATS unit to relay a clearance or information to a third party	FOR [RELAY TO] (*third party callsign*) (*clearance or information*)	FOR [RELAY TO] (*third party callsign*) (*clearance or information*)
27) SARTIME details	a) SARTIME NEW DETAILS FOR ARRIVAL (*or* DEPARTURE) (*details*) b) SARTIME CHANGE OF DETAILS (*details*)	(*callsign*) SARTIME FOR ARRIVAL (*or* DEPARTURE) (*location*) (*SARTIME*)
28) SARTIME cancellation Include time of cancellation if not the current time	SARTIME CANCELLATION (*callsign*) (*location*) [(*time of cancellation*)].	(*callsign*)
29) Providing information to FDC for message action e.g. CHG, DEP, DLA, CNL, ARR	FOR DISTRIBUTION (*aircraft movement message type*) (*callsign*) (*information*)	(*aircraft movement message type*) (*callsign*) (*details including level, route, time, as applicable*)

7 ATS message processing

7.1 ATS message creation and transmission

7.1.1 Responsibilities for origination and distribution

7.1.1.1 Procedures

Comply with the following procedures when originating and distributing ATS messages over AFTN channels:

a) Retain the intent or requirements of pilots;

b) Convert flight notification, modification, delay, cancellation, departure or arrival information received by radio, telephone, intercommunication, fax or other electronic means into appropriate messages and transmit as necessary;

c) Address messages to non-continuous units as though they were open continuously. Local procedures must ensure delivery of messages to responsible units;

d) Distribute flight details notified by radio to ATS units providing services to the flight;

e) Notify message originators immediately if message errors are detected or misrouted messages are received; and

f) Transmit aircraft movement messages required by more than one sector over the AFTN network. Local instructions may vary this requirement when the sectors are located solely within one ATS Centre or Unit.

7.1.2 Standard message compilation

7.1.2.1 Compilation

Compile each message field in accordance with ICAO Doc 4444-PANS ATM.

7.1.3 Standard message addressing

7.1.3.1 Procedures and requirements

Comply with the following addressing procedures and requirements:

a) Address to ATS units responsible for the airspace in which the planned flight will operate;

b) For international flights, except when predetermined address indicators (PDAI) are used, address to centres in charge of each FIR and upper FIR along the route using three-letter designators:

   i) ZQZ – IFR aircraft; and

   ii) ZFZ – VFR aircraft;

c) Address international FPL to aerodrome control towers at destination aerodromes using designator ZTZ;

d) Address to units responsible for airspace shown on charts as activated by NOTAM, unless advised the airspace is not active;

e) Do not address nominated alternate or intermediate aerodromes unless aircraft divert. In cases of flight diversion, the unit responsible for the original destination sends the flight notification to the unit responsible for the alternate aerodrome;

f) Address flight notifications for aircraft operating on SARTIME to YBCENSAR;

g) Do not address to cater for requests for track shortening, direct or preferred routes, or for the provision of Flightwatch services only;

h) Address to units responsible for the origination of departure (DEP) messages from intermediate departure points; and

i) Where delivery of a message requires transmission over a voice circuit, transmit information relevant to the addressee only.

See MATS 7.1.5.7.3 Military locations

7.1.3.2 Unknown distribution requirements

Refer to the BOF for origination if distribution requirements are unknown.

7.1.3.3 Specific addressing requirements

Use the following table for specific addressing requirements for the particular types of flight listed:

Address	Types of flight notification
YAMBZGZX	Military aircraft proceeding into Evans Head Restricted/Military Operating Areas
YBCENSAR	SARTIMES nominated by pilots for either departure or arrival
YPEAZGZX	Military aircraft proceeding to Gin Gin
YPEDZGZX	Aircraft proceeding to Woomera
YPXMYDYX	For aircraft movement messages relating to aircraft proceeding to Christmas Island
YSARYCYX	Aircraft engaged in JRCC Australia coordinated SAR activity or the subject of a SAR phase
YSCBCUST	a) Military aircraft engaged in Maritime Surveillance of Australian Fishing Zones; and b) Aircraft involved in littoral surveillance operations e.g. Customs aircraft.
ZGZX	Military aircraft proceeding to MIL aerodromes
NZCHZPZX	For intermediate departures from Pago Pago
NZCHZPZX	For intermediate departures from NZ, including mainland New Zealand and Norfolk Island
KSFOXAAG	Position reports or other information from United States Air Force (USAF) aircraft requesting a 'relay/pass/copy to Hilda' instruction. The text of AFTN messages are to be prefixed by FOR HILDA

7.1.4 Emergency messages

7.1.4.1 Alerting message (ALR)

Send ALR messages in regard to the various states of flight e.g. INCERFA, ALERFA and DETRESFA.

7.1.4.1.1 International ALR Message Form

The 'International 'ALR' Message Form' is used to represent the ALR message during non-AFTN communication.

See MATS 13.1.1.1 Access to forms

7.1.4.2 AIDC emergency message (EMG)

Use EMG messages at your discretion when the contents require immediate action, for example:

a) reports of emergency calls or emergency locator transmission reports;
b) messages concerning unlawful interference;
c) messages concerning serious illness or disturbance among passengers;
d) sudden alteration in flight profile due to technical or navigational failure; or
e) communications failure.

7.1.5 Flight plan and associated update messages

7.1.5.1 Originate messages

Originate flight notification messages for all flights that have submitted flight plans for the purpose of being provided with services by ATS units along all or part of the planned route.

7.1.5.2 International flights

For international flights, originate separate FPL messages for each flight stage when:

a) flights have intermediate stops; and
b) separate flight plans for each stage of the flight are filed at the aerodrome of first departure.

7.1.5.3 Send a copy of FPL

Only send a copy of the originally-received FPL to non-automated civil, non-automated military and international agencies.

7.1.5.3.1 Addressing to ARO

Use the designator ZPZ when addressing only to the ATS Reporting Office (ARO) at the appropriate aerodrome of intermediate departure.

Note: *The ARO responsible for the aerodrome of departure treats such FPLs as if they have been filed locally and re-distributes accordingly.*

7.1.5.3.2 Exception

If an ARO is not located at the aerodrome of intermediate departure, the unit responsible for that aerodrome originates an FPL for the flight stage concerned.

7.1.5.4 Delay message (DLA)

Send a DLA message when aircraft are, or will be, delayed for 30 minutes or more after the EOBT.

7.1.5.4.1 Delay over 0000 UTC

Where a delay moves the EOBT over 0000UTC and this is to be relayed via AFTN, generate a CHG message for both EOBT and DOF.

7.1.5.5 Modification message (CHG)

Originate a CHG message to modify an FPL.

Note: *When an ATC unit initiates a change to the flight plan of an aircraft requiring the origination of a CHG message, the unit responsible for the message origination is the ATC unit initiating the change.*

7.1.5.5.1 Procedures

Apply the following procedures to CHG messages:

a) Distribute in lieu of SVC CORRECTION for messages relating to ATS messages;

b) Include the complete data of a field reflecting a modification to any item within that field;

c) Include EOBT wherever possible for domestic flights;

d) When a delay moves the EOBT over 0000UTC generate a change for both EOBT and DOF;

e) Cancel the existing flight plan message when necessary and replace with a new flight plan message incorporating the changes;

f) Originate CHG messages on receipt of messages relating to aircraft in flight;

g) Do not originate CHG messages relating to level changes if voice coordination includes advice of the level change; and

h) Ensure a CHG message is originated unless coordination has been completed to all affected ATS units by other means.

7.1.5.6 Cancellation message (CNL)

Originate a cancellation message to cancel an FPL.

7.1.5.6.1 New/change to DLE period

Where a new DLE period or a change to an existing DLE period is to be relayed via AFTN:

a) cancel the existing FPL with a CNL message; and

b) originate a new FPL including the new DLE information.

7.1.5.7 Departure message (DEP)

Originate DEP message following departure for the aircraft listed below:

a) IFR aircraft;

b) military and coastal surveillance aircraft; and

c) aircraft involved in JRCC Australia coordinated SAR activity or the subject of an emergency phase.

7.1.5.7.1 Procedures

Apply the following procedures to DEP messages:

a) Include SSR code only when available i.e. do not include '/N';

b) Address messages to all units responsible for services to the flight between departure point and next point of intended landing; and

c) Waive the requirement to originate DEP messages for IFR aircraft when voice coordination takes place with other affected units. Document variations in local instructions.

7.1.5.7.2 At intermediate departure points

Units responsible for origination of civil DEP at intermediate departure points:

Civil locations	Unit responsible
Within the BN FIR	YBBBZQZA
Within the ML FIR	YMMMZQZA

7.1.5.7.3 Military locations

Units responsible for origination of military DEP at intermediate departure points:

Military location	Unit responsible	
Amberley CTR	YBBBZQZA	
Darwin CTR	YBBBZQZA	
East Sale CTR	During TWR hours - YMESZGZX	Outside TWR hours departing for FIA/CTA/RAS - YMMMZQZA
Edinburgh CTR	During TWR hours - YPEDZGZX	Outside TWR hours - YMMMZQZA
Nowra CTR	During TWR hours - YSNWZGZX	Outside TWR hours - YMMMZQZA
Oakey CTR	YBBBZQZA	
Pearce CTR	During TWR hours - YPEAZGZX	Outside TWR hours - YMMMZQZA
Richmond CTR	During TWR hours - YSRIZGZX	Outside TWR hours - YMMMZQZA
Tindal CTR	YBBBZQZA	
Townsville CTR	YBBBZQZA	
Williamtown CTR	YBBBZQZA	

7.1.5.8 Arrival message (ARR)

Originate ARR messages using the following procedures:

a) Address as requested by the pilot when the aircraft carries the Governor-General or royalty;

b) Transmit arrival reports to units responsible for the airspace containing the place of arrival and the unit nominated to receive the report; and

c) Despatch to the RCC when an aircraft engaged on a SAR operation, or the subject of a SAR phase, has landed.

7.1.6 Coordination messages

7.1.6.1 Current flight plan message (CPL)

CPL is a coordination message and follows the basic format of an FPL. Use CPL messages for aircraft already in flight, and include estimates and cleared levels.

7.1.6.2 Estimate messages (EST)

Originate an EST message to provide an estimate and cleared flight level, along with other pertinent details.

7.1.6.2.1 Origination

Originate an EST when coordination is required between units and is not waived as a result of voice coordination.

7.1.6.2.2 If at other than cleared level

Provide additional information if the aircraft is expected at a level other than the cleared level at the boundary point.

7.1.6.3 Coordination messages (CDN)

Originate CDN messages to propose a change to coordination data as contained in a previously received CPL or EST message.

7.1.6.4 Acceptance messages (ACP)

Accepting units transmit ACP messages to transferring units to indicate acceptance of data in a CPL or EST message.

Note: *Either the accepting unit or the transferring unit must transmit an ACP message to indicate that data received in a CDN message is accepted and coordination is complete.*

7.1.6.5 Logical acknowledgement messages (LAM)

Only use LAM messages between automated centres. The system sends a LAM on successful receipt of an EST or CPL.

7.1.7 ARP, ARS, AEP or POS messages

7.1.7.1 Responsibility for distribution

Units responsible for initiating AIREP distribution:

Area	Responsible unit
In the international mobile service	The unit holding primary guard
In the domestic mobile service	The unit responsible for the airspace in which the aircraft is operating

7.1.7.2 AIREP distribution - general

Distribute AIREP and Movement Reports to units having an operational requirement.

7.1.7.2.1 Unit acknowledging receipt responsibilities

Where the unit acknowledging receipt of an AIREP is not responsible for distribution, coordinate with the responsible unit and request that unit to effect full distribution.

7.1.7.2.2 AIREP from SAR aircraft

Distribute AIREP from SAR aircraft via AFTN to JRCC Australia.

7.1.7.3 AIREP section 3 distribution - AIREP Special

Distribute AIREP Specials containing:

a) meteorological information to:
   - i) the Australian MWO responsible for the FIR;
   - ii) for international flights, any Australian and foreign MWO responsible for an FIR within 2 hrs flight time of the location of the position report;
   - iii) other aircraft and ATS units, if considered of operational significance;
   - iv) YMMCYMYX, YBBBYPYX; and
   - v) YPDMYMYX for information on volcanic activity; and

b) runway braking action reports to the aerodrome operator.

7.1.7.3.1 AIREP Special distribution - long range

Distribute AIREP Specials for international flights over Australia and long range domestic flights to EGRRYMYX, KWBCYMYX and to the following:

Route	Distribute to
ADELAIDE-DARWIN	YPRMYMYX YPDMYMYX YMMCYMYX YBBBYPYX YMRFYMYX
ADELAIDE-PERTH	YPRMYMYX YPRFYMYX
MELBOURNE-PERTH	YMRFYMYX YMMCYMYX
SYDNEY-PERTH	YSRFYMYX YBRFYMYX
PERTH-NEW ZEALAND	
SYDNEY-TOKYO	YBRFYMYX YSRFYMYX
BRISBANE-DARWIN	YPDMYMYX YMRFYMYX
BRISBANE-JAKARTA-SINGAPORE	YBBBYMYX YMMCYMYX
MELBOURNE-DARWIN	
SYDNEY-DARWIN	
SYDNEY-BRISBANE-DARWIN	
ALICE SPRINGS-PERTH	YPDMYMYX YPRFYMYX
PERTH-DARWIN	YPRMYMYX YMRFYMYX
PERTH-ARGYLE	YBBBYPYX YMMCYMYX
ADELAIDE-JAKARTA-SINGAPORE	YMRFYMYX YMMCYMYX YBBBYPYX
MELBOURNE-JAKARTA-SINGAPORE	YPDMYMYX YPRMYMYX
SYDNEY-JAKARTA-SINGAPORE	YPRFYMYX YSRFYMYX YPDMYMYX
NEW ZEALAND-JAKARTA-SINGAPORE	YPRMYMYX YBBBYPYX YMMCYMYX
PERTH-PORT HEADLAND-DARWIN	YPRFYMYX YPDMYMYX
PERTH-KARRATHA	YMMCYMYX YBBBYPYX
TOWNSVILLE-DARWIN	YBRFYMYX YPDMYMYX YMMCYMYX

7.1.7.3.2 AIREP Special distribution - domestic

Distribute AIREP Specials for domestic flights (not long range) according to the following:

QNH area in which aircraft is operating	Distributed to
20	YSRFYMYX YBRFYMYX
21	YSRFYMYX YMRFYMYX
22	YSRFYMYX YPRFYMYX YMRFYMYX
24	YSRFYMYX YPRFYMYX YBRFYMYX
30	YPRMYMYX YMHFYMYX YMRFYMYX
40	YBRFYMYX
41	YBRFYMYX
43	YPDMYMYX YPRMYMYX YBRFYMYX
44	YBRFYMYX
45	YPDMYMYX YBRFYMYX
50	YPRMYMYX YPRFYMYX YMRFYMYX
51	YPRMYMYX YPRFYMYX YSRFYMYX YMRFYMYX
52	YPDMYMYX YPRMYMYX YPRFYMYX
53	YPRMYMYX YPRFYMYX
60	YPRMYMYX YPRFYMYX
61	YPRMYMYX YPRFYMYX
62	YPRFYMYX
63	YPRFYMYX
64	YPDMYMYX YPRFYMYX
65	YPRFYMYX
66, 68, 69	YPRFYMYX YPDMYMYX
70	YMHFYMYX YMRFYMYX
80	YPDMYMYX
83	YPDMYMYX YPRFYMYX
84	YPDMYMYX YPRFYMYX
85	YPDMYMYX YPRMYMYX YPRFYMYX
86-88	YPDMYMYX YPRMYMYX

7.1.8 Supplementary messages

7.1.8.1 Request flight plan message (RQS)

Originate RQS messages to request supplementary information that may have been contained on the flight plan form but was not transmitted in the FPL.

7.1.8.2 Supplementary flight plan message (SPL)

Originate 'Supplementary Flight Plan Message Format' to send supplementary information.

See MATS 13.1.1.1 Access to forms

7.1.8.3 Request flight plan message (RQP)

Originate the RQP message to request an FPL from an adjacent centre after receipt of an aircraft movement message.

7.1.8.4 RQP messages - exception

Do not transmit RQP messages to military ADATS units.

7.1.8.4.1 When ATS message is not effected

When delivery of an ATS message has not been effected, the unit requiring the message requests flight details via RQP or service message to the:

a) adjacent ATS unit;

b) originator of any associated update message;

c) ZQ - FIC addressee serving the departure aerodrome;

d) ZP - ATS reporting office serving the departure aerodrome; or

e) COMC.

7.1.8.4.2 Follow up action

If the RQP message addresses the ZQZX address or the FIR, the Eurocat unit of that FIR ensures follow up action occurs.

7.1.9 Other messages

7.1.9.1 Control (CTL) and transfer of control (TFR) messages

CTL and TFR messages include other messages relating to the control of aircraft for which a high degree of priority is necessary e.g. clearance instruction and coordination messages.

Note: *Standardisation of CTL and TFR messages is not possible or desirable.*

7.1.9.1.1 Procedures

Apply the following procedures to CTL and TFR messages:

a) Originate and address as required;
b) Use standard phrases and abbreviations;
c) Be as brief and clear as possible; and
d) If required, the text of a CTL message containing a clearance closes with a CET.

7.1.10 International Flight Plans

7.1.10.1 ICAO Flight Plan

Utilise the 'ICAO Flight Plan' form for messages requiring international distribution.

See MATS 13.1.1.1 Access to forms

7.1.11 AFTN message management

7.1.11.1 Test messages

Test messages are used to check continuity or as requested by AFTN connected units.

7.1.11.2 Test message

Test messages consist of:

```
QJH YBBBYFYX
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

7.1.11.3 Check messages

Check messages transmit automatically to each configured user by the AAMS each hour, hour and 20 minutes, and hour and 40 minutes, in the following format:

```
CSN00004 121220
CH
```

7.1.11.3.1 Check message not received

Advise the AFTN COMC immediately if a check message is not received.

Note: *The channel check transmission ensures that the receiving unit is aware of the CSN of the last message.*

7.1.11.4 Procedures

Apply the following procedures on receipt of an automatic service message:

a) Check all received messages;

b) Retransmit messages missed by the AAMS;

c) Transmit requests for missing messages if CSN indicates missing messages; and

d) Contact the COMC for advice on appropriate action.

7.1.11.5 Acknowledge receipt of SS

Acknowledge receipt of distress messages, distress traffic and urgency messages (priority indicator SS) individually. The AFTN destination station sends a service message to the AFTN origin station.

Note: *AFTN origin station ensures receipt of acknowledgements within a reasonable period.*

See MATS 7.1.12.2 SS priority indicator

7.1.11.5.1 Example of SS acknowledgement

An example of an SS acknowledgement:

```
SWA022
SS WSSSYCYX
120022 YBBBYFYX Priority Alarm
R 120017 WSSSYCYX
```

7.1.11.6 COMC role

The AFTN COMC:

a) pursues any outstanding acknowledgements;
b) sends single acknowledgements for domestic users;
c) re-directs received international acknowledgements using FLW REC procedure; and
d) acknowledges receipt of SS messages addressed to ATS units which are closed. Acknowledgement indicates the unit is closed and that delivery has been made to the responsible unit.

7.1.12 AFTN

7.1.12.1 Message priority

Distribute messages in the following order of priority:

1) SS;
2) DD;
3) FF;
4) GG; and
5) KK.

7.1.12.2 SS priority indicator

Type of message	When SS priority indicator is used
Distress messages	Originated by mobile stations when threatened by grave and imminent danger.
	When immediate assistance is required by the mobile station in distress.

Note: *Following dispatch and acknowledgement of the initial Distress message, subsequent messages may be dispatched DD priority unless SS is warranted.*

7.1.12.2.1 Priority alarm

The priority alarm is automatically added by the AMI/CADAS INPUT TERMINAL on creation of a priority message and actuates a bell at the receiving unit.

7.1.12.3 DD priority indicator

Type of message	When DD priority indicator is used
Urgency messages	When there are concerns about the safety of a ship, aircraft or other vehicle, or of some person on board or within sight.
Messages justifying higher priority	Messages other than a reservation message or general aircraft operating agency message may be assigned the priority indicator DD instead of that which the message is normally entitled.

7.1.12.4 FF priority indicator

Type of message	When a FF priority indicator is used
Flight safety messages	Movement and control messages (air traffic control messages, position reports from aircraft)
	Messages originated by an aircraft operating agency, of immediate concern to an aircraft in flight or to an aircraft about to depart
	Meteorological advice of immediate concern to aircraft in flight or about to depart, including amended TAFs, special aerodrome reports, special AIREPs and SIGMET and AIRMET information
	Other messages concerning aircraft in flight or about to depart
Meteorological messages (to/from aircraft)	Containing amended meteorological forecasts

7.1.12.5 GG priority indicator

Type of message	When a GG priority indicator is used
Meteorological messages (to/from aircraft)	Containing meteorological forecasts
	Containing exclusively meteorological observations. When addressing AIREPs exclusively to meteorological offices
	Other meteorological messages exchanged between meteorological offices
	Area QNH
Aeronautical administrative messages	Operation or maintenance of facilities essential for the safety or regularity of aircraft operation
	Exchanged between Government civil aviation authorities relating to aircraft operation
	Essential to the efficient functioning of aeronautical telecommunication services
NOTAM	Messages containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard
Approved non-aeronautical administrative messages	Messages on behalf of Customs, Health, and Immigration Departments concerning aircraft under suspicion, aircraft not yet cleared by Customs, etc
	Relating to emergencies handled on behalf of other organisations when normal communications channels are interrupted or inadequate, or when prior approval has been given (domestic service only). This includes messages relating to bushfires, urgent medical supplies, fire, weather warnings, seismic activity, floods, etc. (Handle these messages in accordance with local instructions)

7.1.12.6 GG - flight regularity messages

Type of message	When a GG priority indicator is used
Flight regularity messages	Load messages contain: a) details of the number of passengers and crew; b) weight of cargo; c) data required for weight and balance computation; and d) remarks essential to the rapid clearance of the load from the aircraft (optional).
	Accept the load messages above when addressed to the point of intended landing and to not more than two other addresses concerned in the general area of the route segment of the flight to which the message refers
	Changes in: a) aircraft operating schedules to become effective within 72 hours after the message is filed; or b) collective requirements for passengers, crew and cargo caused by unavoidable deviations from normal operating schedules, and necessary for flight regularity in the case of aircraft en route or about to depart. Individual requirements of passengers or crew are not admissible in this type of message.
	Concerns the servicing of aircraft en route or scheduled to depart within 48 hours
	Non-routine landings to be made by an aircraft en route or about to depart
	Parts and material urgently required for the operation of aircraft en route or scheduled to depart within 48 hours
	Pre-flight arrangements of air navigation services and operational servicing for non-scheduled or irregular operations of aircraft, filed within 48 hours of the proposed time of departure

7.1.12.7 KK priority indicator

Type of message	When a KK priority indicator is used
Reservation messages	Originated by aircraft operating agencies concerning the selling, releasing or regulation of weight or space capacity for goods or for the individual accommodation of passengers aboard public transport aircraft scheduled to depart within 72 hours after the message is filed
General aircraft operating agency messages	a) Originated by aircraft operating agencies for: i) information that has a direct bearing on the efficient and economic conduct of the day-to-day operation of international air transport; and ii) reservation messages and flight regularity messages (other than load messages) that do not conform to the time limitation specified therein and are addressed to officers or representatives of aircraft operating agencies; and b) KK priority is not to be used for: i) third party messages; or ii) messages addressed to parties other than aircraft operating agencies or their representatives.

7.2 AFTN system failures

7.2.1 Responsibilities and procedures for reporting failures

7.2.1.1 Responsibilities

Notify the COMC on becoming aware of:

a) an interruption (no check received); or

b) the last received (LR)/last sent (LS) message indicating a channel sequence number (CSN) discrepancy.

7.2.1.2 AAMS does not advise failure

Messages are not transmitted by the AAMS to advise that an AFTN failure has occurred.

Note: *The COMC advises all users of occurrences of international circuit outage that may affect the delivery of AFTN traffic and includes an alternate method of delivery.*

7.2.1.3 LR/LS on service restoration

You will receive a service message LR/LS on restoration of the service.

8 Information services

8.1 NOTAM

8.1.1 NOTAM management

8.1.1.1 NOTAM specifications

Manage NOTAM initiation, construction and content in accordance with the relevant Data Product Specification (DPS) and NOTAM Data Quality Requirements (DQR).

Note 1: *Airservices see Data Product Specification - CASR Part 172 Air Traffic Service Providers (ATS-DPS-0019) and NOTAM Data Quality Requirements for Airservices (C-MAN0277).*

Note 2: *Defence see Data Product Specification - Aeronautical Information Services - Air Force (AIS-AF) (ATS-DPS-0020)* and *NOTAM Data Quality Requirements for Australian Defence Force (C-MAN0282).*

8.1.1.2 NOTAM origination

Originate NOTAM for matters related to your operations when authorised in writing under CASR Part 175. Forward details of any NOTAM requirements to the NOF.

8.1.1.2.1 Airservices ATS NOTAM originators

ATS positions authorised to originate NOTAM are specified in National ATS Procedures Manual (ATS-MAN-0014).

8.1.1.2.2 Defence NOTAM originators

Defence originate NOTAM as follows:

a) AIS-AF originate NOTAM:
   i) when an urgent amendment or correction is necessary to a flight information publication map or aeronautical chart and AIPAB action would be unsatisfactory;
   ii) to promulgate details received from appropriate sources regarding use of airspace over international waters for special exercises; and
   iii) as required by Air Force Headquarters.

b) Military ATS units originate NOTAM for activation of airspace for which they are the Controlling Authority or as agreed on behalf of other Defence agencies.

8.1.1.3 NOTAM duration

Maximum validity period for NOTAM is three months unless otherwise approved by NOF.

Permanent (PERM) NOTAM may only be issued by, or with the approval of, the relevant AIP Responsible Person.

8.1.1.4 PRD and MOA NOTAM content

Include the following in NOTAM referring to PRD or MOA:

a) In field A): enter the:
   i) PRD or MOA number; or
   ii) airspace group; and
b) In field E): enter the:
   i) PRD or MOA numbers of the individual areas affected;
   ii) statement ACT/DEACTIVATED;
   iii) activity and conditional status for Restricted/Military Operating Areas, where different to that published.

8.1.1.5 Activating SUA

Any NOTAM which activates a:

a) SUA and increases the published vertical or horizontal limits must be supplemented by a second NOTAM (additional to the airspace NOTAM) which establishes a temporary SUA within the amended airspace limits as approved by OAR; or
b) portion of an established SUA must contain a description of the activated portion in field E). Field E) may contain a statement relating to the status of the deactivated portion if this will assist pilots.

8.1.1.6 TRA/TM NOTAM

Issue a NOTAM promulgating a Temporary Restricted Area or Temporary Military Operating Area when operations are required that exceed the restrictions detailed in the Flight Information Handbook Australia.

8.1.1.7 Low level military operations

Specify in the text the sector altitude Above Ground Level (AGL) when establishing a NOTAM for low level military operations, including LJR.

8.1.1.7.1 Route description

Describe the route in terms of place names, true bearings and distances from place names and/or latitudes and longitudes.

8.1.1.8 Amending a current NOTAM

Issue a NOTAMR when:

a) amendment to information in a current NOTAM is required; or

b) EST is included, in order to extend the effective time of the NOTAM.

8.1.1.9 Cancelling a current NOTAM

Issue a NOTAMC when information in a current NOTAM is no longer required or becomes ineffective.

8.2 Briefing

8.2.1 Briefing services

8.2.1.1 Pre-flight information

Provide applicable pre-flight aeronautical information to flight operations personnel, including flight crews and associated services, that is:

a) essential for the safety, regularity and efficiency of air navigation; and
b) relevant to the route stages originating at the aerodrome/heliport.

8.2.1.1.1 Information elements

Include pertinent information elements from the following:

a) Integrated AIP Australia including:
   i) aerodrome/heliport facilities;
   ii) air routes and navaids;
   iii) maps and charts;
   iv) communication facilities;
   v) rules of the air;
   vi) ATS procedures;
   vii) controlled airspace and SUA;
   viii) international flight entry or transit regulations; and
   ix) SAR facilities and survival information;
b) Meteorological forecasts and reports (provided by the BoM); and
c) NOTAM.

Note: *Automated pre-flight information systems may provide aeronautical information/data available to flight operations personnel, including flight crew members, for self-briefing, flight planning and flight information service purposes.*

8.2.1.2 International services

Provide a pre-flight briefing service to pilots:

a) from Australia to the first destination outside Australia;

b) planning to enter Australia from Norfolk Island or Christmas Island; and

c) from the RAAF, via their Australian Base who will forward it on.

Note: *Refer ERSA GEN for international telephone and facsimile numbers for use from outside Australia.*

8.2.1.2.1 Non-scheduled operations

For non-scheduled operations to international destinations for which no NOTAM information is held, despatch a request to the appropriate international authority(ies).

8.2.1.2.2 Provision of frequency predictions

Make radio frequency flight plans available to pilots upon request.

Note: *The BoM Ionospheric Prediction Service provides guidance, based on predictions in the movement of the ionosphere, for the selection of HF frequencies to be used on domestic and international mobile networks.*

8.2.1.3 Process flight notification

Accept flight notification and distribute the information to ATS units with a responsibility for the flight.

8.2.1.3.1 Check and correct

When accepting a flight notification:

a) check for compliance with the format and data conventions;

b) check for completeness and, to the extent possible, for accuracy;

c) ensure the exact location of all points on the planned route are known, and include any clarification on unusual places in the RMK/section;

d) take action (including contacting the pilot) to resolve any omissions, errors or anomalies;

e) include reference to any unresolved issues in the RMK/section of the flight notification e.g. RMK/CFM ROUTE or RMK/CFM GNSS RNP2; and

f) verbally advise the relevant ATS units of the unresolved issue or send a service message to the ATS unit responsible for the first point of departure.

8.2.1.4 ATS responsibilities

When necessary, clarify the pilot’s intentions prior to services being provided to those flights for which notifications have been distributed with remarks indicating known deficiencies.

8.2.1.4.1 No remarks

On receiving an incorrect or incomplete flight notification, without a corresponding remark, contact the BOF describing the deficiency.

8.2.1.4.2 Auto-filed flight plans

Auto-filed flight plans are not received by the BOF. Direct any queries relating to these plans to the airline company concerned.

8.2.1.5 Post-flight information service

When a post-flight report is received on weather conditions and air navigation facilities, distribute those reports to the NOF, the relevant meteorological office or other authority as appropriate.

8.3 SARTIME management

8.3.1 Maintaining the SARTIME database

8.3.1.1 Managing SARTIME

Use CENSAR to manage SARTIME for:

a) civil aircraft nominated to all ATSUs; and

b) military aircraft nominated to all Airservices ATSUs and most military units.

Note: *Flight notifications addressed to CENSAR automatically enter SARTIME details into the database.*

8.3.1.1.1 Exception - local units

ATS units may hold:

a) SARTIME for departure in accordance with Clause 4.4.1.4; or

b) local SARTIME (military) in accordance with LoA/MATS Supps.

See MATS 4.4.1.4 SARTIME

8.3.1.2 Communication checks and alerting action

The following units are responsible for communication checks and alerting action where a SARTIME has been nominated:

SARTIME type	Unit responsible
SARTIME in CENSAR	HF communications unit
SARTIME for departure	HF communications unit or ATS unit responsible for the departure aerodrome as applicable
Local SARTIME (military flights)	Military ATS unit

8.3.1.2.1 CENSAR notification

For SARTIME in CENSAR, the CENSAR operator alerts the appropriate HF operator when both the SARTIME and INCERFA times are reached.

8.3.1.3 Changes to SARTIME

Only cancel or vary a SARTIME at the request of the pilot, AMSA or Headquarters Air Command (military flights only).

8.3.1.3.1 Actions at expiration

Do not cancel the SARTIME at expiration if incidental information received indicates that the aircraft may have arrived safely, but no contact with the pilot has taken place during the communications checks phase.

9 Control practices

9.1 Provision of FIS

9.1.1 Scope of FIS

9.1.1.1 Responsibility

Provide FIS to all aircraft which are:

a) provided with air traffic control service; or
b) otherwise known to the relevant air traffic services units.

9.1.1.2 Provision includes

FIS includes the provision of pertinent:

a) pre-flight information;
b) operational information such as:
   i) meteorological conditions and the existence of non-routine MET products (e.g. amended TAF, selected SPECI, SIGMET, AIRMET);
   ii) changes to air routes;
   iii) changes to the status of air routes, aerodromes, navigation facilities e.g. RAIM, communication facilities and approach aids;
   iv) changes to ATS procedures;
   v) changes to airspace status;
   vi) changes to ARFFS category;
   vii) RCR information for non-controlled aerodromes;
   viii) information on unmanned free balloons; and
   ix) release into the atmosphere of radioactive materials or toxic chemicals;
c) traffic information to aircraft operating in airspace Classes C, D, E and G when licenced to do so;
d) ATS surveillance system derived information to aircraft operating in Classes E and G when licenced to do so; and
e) other information likely to affect safety.

Note: *Aerodrome Warnings are not required to be disseminated.*

9.1.2 Responsibilities

9.1.2.1 ATSO responsibility

The ATSO whose area of responsibility is affected by the information is responsible for communication with the relevant aircraft. This may involve addressing the message to the pilot through another unit.

9.1.2.1.1 Coordinate responsibility

Clearly coordinate the responsibility if the affected area is in the vicinity of unit boundaries. Specify in local instructions when one unit accepts responsibility for FIS dissemination.

9.1.2.1.2 Dissemination at controlled aerodromes

Disseminate flight information at a controlled aerodrome as follows, unless specified in local instructions:

ATC service	FIS content affecting	Examples
Approach/ Departures	Airspace	All relevant MET products, NOTAM affecting navigation or approach aids, etc.
Tower	Movement area	NOTAM regarding movement area availability or lighting, TORA, etc.
Tower with airspace (excluding ad hoc releases)	Airspace and movement area	All FIS relevant to the aerodrome and airspace for which they are routinely responsible

Note: *The Tower remains responsible for ATIS content, however Approach may request appropriate information to be included to assist dissemination.*

9.1.2.1.3 GRF RCR NOTAM

During tower hours, disseminate RCR information for controlled aerodromes via ATIS only. Outside tower hours, the unit responsible for the airspace becomes responsible for disseminating NOTAM information to affected aircraft.

See MATS 9.1.2.1 ATSO responsibility

9.1.2.2 Precedence

Where air traffic service units provide both flight information and air traffic control services, give precedence to the provision of air traffic control over flight information, unless doing so would compromise safety.

9.1.2.3 Pilot access to information

Advise pilots to access information on an alternate frequency if your workload or frequency congestion makes it more practical.

Note: *Aerodrome information may be obtained from a local Automatic Broadcast Service including ATIS, AAIS, AWIS and WATIR.*

9.1.3 Transmission of information

9.1.3.1 Notify components of FIS

Notify components of FIS to the relevant aircraft as soon as practicable after receipt.

9.1.3.2 Aircraft to notify

Notify aircraft at the time operational information or the existence of non-routine MET products is identified:

a) except for AIRMET, by directed transmission to those aircraft maintaining continuous communication and within one hour's flight time of the conditions (two hours in the case of SIGMET);

b) where continuous communication is not required, by broadcasting on appropriate ATS frequencies to those aircraft that could be within one hour's flight time of the conditions (two hours in the case of SIGMET); and

c) by directed transmission to all affected aircraft engaged in SAR action.

See MATS 9.1.3.5 AIRMET

9.1.3.3 Broadcast vs directed transmission

Where workload or frequency congestion dictates, broadcast to aircraft in continuous communication in place of a directed transmission e.g. broadcast of ATIS changes.

Note: *Notification of the existence of non-routine MET products may include a summary of significant changes.*

9.1.3.3.1 Transmit details on request

Transmit details of these products on request where workload or frequency congestion permits.

9.1.3.4 Hazard alert

Prefix directed transmissions and broadcasts with HAZARD ALERT when a sudden change to a component of FIS, not described in a current MET product or NOTAM, has an immediate and detrimental effect on the safety of aircraft.

9.1.3.4.1 Prolonged effect on safety

When a hazard alert is expected to be prolonged, repeat broadcasts at H+15 and H+45 in the hour following the initial broadcast.

9.1.3.4.2 Cease broadcasts

Cease broadcasts after one hour or when an updated MET product or NOTAM is available for dissemination, whichever is earlier.

See MATS 9.1.3.1 Notify components of FIS

9.1.3.4.3 Non-continuous towers - opening and extension

Commence hazard alert broadcasts for tower activation when:

a) the opening of an adjoining or underlying tower is delayed; or
b) tower services are extended and a NOTAM is not issued.

9.1.3.4.4 Unauthorised RPAS operations or laser illumination

When an RPAS operation is suspected as unauthorised or conducted in a way that endangers aviation safety, or a pilot reports an unauthorised laser illumination event:

a) advise pilots by:
   i) hazard alert; or
   ii) transmitting a warning on the ATIS for one hour; and
b) submit an occurrence report.

9.1.3.4.5 Immediate safety concern - RPAS or lasers

When an immediate concern for aviation safety exists regarding inappropriate RPAS operations or unauthorised laser illumination:

a) report the occurrence to the Police as soon as practicable, including the level of the aircraft and any other specific information that might assist law enforcement agencies to respond; and
b) notify the occurrence to the NOMC and advise the NOMC if the Police have been notified.

Note: *Early reporting may assist Police in locating and stopping the unauthorised activity.*

9.1.3.4.6 Medium and Heavy unmanned free balloons

Transmit the following Hazard Alert information regarding Medium and Heavy unmanned free balloon flights concluding at the expected time of impact:

a) If launching from an uncontrolled site, 10 minutes before notified expected launch time until the balloon passes FL200;
b) 10 minutes prior to cutdown; and
c) During cutdown, including:
   i) expected position and time at FL600;
   ii) track; and
   iii) location and time of expected impact.

9.1.3.5 AIRMET

Disseminate AIRMET by broadcasting their availability on appropriate ATS frequencies. Do not use directed transmissions.

9.1.3.5.1 AIRMET relevance

Include details as required to assist pilots to determine the relevance of the AIRMET.

9.1.3.5.2 Repeat broadcast

Repeat the broadcast in the hour following the initial broadcast at H+15 and H+45.

9.1.3.6 Amended ATIS

Detail in local instructions any routine requirement for ENR/CEN to pass notification of an amended ATIS to aircraft.

9.1.3.7 Take-off and landing information

Transmit take-off or landing information to a pilot who has not notified receipt of the current ATIS and include as much of the following as may be significant at the time:

a) runway;
b) surface wind velocity, including crosswind components if significant, and any discernible tailwind component;
c) QNH;
d) surface air temperature;
e) visibility;
f) low cloud;
g) dew point if requested by the pilot;
h) prevailing weather conditions; and
i) a time check to the nearest half minute (at pilot request for departing aircraft only).

9.1.3.7.1 Significant crosswind

Consider crosswind to be significant when it equals or exceeds 8 kt for civil single engine aircraft, 10 kt for military aircraft, or 12 kt for civil multi-engine aircraft.

9.1.3.8 Aerodrome information

Tower controllers are responsible for ensuring aircraft under their control are advised of sudden and unexpected changes to the aerodrome information, pending an amended ATIS.

9.1.4 Safety alerts and traffic avoidance advice

9.1.4.1 Vigilance

Remain vigilant for the development of safety alert or traffic avoidance advice situations.

9.1.4.2 Responsibility

Do not assume that because another Controller has responsibility for an aircraft that an unsafe situation has been observed and a safety alert or traffic avoidance advice has been issued.

9.1.4.3 Issuing a safety alert

Unless the pilot has advised that action is being taken to resolve the situation or that the other aircraft is in sight, issue a safety alert prefixed by the phrase 'SAFETY ALERT' when you become aware that an aircraft is in a situation that places it in unsafe proximity to:

a) terrain;
b) obstruction;
c) active Prohibited/Restricted/Military Operating Areas; or
d) other aircraft.

9.1.4.3.1 Airspace classes - safety alerts

You may issue safety alerts, including those based on visual observation, in all classes of airspace both within and outside ATS surveillance system coverage.

9.1.4.4 Traffic avoidance advice

Issue traffic avoidance advice, prefixed by the phrase 'AVOIDING ACTION', to an aircraft that:

a) is receiving an ATS surveillance service; and
b) in your judgement, is in a situation that places it at risk of a collision with another aircraft under surveillance.

9.1.4.4.1 'SUGGEST' prefix

Prefix advice to turn or change level with 'SUGGEST' unless the advice is for controlled flights with reference to other controlled flights e.g. 'AVOIDING ACTION, SUGGEST (*turn or level advice* [VISUAL])'.

9.1.4.5 Abbreviated phraseology

When required, you may abbreviate safety alert and traffic avoidance advice phraseologies to ensure timely provision of advice.

9.1.4.6 Discontinuing

You may discontinue issuing further safety alerts or traffic avoidance advice when the pilot advises action is being taken to resolve the situation or has reported the other aircraft in sight.

9.1.5 Traffic information

9.1.5.1 Flight category

Base provision of traffic information on flight category in accordance with the following table:

Airspace class	IFR re IFR	IFR re VFR	VFR re IFR	VFR re VFR
Class C	(*Separation required*)	(*Separation required*)	(*Separation required*)	Provide traffic information
Class D	(*Separation required*)	Provide traffic information	Provide traffic information	Provide traffic information
Class E	(*Separation required*)	Provide traffic information where practicable	Provide traffic information if in receipt of a SIS	Provide traffic information if in receipt of a SIS
Class G	Provide traffic information	Provide traffic information where practicable	Provide traffic information if in receipt of a SIS	Provide traffic information if in receipt of a SIS
Class G - AFIS/SFIS	Provide traffic information	Provide traffic information	Provide traffic information	Provide traffic information

9.1.5.1.1 IFR conducting VFR procedures

For the purposes of providing traffic information, treat VFR departures, VFR climb/descent and VFR-on-top aircraft as:

a) VFR category in Class C or Class D airspace; or

b) VFR category in receipt of a SIS in Class E and Class G airspace.

Note: *A visual departure is not a VFR departure and remains IFR.*

9.1.5.1.2 MLJ

For the purposes of providing traffic information, treat MLJ aircraft as IFR regardless of flight-planned category.

9.1.5.2 VFR aircraft receiving a SIS/SFIS

Pass traffic information to VFR aircraft when:

a) requested by pilots;

b) pilots notify intention to change level and/or track; or

c) you become aware of relevant traffic.

See MATS 9.7.9.1 SIS

See MATS 9.7.9.2 SFIS

9.1.5.2.1 No reported IFR traffic

When applicable, provide advice that no reports have been received from IFR traffic.

9.1.5.3 IFR aircraft

Pass traffic information to IFR aircraft when:

a) requested by pilots;
b) pilots notify intention to change level and/or track;
c) pilots notify either taxi or airborne or departure, whichever is first; or
d) you become aware of relevant traffic.

9.1.5.3.1 No reported IFR traffic

When applicable, provide advice that no reports have been received from IFR traffic.

9.1.5.3.2 Ceasing traffic information

Your obligation to provide traffic information to or about an aircraft ceases when:

a) the pilot reports changing to a CTAF except where SFIS is provided;
b) military pilots report ceasing guard on ATS frequencies; or
c) the pilot cancels SARWATCH and:
    i) has reported in the circuit area; or
    ii) the destination ETA has been reached.

Note 1: *Workload or communications may not allow traffic information to be passed to a pilot who has cancelled SARWATCH.*

Note 2: *IFR SARWATCH is maintained within a SFIS BA until the aircraft has landed.*

9.1.5.3.3 Military flight following

Cancel SARWATCH after a military flight following aircraft is established outside controlled airspace and has advised transferring to MILITARY FLIGHT FOLLOWING.

Note: *Aircrews will specifically request a civil SARWATCH where required.*

9.1.5.4 Not on frequency

Pass traffic information relating to aircraft not yet on the appropriate ATS frequency.

9.1.5.5 MLJ

Workload permitting, broadcast the intentions of MLJ on the appropriate area frequencies, prior to the aircraft transiting the area served by the frequency concerned.

9.1.5.5.1 Broadcast progress

Broadcast the progress of MLJ whenever practical.

9.1.5.5.2 Planned levels

Use actual planned levels in broadcasts e.g. '350 AGL', or refer to the flight as 'LOW LEVEL MILITARY OPERATIONS'.

9.1.5.6 Routine movement reports

Do not update traffic information when a conflicting aircraft subsequently passes routine movement reports unless there is a change to the previously advised traffic information.

9.1.5.7 Traffic information for other units

As far as practicable, anticipate the traffic information responsibilities of accepting ATS units.

9.1.5.7.1 Advise accepting unit

Advise the accepting unit of traffic passed on their behalf.

9.1.5.8 Leaving controlled airspace

Advise aircraft leaving controlled airspace of observed traffic within the airspace to be entered where:

a) the aircraft is on descent and pressure altitude-derived level information of observed traffic indicates it is operating within 2000 FT of the base of CTA; or
b) other information indicates a potential conflict exists.

9.1.6 Traffic information assessment and content

9.1.6.1 When in doubt

Within the guidelines of this section, provide traffic information as far as is practicable. If you are ever in doubt as to whether traffic information is required, provide advice.

9.1.6.2 Possibility of conflict

Pass traffic information to qualifying aircraft when data assessment indicates the possibility of conflict.

9.1.6.3 Be concise

Keep traffic information concise.

9.1.6.4 Content of traffic information

To assist the pilot in identifying the other aircraft, include relevant information from the following:

a) aircraft identification;
b) type, and description if unfamiliar;
c) position information;
d) estimated time of passing or closest point of approach;
e) direction of flight or route of aircraft;
f) level;
g) intentions of the pilot, such as:
    i) initial departure track and intended cruising level; and
    ii) inbound track or direction, level and next estimate; and
h) advice that an aircraft is not yet on the appropriate frequency.

9.1.6.5 Position information

Provide position information by:

a) clock reference;
b) bearing and distance;
c) relation to a geographical point;
d) reported position and estimate; or
e) position in the circuit.

9.1.6.5.1 Features not on an ERC

Provide reference information, if required, when traffic information relates to positions or features not shown on an ERC.

9.1.6.6 Unverified information

When providing traffic information, prefix unverified level information by the words UNVERIFIED LEVEL.

9.1.6.6.1 2000 FT or more

Where pressure altitude-derived level information is unverified and indicates 2000 FT or more above or below aircraft receiving traffic information, disregard the data for traffic or avoidance except when other information indicates a potential conflict.

9.1.6.7 Class G airspace - surveillance not available

When ATS surveillance system information is not available, use the following guidelines to determine whether to issue traffic information between:

a) aircraft that climb, descend or operate with less than 1000 FT vertical spacing and less than 15 NM lateral or longitudinal spacing;
b) overtaking or opposite direction aircraft on the same or reciprocal tracks with less than 1000 FT vertical spacing, and less than 10 minutes longitudinal spacing, based on pilot estimates; and
c) aircraft that depart and arrive with less than 10 minutes between other departing and arriving aircraft from the one aerodrome and falling within these guidelines.

9.1.6.7.1 Exception SFIS

Issue traffic information to or about unidentified VFR aircraft when information indicates a potential conflict exists.

See MATS 9.1.6.2 Possibility of conflict

9.1.6.7.2 Less than 2000 FT vertical displacement

Issue traffic information when less than 2000 FT vertical spacing exists between aircraft and:

a) severe turbulence is reported;
b) aircraft are operating above FL290; or
c) due to different altimetry rules beyond Australian FIRs, aircraft are at and below:
    i) 20 000 FT along the Port Moresby and Honiara boundaries;
    ii) 11 000 FT along the New Caledonia Sector Boundary; and
    iii) 10 000 FT along the remainder of Australian airspace oceanic limits.

9.1.6.8 Assistance to avoid traffic

On request, assist aircraft receiving an ATS surveillance service to avoid other traffic provided:

a) traffic information has been issued about the other traffic;
b) advice to turn or change level is prefixed with 'SUGGEST'; and
c) you notify pilots when the conflict no longer exists.

See MATS 9.1.4.3 Issuing a safety alert

9.1.7 Flightwatch

9.1.7.1 Flightwatch services

On request, provide flight information and briefing service via air-ground communication channels to pilots:

a) unable to obtain information pre-flight; or

b) requiring an in-flight briefing update.

9.1.7.1.1 Essential information

This service is normally limited to information considered essential to the first point of intended landing where access to a telephone or facsimile is available.

9.2 Clearances

9.2.1 Purpose and content

9.2.1.1 Objectives

Issue air traffic control clearances as necessary to prevent collisions, and to expedite and maintain an orderly flow of air traffic.

9.2.1.2 Issuing clearances

Issue clearances to provide separation between:

a) all flights in airspace Class A;
b) IFR flights in airspace Classes C, D and E;
c) IFR flights and VFR flights in airspace Class C;
d) IFR flights and special VFR flights; and
e) special VFR flights when visibility is less than VMC.

9.2.1.2.1 Exception

When requested by an IFR flight in Class D or E airspace, you may clear the flight without providing separation in visual meteorological conditions in accordance with:

a) VFR climb/descent procedures in Classes D and E airspace;
b) VFR-on-top procedures in Class E airspace; or
c) VFR departure procedures at Class D aerodromes.

See MATS 9.2.4 VFR climb/descent - Classes D and E airspace

See MATS 9.2.5 VFR-on-top - Class E airspace

See MATS 9.2.6 VFR procedures - Class D aerodrome

9.2.1.3 Content of a clearance

Include the following when issuing a clearance:

a) aircraft identification;
b) destination, area of operation, position or clearance limit;
c) route of flight; and
d) cleared level.

9.2.1.3.1 Additional instructions

You may include any additional instructions such as:

a) a level restriction;
b) departure type for IFR flights;
c) SSR code; and
d) frequency requirements.

9.2.1.3.2 Lengthy clearance

When the content of a clearance is considered complex or lengthy, advise the pilot that a clearance is available prior to issuing it. The pilot should then advise when ready to copy. This does not apply when a pilot has requested a clearance and is expecting a reply.

9.2.1.3.3 Anticipate request

Anticipate a clearance request in order to minimise delays. If a delay is anticipated, advise the pilot of the expected delay and offer an alternative, where practicable.

9.2.1.3.4 Purpose

Issue clearances that will enable an aircraft to remain within CTA if the pilot has planned to do so. If the clearance would involve a significant delay, you may offer a pilot an alternative route or track which would take the aircraft outside controlled airspace, provided that:

a) you advise the pilot that the amended clearances will take the flight outside controlled airspace;
b) the pilot accepts the amended clearance; and
c) you issue a specific clearance to re-enter controlled airspace if the flight will re-enter after the initial diversion.

9.2.1.3.5 Validity

The clearance, and its amendments during the flight only apply:

a) to the first point at which the aircraft leaves controlled airspace;
b) to the first landing point if the flight is wholly within controlled airspace;
c) to the clearance limit if issued;
d) until the expiration of a clearance void time; or
e) until cancelled by a controller.

9.2.2 Airways clearance

9.2.2.1 Issuing

When issuing an airways clearance, include:

a) at least the first position at which the flight planned route is joined; and
b) for a departing aircraft, the lower of:
    i) the standard assignable level;
    ii) the RFL; or
    iii) an amended level.

9.2.2.2 AIP routes

Clear IFR flights on routes published in AIP, where available.

9.2.2.2.1 Non-published routes

Obtain ATMD/Military Supervisor approval to use non-published routes.

Note: *Supervisor approval is not required for minor route deviations.*

9.2.2.3 Flight planned route

You may use the phrase 'FLIGHT PLANNED ROUTE' in an initial airways clearance to describe any route or portion of route that is identical to that filed in the flight notification after providing sufficient route details to definitely establish the aircraft on its route.

9.2.2.4 Amendment to an airways clearance

If the route and/or level issued in the initial airways clearance is not in accordance with the held Flight Plan, prefix the route and/or level clearance with 'AMENDED'.

9.2.2.4.1 Exception

Do not use the prefix 'AMENDED' or 'RECLEARED':

a) for SID or STAR clearances; or

b) during normal progressive climb/descent instructions.

9.2.2.5 Amended route clearances

Describe amended route clearances by:

a) ATS route designators published in AIP;

b) turning points in accordance with ERC (not permissible in respect of VFR flights other than RPT, or VFR at night where DR turning points are specified); or

c) visual fix points (at night fix points are only permissible for route description in respect of aircraft operating VFR at night).

9.2.2.5.1 Amended en route

Except as stated in Clause 9.2.2.4.1, when an airways clearance is amended en route, prefix the route and/or level information 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.

See MATS 9.2.2.4.1 Exception

9.2.2.5.2 Flight planned route

Do not use the phrase 'FLIGHT PLANNED ROUTE' when reclearing an aircraft.

9.2.2.5.3 Level assignment

Assign a level with all clearance changes regardless of whether a change has been made to the cleared level.

9.2.2.6 Clearance for VFR at night

Issue airways clearances to aircraft operating VFR at night in accordance with the flight planned route except:

a) when the pilot specifically requests another route;
b) when an amended route is deemed satisfactory in relation to the planned route (e.g. coastline flying); or
c) for short-term route variations:
   i) by vectoring; or
   ii) within 30 miles of a controlled aerodrome, by visual tracking.

9.2.2.6.1 Delay

You may delay a departing aircraft operating VFR at night until a planned route is available.

9.2.2.7 Area navigation tracking

Only issue route clearances authorising area navigation tracking when:

a) the flight segment is contained within ATS surveillance system coverage;
b) the route is published in AIP; or
c) prior coordination has been conducted between affected units.

9.2.2.8 Loss of area navigation capability

On pilot advice of loss or reduction of area navigation capability, reclear the aircraft via ground based navigation aids where practicable.

9.2.2.9 Imposing clearance limits

Impose clearance limits where required to ensure separation.

Note 1: *The clearance limit for aircraft navigating on instruments is the holding fix associated with the final approach to be used.*

Note 2: *A holding instruction imposes a clearance limit on the aircraft.*

9.2.2.10 Description of a holding path

A description of a holding path to be flown at a clearance limit is not required when:

a) the holding fix is published in aeronautical information documents; or
b) it has been imposed temporarily, and it is expected that the requirement to hold will have lapsed before the aircraft arrives at the designated holding fix.

9.2.2.11 Repeat turn direction

Repeat the direction of turn when an aircraft is instructed to turn through 180 degrees or more.

9.2.2.12 Cancelling clearance limit

When a clearance limit is cancelled, issue an onwards clearance specifying the level and route to be flown from that point.

9.2.2.13 Pilot readback

Obtain a readback in sufficient detail that clearly indicates pilot's understanding of and compliance with all ATC clearances, including conditional clearances, instructions and information which are transmitted by voice.

9.2.2.13.1 ATC route clearance

Obtain a readback of an ATC route clearance in its entirety, as well as any amendments.

9.2.2.13.2 Key elements

Obtain a readback of the key elements of the following ATC clearances, instructions and information:

a) en route holding instructions;
b) any route and runway-holding position specified in a taxi clearance;
c) any clearances or instructions to hold short of, enter, land on, line up on, wait, take-off from, cross, taxi or backtrack on, any runway or HLS;
d) an assigned runway or HLS;
e) any approach clearance;
f) altimeter settings directed to specific aircraft, radio and radio navaid frequency instructions;
g) SSR codes and data link logon codes; and
h) level instructions, direction of turn, heading and speed instructions.

Note: *Pilots are not required to read back an expectation of the runway to be used.*

9.2.2.13.3 Readback discrepancies

Correct readback discrepancies immediately.

9.2.2.14 Avoiding volcanic ash

When a clearance includes air routes affected by volcanic ash within Australian-administered airspace:

1) determine the pilot's awareness of the volcanic ash and intentions; and
2) suggest amended routing if necessary.

Note: *A pilot may have more up to date information on volcanic activity and may plan or request route clearances and amendments contrary to information available to ATC.*

9.2.3 Blanket clearances

9.2.3.1 Use of blanket clearance

Originate blanket clearances for activities or events that require extended approval to operate within controlled airspace.

9.2.3.1.1 Written approval

Publish the terms of blanket clearances in local agreements. Include applicable details from the following:

a) Area or route of operation;
b) Approved level(s) of operation;
c) Applicable times of operation;
d) Restrictions or limitations;
e) Aircraft callsigns or activities to which the agreement applies; and
f) Other information e.g. emergency or contingency procedures.

9.2.4 VFR climb/descent - Classes D and E airspace

9.2.4.1 VFR climb/descent

In Classes D and E airspace, on receiving a request for VFR climb/descent, you may clear the pilot to 'CLIMB/DESCEND VFR' for a specified portion of the flight.

Note: *Separation is not provided to an aircraft during VFR climb/descent.*

See MATS 9.1.5.1.1 IFR conducting VFR procedures

9.2.5 VFR-on-top - Class E airspace

9.2.5.1 VFR-on-top

In Class E airspace, on receiving a request for VFR-on-top, you may instruct the pilot to climb to 'VFR-ON-TOP'. Include in the instruction:

a) if required, a clearance limit, routing and an alternative clearance if VFR-on-top is not reached by the lower of a specified altitude or the upper limit of Class E airspace;
b) the requirement to report reaching VFR-on-top; and
c) the reported height of the tops or that no tops report is available.

9.2.5.1.1 Maintain VFR-on-top

Once the pilot reports reaching VFR-on-top, you may re-clear the aircraft to 'MAINTAIN VFR-ON-TOP'.

Note: *Separation is not provided to an aircraft cleared to maintain VFR-on-top.*

See MATS 9.1.5.1.1 IFR conducting VFR procedures

9.2.5.1.2 Night restriction

Do not clear an aircraft to 'MAINTAIN VFR-ON-TOP' at night to separate holding aircraft from each other or from en route aircraft unless restrictions are applied to ensure the appropriate IFR vertical separation exists.

9.2.5.1.3 Refusal of procedure

When the use of VFR-on-top may adversely impact your workload, or may impose a collision risk, then you may refuse use of the procedure or impose vertical limits to separate the aircraft from other traffic.

9.2.5.1.4 Vertical boundary

Where a vertical boundary exists between units within Class E airspace, impose a level restriction on an aircraft climbing to/maintaining VFR-on-top to prevent the aircraft from entering the adjacent unit's airspace, until appropriate coordination has been effected.

9.2.6 VFR procedures - Class D aerodrome

9.2.6.1 VFR departure

At a Class D aerodrome, on pilot request, you may approve an IFR aircraft to conduct a VFR departure.

Note: *The pilot of an IFR flight conducting a VFR departure must:*

a) comply with the VFR;

b) obtain ATC clearance prior to entering Class A or C airspace;

c) obtain ATC approval to resume IFR in Class A, C, D or E airspace; and

d) notify ATC when resuming or cancelling IFR once in Class G airspace.

See MATS 10.1.5 Transfer of separation responsibility

9.2.6.1.1 Service provided

Treat aircraft as:

a) VFR for separation purposes in Class C, D or E airspace until the pilot requests and is granted an IFR clearance;

b) VFR in Class C or D airspace and VFR in receipt of a SIS in Class E or G airspace for traffic information; and

c) IFR for all other services, including in Class G airspace.

See MATS 9.1.5.1.1 IFR conducting VFR procedures
See MATS 10.1.5.3 Resume responsibility
See MATS 10.1.5.4 IFR conducting VFR procedures

9.2.6.2 VFR arrival

When an aircraft will arrive at a Class D aerodrome the pilot may change flight rules to facilitate entry to the control zone.

9.2.7 Special VFR

9.2.7.1 Special VFR clearance conditions

A Special VFR clearance may be issued:

a) at pilot request;
b) by day;
c) when VMC does not exist;
d) for a VFR flight:
   i) within a CTR; or
   ii) in CTA next to the CTR for the purpose of entering or leaving the CTR; and
e) provided an IFR flight will not be unduly delayed.

9.2.8 STAR clearances

9.2.8.1 Use of STARs

Initiate STARs when they are available unless circumstances, such as weather, render them impractical.

9.2.8.1.1 Exception to STAR

Do not issue a STAR to an aircraft that has planned below the LSALT.

9.2.8.2 Responsible sector to issue

Issue the STAR clearance on initial contact with the aircraft and prior to commencement of descent.

9.2.8.3 STAR expectation

Prior to issuing the clearance, advise the pilot that a clearance is available, unless the pilot has been advised by the preceding sector to 'EXPECT STAR CLEARANCE' on first contact.

9.2.8.3.1 Local instructions

Specify in local instructions when the preceding sector will issue 'EXPECT STAR CLEARANCE'.

9.2.8.4 Content

A STAR clearance contains:

a) STAR designator;
b) a transition route when applicable;
c) a runway, when a STAR includes more than one arrival track; and
d) a cleared level.

9.2.8.5 Specify compliance

When an aircraft has commenced a STAR and published speed or level restrictions remain, indicate STAR compliance in all descent instructions e.g. '[WHEN READY] DESCEND VIA STAR TO A100'.

9.2.8.5.1 No remaining published restrictions

If there are no remaining published restrictions on the STAR, the phrase 'DESCEND TO (*level*)' should be used.

9.2.8.5.2 Before STAR has commenced

When an aircraft is cleared on a STAR, but has not commenced it, indicate STAR compliance in sufficient time to allow pilots to comply with published restrictions.

9.2.8.5.3 Exception - holding

When an aircraft has commenced a STAR and is instructed to descend within a holding pattern, do not use STAR phrases.

9.2.8.6 Speed restrictions - STAR

Consider an ATC-issued speed control instruction to explicitly cancel published speed restrictions.

Note: *Airspace speed limitations still apply.*

See MATS 9.5.1.2 Published speeds

9.2.8.7 Level restriction changes - STAR

Reiterate all level restrictions when an aircraft is on a STAR with published level restrictions and:

1) ATC level restrictions are issued; and
2) any level restrictions are subsequently cancelled e.g. 'DESCEND VIA STAR TO A040, CANCEL LEVEL RESTRICTIONS, DESCEND TO REACH A060 BY LETTA DUE CROSSING TRAFFIC'.

9.2.8.8 Heavy jet

With the exception of Australian and New Zealand operators, do not assign Super or Heavy jet aircraft the visual segment of a STAR.

9.2.8.9 Timely descent

Assign descent in sufficient time to allow pilots to comply with vertical navigation restrictions.

Note: *A published level restriction depicted on a STAR chart does not authorise a pilot to descend to meet that restriction.*

9.2.8.10 Vector on request

Provide vectors on pilot request during a STAR.

Note: *Where a STAR incorporates circuit legs to a runway, pilots of aircraft not equipped with a flight management system may accept the STAR clearance in anticipation of vectors from approach control e.g. '(callsign) REQUEST VECTORS FROM (waypoint or fix)'.*

9.2.8.11 Vectoring or deviations after a STAR has been issued

When an arriving aircraft is vectored or cleared to deviate away from its cleared route after a STAR has been issued, and there is an expectation it will join (or rejoin) the STAR at or after its commencement point:

a) reiterate the cleared level;

b) provide speed and level restrictions as necessary; and

c) as far as practicable, issue EXPECT TO REJOIN STAR.

Note 1: *All published speed and level restrictions of the STAR are automatically cancelled.*

Note 2: *A holding aircraft is not considered to have left the STAR.*

9.2.8.11.1 No rejoin expectation

Prior to hand-off, coordinate to the next unit when an aircraft being vectored has not been issued a REJOIN STAR expectation.

9.2.8.12 Rejoining a STAR

When an aircraft is instructed to rejoin a STAR, specify any transition restrictions that must be complied with up to, but not including the waypoint where the STAR is rejoined.

Note: *The pilot must comply with all published speed and level restrictions at and after the waypoint where the STAR is rejoined.*

9.2.8.12.1 Include STAR designator

When an expectation to rejoin the STAR is not provided, include the STAR designator when clearing the aircraft to rejoin the STAR.

9.2.9 Abbreviated clearances - Class D Aerodromes

9.2.9.1 Clearance by establishing two-way communication

You may authorise an aircraft to enter Class D airspace, in accordance with the pilot's stated intentions, by establishing two-way communications with the pilot.

See AIP ENR 1.1

9.2.9.2 Alternative clearance

To maintain separation or expedite the flow of traffic, you may issue specific instructions that differ from the stated altitude and intentions. In such circumstances normal readback requirements apply.

See MATS 9.2.2.13 Pilot readback

9.3 Altimetry

9.3.1 Altimeter settings

9.3.1.1 Common settings

Consider an aircraft using Local QNH to be on common settings with an aircraft using Area QNH or an alternate Local QNH, provided the difference between the QNHs is not greater than 5 HPA.

9.3.1.2 QNH variations

Notify the MET office when you observe that the difference exceeds 5 HPA between:

a) Local QNH and Area QNH; or
b) adjacent Area QNH zones.

9.3.1.3 Transition layer

Australian FIRs use a transition layer between the 10 000 FT transition altitude and the transition level of FL110 to FL130 depending on QNH.

9.3.1.3.1 Use of transition layer

Do not clear aircraft to cruise within the transition layer.

9.3.1.4 Transition levels

The transition level is FL110 unless the QNH is in accordance with the following:

QNH is less than	Transition level
1013 HPA	FL115
997 HPA	FL120
980 HPA	FL125
963 HPA	FL130

9.3.1.4.1 Area and local QNH

ATC may assign a level if either the Area or Local QNH permits.

9.3.1.4.2 Aircraft outside controlled airspace

In the event of an aircraft outside controlled airspace reporting at a non-permissible flight level due to the current Area QNH value being less than 1013 HPA, advise the aircraft of the Area QNH so that adjustment of cruising level can be made e.g. 'AREA QNH ONE ZERO ZERO THREE PRECLUDES CRUISING AT FLIGHT LEVEL ONE ONE ZERO - ADVISE INTENTIONS'.

9.3.1.5 Altimeter settings to pilot

Give altimeter settings in HPAs and rounded down to the nearest whole HPA.

9.3.2 Local QNH

9.3.2.1 Pass local QNH

Pass Local QNH to aircraft that will be arriving at or departing from a controlled aerodrome.

9.3.2.1.1 Aircraft descending

Provide an aircraft descending in controlled airspace with a Local QNH when it is first assigned an altitude.

9.3.2.2 QNH older than 30 min

Do not pass a QNH that is more than 30 minutes old.

9.3.3 Area QNH

9.3.3.1 Area QNH

Advise aircraft intending to cruise in the Altimeter Setting Region of Area QNH:

Situation	Unit responsible	Action required
When departing from an aerodrome outside controlled airspace	For the departure aerodrome	Transmits the current Area QNH for the zone to IFR aircraft on receipt of a departure report
When departing from an aerodrome within a control zone	For sector control, if the aircraft will transfer to a sector frequency; or The appropriate flight information unit	Pass the Area QNH when communication is established

9.3.3.2 En route aircraft

Advise en route aircraft cruising in the Altimeter Setting Region of Area QNH when crossing:

a) the lateral boundary of an Area QNH zone; and
b) additional boundaries specified due to pressure distribution.

9.3.3.3 Descending aircraft

Advise Area QNH to aircraft in the Standard Pressure Region when:

a) descending to cruise at an altitude in the Altimeter Setting Region; and

b) on final descent out of the Standard Pressure Region to a non-controlled aerodrome.

9.3.3.4 Changes greater than 5 HPA

Broadcast the current Area QNH on all air-ground frequencies whenever the Area QNH changes by greater than 5 HPA.

9.3.3.4.1 Advice

As far as possible, specifically advise aircraft known to be affected.

9.3.3.5 Dissemination of Area QNH

Current Area QNH and subsequent Area QNH information received from the BoM for the next period is to be:

a) displayed at briefing units; and

b) included in verbal briefing for non-radio equipped aircraft and for aircraft not using radio for reporting.

9.3.3.6 Brief pilots of Area QNH

Brief pilots planning to enter other Area QNH zones with the appropriate Area QNH. If the adjacent Area QNH is not readily obtainable, instruct the pilot of an aircraft equipped with radio to make a specific call at the boundary to obtain the information.

9.3.4 Pressure settings in military airspace

9.3.4.1 Flights departing

Notify flights departing military airspace intending to cruise in the Altimeter Setting Region of Area QNH, after transfer of responsibility.

9.3.4.2 Flights proceeding NOCOM

Make Area QNH available before departure for flights intending to proceed NOCOM before airspace boundary.

9.3.4.3 Notify arriving flights

Notify arriving flights cruising in the Altimeter Setting Region of Local QNH on first descent assignment unless the pilot indicates receipt of ATIS.

Note 1: *In military airspace local flights operating in the Altimeter Setting Region normally remain on Local QNH.*

Note 2: *In military airspace overflying aircraft operating in the Altimeter Setting Region remain on Area QNH unless requested to set Local QNH (settings are considered the same for separation purposes).*

9.4 Level assignment

9.4.1 Procedure

9.4.1.1 Considerations

Assign levels, taking into account:

a) separation;
b) terrain clearance;
c) the tables of cruising levels;
d) provision for radio failure; and
e) priority.

See MATS 9.2 Clearances
See MATS 9.7 ATS surveillance system procedures
See MATS 11.1 Arriving aircraft
See MATS 11.2 Departing aircraft

9.4.1.2 Minimum assignable level

Assign levels no lower than the applicable LSALT unless the pilot has accepted responsibility for terrain clearance.

Note: *A pilot calculated LSALT is acceptable for this purpose, when not on a published route.*

See MATS 9.4.2 Operations below LSALT
See MATS 9.7.11 Terrain clearance

9.4.1.2.1 Assigning levels in accordance with an RTCC

Only assign levels in accordance with an RTCC when you are providing a surveillance approach service.

9.4.1.2.2 RNP APCH

Assign levels no lower than the level depicted for the intermediate fix where the aircraft intercepts the RNP APCH procedure.

See MATS 11.1.2.1 Vectoring aircraft for approaches - ground based navaids

9.4.1.2.3 RNP AR APCH

Assign the segment minimum safe altitude depicted in the approach segment at or after the waypoint where the aircraft intercepts the RNP AR APCH procedure.

See MATS 11.1.2.1 Vectoring aircraft for approaches - ground based navaids
See MATS 11.1.10.2 RNP AR APCH terrain clearance
See AIP DAP

9.4.1.3 Compliance with CASR 91.265 and 91.267

Issue clearances to enable pilots to comply with CASR 91.265 and 91.267 (minimum height rules).

Note: *Compliance with CASR 91.265 and 91.267 remains a pilot responsibility.*

9.4.1.4 One level or band

Assign one cruising level or band of levels to an aircraft at any one time.

9.4.1.5 Block level clearances

Do not issue block level clearances to:

a) civil aircraft in Class E airspace; or
b) aircraft to which a Mach number technique is applied.

Note: *For NVG/NVIS in Class E airspace, a clearance not above an altitude or level does not constitute a block level clearance.*

9.4.1.6 Cancellation

Cancel block level clearances if other aircraft request a clearance to operate at levels within the block.

9.4.1.7 Priority

Apply level assignment, as follows:

a) Aircraft at levels conforming to the tables of cruising levels have priority over aircraft at non-conforming levels;
b) Aircraft assigned a level have priority over aircraft requesting that level; and
c) When two or more aircraft are at the same level, the preceding aircraft has priority.

9.4.1.8 Cruising levels

Assign cruising levels conforming to the tables of cruising levels.

9.4.1.9 Non-conforming levels

Assign cruising levels not conforming to the tables of cruising levels only when:

a) traffic disposition or other operational circumstances preclude the use of conforming levels; or
b) operationally required by a flight crew member.

9.4.1.9.1 Continuous assessment

Continually assess the risk to all traffic against any operational penalty to the non-conforming aircraft following the assignment of a non-conforming level.

9.4.1.9.2 Return to standard levels

Return aircraft to conforming levels when traffic, workload and aircraft performance allow.

9.4.1.10 Where RVSM not applied

Unless coordination is effected, assign aircraft entering airspace where RVSM is not applied, a level complying with the accepting sector's tables of cruising levels before the sector boundary, or by the time or distance specified by the accepting sector.

9.4.1.11 Non-conforming cruising levels - outside of controlled airspace

Advise pilots operating at, or notifying intention to operate at, a cruising level not conforming to the tables of cruising levels, that they are at a non-conforming cruising level and request their intentions.

See AIP

9.4.1.12 Cruise climb

Do not authorise aircraft to use the ICAO cruise climb procedure.

9.4.1.13 Non-continuous climb or descent

Where there is an expectation that an aircraft will maintain a level on climb or descent include the instruction 'AND MAINTAIN' e.g. 'DESCEND TO AND MAINTAIN FL250'.

9.4.1.14 Level assignment with vertically adjoined airspace

Assign levels that separate a controlled flight operating in one airspace from a controlled flight operating in an adjacent airspace, by an air traffic control vertical minimum appropriate to the operations involved.

9.4.1.14.1 Retain useable levels

Establish the highest and lowest useable levels within each airspace to ensure separation is maintained and a level is not lost at the adjoining boundary.

9.4.1.14.2 Standard assignable levels

Unless specified in local instructions, assign levels for aircraft that will cross a vertically adjoining en route/en route, or en route/approach airspace boundary, as follows:

a) where the boundary is a VFR level:

For aircraft on	Assignable level
Climb	500 FT below the common airspace boundary level
Descent	500 FT above the common airspace boundary level

b) where the boundary is an IFR level:

For aircraft on	Assignable level
Climb	The common airspace boundary level
Descent	1000 FT above the common airspace boundary level

See also MATS 6.3.4.15 Boundary coordination - vertical

9.4.1.15 Leave CTA descending

When the applicable LSALT is within controlled airspace and an IFR aircraft is descending to leave controlled airspace:

a) if the pilot is visual, append 'VISUAL' to the clearance; or
b) if it is not certain that VMC exists:
   i) do not clear the aircraft below the LSALT;
   ii) instruct the aircraft to report approach intentions at that altitude; and
   iii) issue further clearances as required.

See MATS 9.4.2.1 Issuing levels below LSALT

9.4.1.15.1 Lowest holding altitude

Continue to maintain separation with an aircraft holding, leaving controlled airspace or re-entering controlled airspace on an instrument approach, until a successful approach is assured.

Note: *A clearance to leave CTA on the approach also authorises the aircraft to re-enter CTA, or Restricted/Military Operating Areas, on the published missed approach.*

9.4.1.16 Entering CTA climbing

Where it is not certain that a clearance that enables uninterrupted climb to route LSALT will be available without delay, then on receipt of a taxi report or clearance request:

a) advise the pilot that clearance to route LSALT is not available;
b) advise the expected delay; and
c) propose a clearance on an alternative route, where practicable.

9.4.1.17 Instruct aircraft

You may instruct aircraft to enter controlled airspace at a specified time, position or level when issuing a clearance.

9.4.2 Operations below LSALT

9.4.2.1 Issuing levels below LSALT

You may assign a pilot a level below the applicable LSALT provided that:

a) by day, the IFR pilot has reported 'VISUAL' and 'VISUAL' is appended to the level assigned; or

b) by night:

  i) for VFR aircraft the clearance is issued by use of the phrase 'WHEN ESTABLISHED WITHIN THREE MILES, DESCEND TO (*level*)'; or

  ii) for IFR aircraft, the pilot has reported 'VISUAL', and the clearance is issued by use of the phrase 'WHEN ESTABLISHED IN THE CIRCLING AREA, DESCEND TO (*level*) VISUAL'.

See MATS 9.7.11.2 Approving pilot terrain clearance

See MATS 12.9.2.3 VMC by day only

9.4.2.1.1 Exception - authorised flights

You may assign pilots levels below the published or pilot calculated LSALT, on pilot request, in accordance with the following table:

Type of flight	Conditions
Civil - NVIS Pilots requesting operations 'not above' a published or pilot calculated LSALT using NVIS Pilots requesting operations at (or not above) a level below the published or pilot calculated LSALT using NVIS	**Pilot:** REQUEST NOT ABOVE (*altitude*) (PILOT CALCULATED [or PUBLISHED] LOWEST SAFE) NVIS **ATC:** CLIMB (*or* DESCEND) TO (*or* OPERATE NOT ABOVE) (*altitude*) [PILOT CALCULATED LOWEST SAFE] NVIS **Pilot:** REQUEST [NOT ABOVE] (*altitude*) NVIS **ATC:** CLIMB (*or* DESCEND) TO (*or* OPERATE NOT ABOVE) (*altitude*) NVIS
Civil - CASA approval Pilots with CASA approval requesting operations below the published LSALT at night or in IMC.	**Pilot**: REQUEST (DESCENT *or* CLIMB *or* OPERATIONS) [AT (NOT ABOVE)] (*altitude*) OWN TERRAIN CLEARANCE **ATC**: CLIMB TO (*or* DESCEND TO *or* OPERATE) [AT (NOT ABOVE)] (*altitude*) MAINTAIN OWN TERRAIN CLEARANCE
Military - In IMC or VMC at night without NVG	**Pilot:** REQUEST (*altitude*), MILITARY TERRAIN CLEARANCE **ATC:** CLIMB (*or* DESCEND) TO (*or* OPERATE NOT ABOVE) (*altitude*) MILITARY TERRAIN CLEARANCE'
Military - In VMC at night with NVG	**Pilot:** REQUEST (*altitude*), NVG **ATC:** CLIMB (*or* DESCEND) TO (*or* OPERATE NOT ABOVE) (*altitude*) NVG

Note 1: *These procedures do not substitute for the conditions of a visual approach at night.*

Note 2: *In accepting the clearance, the pilot accepts the responsibility for terrain clearance.*

9.4.3 Vertical buffers between aircraft inside and outside controlled airspace

9.4.3.1 Vertical buffer with base of CTA - VFR aircraft

Assign levels to VFR aircraft to provide a buffer of at least 500 FT with the base of CTA.

9.4.3.2 Vertical buffer with base of CTA - IFR aircraft

Except on pilot request, assign levels to IFR aircraft to provide a buffer with the base of CTA in accordance with the following table:

Base of CTA	Vertical buffer	Exception
IFR level	1000 FT from the base of CTA	No IFR traffic operating at base of CTA - provide 500 FT from the base of CTA
All other levels	500 FT from the base of CTA	IFR traffic operating less than 500 FT below the CTA base - provide 1000 FT from the base of CTA

Note 1: *It is a pilot responsibility to ascertain if CTA containment is required when conducting an instrument approach procedure which will take the aircraft into Class G airspace.*

Note 2: *IFR aircraft must remain not less than 500 FT above the base of CTA during the conduct of a visual approach.*

9.4.3.2.1 IFR aircraft

Provide traffic information about aircraft operating outside CTA when levels are assigned without the appropriate buffer with the base of CTA.

See MATS 9.1.5 Traffic information

9.4.4 Level restrictions

9.4.4.1 Departing aircraft

Do not issue level restrictions for departing aircraft which apply beyond a distance of 50 NM (or as specified in local instructions) from the departure aerodrome.

9.4.4.2 Repeat level restrictions

Repeat level restrictions issued by ATC in air-ground communications in conjunction with subsequent level clearances in order for them to remain in effect.

9.4.4.3 Further restriction

Whenever a restriction has been imposed and a further restriction is required, the subsequent instruction cancels all previous restrictions unless:

a) all restrictions are restated; or
b) you prefix the subsequent instruction with 'FURTHER RESTRICTION'.

9.4.4.4 Enable pilots to comply

Assign levels in sufficient time to enable pilots to comply with vertical navigation restrictions.

9.4.4.5 Future level restrictions

You may advise pilots to expect a future level restriction which will apply beyond the terms of their current clearance e.g. 'EXPECT A RESTRICTION TO REACH FL210 BY TARAL'.

9.4.4.5.1 Expectation of future level

Do not provide the expectation of a future level restriction in the same transmission as a level assignment.

9.5 Speed control

9.5.1 Application

9.5.1.1 Speed control principles

Adhere to the following when applying ATC-issued speed control:

a) Avoid alternate decreases and increases in speed;

b) Avoid the use of minimum speed when a higher speed is practicable;

c) Do not vary the final approach speed;

d) Advise the pilot of future intentions;

e) Remove ATC-issued speed control restrictions when the application of speed control is no longer necessary; and

f) Make speed adjustments judiciously in advance of the point at which the new speed is required, depending on the aircraft type and amount of adjustment involved.

Note: *For like type aircraft, performance may vary between companies or within the same company. Factors affecting performance include the:*

a) model or series of the aircraft;

b) operational conditions; and

c) in-flight or operator requirements.

9.5.1.2 Published speeds

Avoid cancelling published speed restrictions for arriving aircraft, except when necessary for:

a) traffic management; or

b) aircraft operational requirements.

See MATS 9.2.8.6 Speed restrictions - STAR
See MATS 11.2.2.3.2 Speed restrictions - SID

9.5.1.3 Formation and MILSPECREQ (LTD FUEL ENDCE) flights

Do not apply speed control to formation or MILSPECREQ (LTD FUEL ENDCE) flights.

9.5.1.4 Aircraft speed data guidance table

Aircraft Type	CLIAS	MAX CRUISE	PROFILE to 30 NM	MNM to 30 NM	MNM 30 to 15 NM	MNM 15 NM to Final	MAX DESCENT
Civil							
A220/BCS3 (QJE)	290/M.78	M.82	290	250	210	145	M.78/300 280 B100 250 B050 210 B030
A320 (JST)	275 - 320	M.76-M.78	280	230	210	170	M.80/340
A320 (SIA)	275/M.78	M.78	275	200	150	140	320
A321 (JST)	280/M.77	M.76-M.78	280	245	220	180	M.80/340
A330 (JST)	275 - 310	M.81	280	220	200	170	M.84/320
A330 (QFA)	280 - 330	M.84	280 - 310	210	200	160	M.82/310
A330 (SIA)	290/M.82	M.82	280	180	160	140	320
A350 (SIA)	300/M.85	M.85	280	190	160	140	320
A350 (THA)	280 - 330	M.87	M.85/300	200 – 250	155 – 200	140 - 155	M.87/330
A380 (QFA)	280 - 330	M.86	280 - 310	210	200	160	M.85/320
A380 (SIA)	300/M.84	M.84	280	190	170	140	320
ATR 72 500/600	170	265	240	170	170	150	240
B712 (QJE)	280/M.76	M.76	M.76/260	M.72/230	210	145	M.78/320 280 B100 250 B050 210 B030
B737 (QFA)	270 - 300	M.80	280 - 310	230	230	170	M.78/310
B737 (RXA)	270 - 310	M.80	280 - 310	230	230	170	M.78/320 250 B050
B737 (SIA)	280/M.78	M.78	255	200	170	150	320
B737 (VOZ)	270 - 310	M.80	280 – 310	230	230	170	M.78/320 250 B050
B737-BBJ	280 - 330	M.80	280	220	200	150	M.82/340
B747	280 - 340	M.86	280 - 310	220	200	170	M.86/340
B747F (SIA)	320 - 340/M.85	M.85-M.86	300	230	190	170	320
B767	280 - 330	M.82	280 - 310	220	200	170	M.86/340
B777 (SIA)	320/M.836	M.836	300	210	170	160	320
B777 (THA)	320/M.85	M.85	280 – 310	210	190	170	M.85/315

Aircraft Type	CLIAS	MAX CRUISE	PROFILE to 30 NM	MNM to 30 NM	MNM 30 to 15 NM	MNM 15 NM to Final	MAX DESCENT
B787 (JST)	300 - 330 M.82-M.85	M.80-M.86	300	250	230	150	M.86/350
B787 (QFA)	300 - 330 M.82-M.85	M.80-M.86	280 - 310	250	230	150	M.86/350
B787 (SIA)	320/M0.85	M.85	300	200	180	160	320
B787 (THA)	320/M.86	M.86	280 – 310	210	190	170	M.85/315
B461/2/3 (QJE)	250/M.60	M.67/280	280	230	210	150	M.68/285
BE20	160	220	210	-	140	-	220
B350	170	200	210	140	140	140	230
C550	-	M.60	250	-	-	140	260
DH8B/C (QLK)	150 - 205	160 - 230	195 - 230 210 B030	160	160	160	230
DH8D (QLK)	185 - 240	230 - 275	240 - 275 210 B030	190	190	190	275
E170	250 - 290	M.80/310	M.78/280	210	210	160	M.80/310
E190	250 - 290	M.80/310	M.78/280	210	210	160	M.80/310
F100 (UTY)	280/M.70	M.70	280	210	210	180	M.74/320
GULF	300	M.80	275	200	160	-	330
HS25A/B	230/M.63	M.73	250	200	-	-	M.72/300
LJ25/35	250/M.70	M.78	300	250	210	180	350
PC12NG	140	M.48/240	220	170	-	150	220
PC24	200 – 250	M.74	M.72/280	250	200	150	M.73/280
SF34	155	200	245	140	140	130	245
WW24	250/M.65	M.71	350	-	-	-	350
Military							
C17	250 - 310	M.76	310 250 B100	220	180	160	M.82/350
C27	250	300	200 - 220	140 - 220	140 - 170	120 - 140	250
C130J	170	230	230	170	170	150	250
CL60	250/M.72	M.82	M.78 280 - 300	190	160	125 - 135	M.82/330
E737*	260 - 300	M.76	280	220	210	150	M.78/340
F18	350	M.88	350	300 - 250	210	180	450+
F35A	350	M.95	350	250	200	150 - 200	450+

Aircraft Type	CLIAS	MAX CRUISE	PROFILE to 30 NM	MNM to 30 NM	MNM 30 to 15 NM	MNM 15 NM to Final	MAX DESCENT
FA7X	250 - 300	M.90	M.83/300	200	200	140	350
HAWK	350/M.74	450/M.85	350	300	210	180	M1.2/575
KC30A	280 - 330	M.84	280 - 310	210	200	160	M.84/330
P3	220	-	250 - 300	200	170	150	300
P8	290/M.76	310/M.78	M.76/290	250	210	150	M.78/320
PC21	180	300	240	160	160	130	300

* E737 operations restricted to no greater than 250 KIAS below 5000 FT AGL

Note 1: *IAS is in knots unless otherwise depicted*

Note 2: *Operators will comply with airspace and procedure speed requirements*

Note 3: *Quoted minimum speeds may be less than the recommended turbulence penetration speed*

9.6 Holding

9.6.1 Rules and procedures

9.6.1.1 Issuing holding instructions

When holding is required, use the published procedure or clear the aircraft to a holding position.

9.6.1.1.1 Holding other than published

You may require or approve a request for an aircraft to hold or orbit in a manner different from that published provided that:

a) the specified holding pattern will not take the aircraft outside controlled airspace; and

b) terrain clearance is maintained.

9.6.1.2 Holding due weather

When aircraft are holding because weather conditions are worse than the prescribed landing minima of an applicable instrument approach, instruct the pilot to report at scheduled intervals not exceeding 15 minutes.

9.6.1.3 Onward clearance times

When a delay of 6 min or more is expected, notify the pilot as soon as possible of the:

a) EAT;

b) ETL; or

c) expected time to depart from the holding fix.

Note 1: *Pilots are required to advise latest divert times when operationally necessary.*

Note 2: *Holding delays may be broadcast on the ATIS.*

See MATS 3.1.1.5 Order of ATIS information

9.6.1.3.1 Changes to delay advice

Advise changes to the aircraft’s onward clearance time on arrival at the holding fix, and as considered necessary.

9.7 ATS surveillance system procedures

9.7.1 Application

9.7.1.1 ATS surveillance system information

Use the information provided by the ATS surveillance system and presented on a situational display to:

a) provide surveillance services to:
   i) improve airspace utilisation;
   ii) reduce delays;
   iii) provide for direct routings;
   iv) optimise flight profiles; and
   v) enhance safety;

b) provide vectoring to:
   i) departing aircraft to facilitate an expeditious and efficient departure flow and expedite climb to cruise level;
   ii) aircraft to prevent potential conflicts;
   iii) arriving aircraft to establish an expeditious and efficient approach sequence; and
   iv) assist pilot navigation;

c) provide separation and maintain normal traffic flow when an aircraft experiences communication failure within the area of coverage;

d) maintain flight path monitoring of air traffic; and

e) maintain a watch on the progress of air traffic in order to provide:
   i) improved position information regarding aircraft under control;
   ii) supplementary information regarding other traffic; and
   iii) information regarding any significant deviations by aircraft from the terms of their respective clearances.

9.7.2 Identification

9.7.2.1 Establish identification

Establish identification before providing an ATS surveillance service to an aircraft.

9.7.2.2 Maintain identification

Maintain identification until the ATS surveillance service is terminated.

9.7.2.3 Identification advice

Advise aircraft when identification is established or terminated.

9.7.2.3.1 Exception aerodrome control

Do not advise aircraft when identification is established when providing a Tower ATS surveillance service unless vectoring.

See MATS 12.9.3.5.1 Identification advice

9.7.2.4 Identification procedures

Establish identification by one or more of the following procedures:

a) Correlate an alpha-numeric label with an aircraft's ATS surveillance system position symbol provided the correlation is consistent with the aircraft's expected position;

b) Transfer of identification;

c) Observe compliance with an instruction to:

   i) operate the Special Position Identification (SPI);

   ii) change to a specific SSR code; or

   iii) transmit ADS-B IDENT; or

d) Correlate an observed radar position symbol with manoeuvres currently executed by a departing aircraft which acknowledged instructions to that effect, provided that identification is established within 3 NM of the radar sensor.

See MATS 9.7.6 Transfer of identification

9.7.2.5 Additional identification procedures - ADS-B and Mode S

You may establish ADS-B or Mode S identification by direct recognition of the aircraft identification.

9.7.2.6 Additional identification procedures - PSR

You may establish PSR identification by using one or more of the following procedures:

a) Correlate a particular radar position symbol with an aircraft reporting its position over, or bearing and distance from, a point shown on the situation display, provided the track of the radar position symbol is consistent with the aircraft path or reported heading;

b) Correlate an observed radar position symbol with an aircraft which is known to have departed, provided that the identification is established within 1 NM from the end of the runway used; or

c) Ascertain the aircraft heading, if required, and following a period of track observation:

   i) instruct the pilot to execute one or more changes of heading of 30 degrees or more and correlate the movements with the aircraft’s acknowledged execution of the instructions given; or

   ii) correlate the movements of a particular radar position symbol with the reported manoeuvres of an aircraft.

9.7.2.6.1 PSR identification conditions

When correlating the movements of a radar position symbol to identify an aircraft:

a) verify that the movements of not more than one radar position symbol correspond with those of the aircraft;

b) ensure that the manoeuvre(s) will not carry the aircraft outside the coverage of the radar or the situation display; and

c) allow for equipment tolerances in the reported position and in the observed radar position symbol.

9.7.2.7 Identification by visual observation

Establish identification by correlating a particular radar position symbol to the position of an aircraft observed visually.

9.7.3 SSR code management

9.7.3.1 Verification of Mode 3A

On initial radar contact:

a) check that the Mode 3A Code set is identical to that assigned to the aircraft; and

b) verify by matching the callsign displayed in the label to a radar position symbol.

9.7.3.1.1 Display discrepancy

Where the Mode 3A data displayed does not correspond to that assigned, request the pilot to confirm selection of the correct code.

9.7.3.1.2 Continuing discrepancy

If the discrepancy continues, instruct the pilot to turn the transponder to STANDBY or OFF.

9.7.3.1.3 Do not advise verification

Do not advise the pilot of verification of Mode 3A data.

9.7.3.2 Issue SSR on first contact

When an aircraft will operate within radar coverage, issue the assigned SSR code:

a) on first contact; or

b) upon entering Australian-administered airspace.

Note: *The availability of ADS-B data does not negate any requirement to assign an SSR code to the aircraft.*

9.7.3.3 SSR code dissemination

Disseminate assigned SSR codes to international HF positions responsible for third party communications for inbound and overflying flights.

9.7.3.4 Code changes

Keep the number of SSR code changes required by a pilot to a minimum.

9.7.3.5 Testing of emergency functions

Notify the Supervisor when a pilot advises intention to test avionics emergency functions e.g. transponder emergency codes, ADS-B or ADS-C emergency mode.

9.7.3.6 ATC initiated testing of SSR emergency codes

Restrict ATC initiated testing of SSR emergency codes to Virgin, Qantas and military aircraft. Advise the Supervisor, who will notify the Airline's Operational Control Centre, at least 30 minutes prior to test commencement. Notify other affected units where practicable.

9.7.3.7 Local SSR codes

Manage SSR code blocks for local use, in accordance with national plans and agreements.

9.7.3.7.1 Semi-permanent SSR LoA

Units may assign SSR codes from their block for use by specific aircraft. Detail use in an LoA with the relevant operator and other affected units. Specify:

a) the assigned SSR code;
b) the aircraft registration to which the SSR code is assigned;
c) the callsign; and
d) that use of the approved SSR code is only for the assigned aircraft registration, in conjunction with the approved callsign.

See AIP GEN 3.4 - Aircraft callsigns.

9.7.3.8 Garbling

To minimise the loss of SSR responses due to garbling, you may instruct one of the aircraft to 'SQUAWK STANDBY'.

9.7.3.8.1 Formation flight garbling

When required for close or standard formations, instruct aircraft other than the formation leader to 'SQUAWK STANDBY'.

9.7.3.8.2 Garbling ceases

When garbling ceases, instruct the aircraft to 'SQUAWK NORMAL' with the original code.

9.7.3.9 Mode A/C/S and ADS-B errors

If an expected surveillance position symbol is not displayed, unexpectedly drops or displays in an incorrect position:

a) advise the flight crew and instruct them to reset the transponder/transmitter and/or select the secondary transponder/transmitter;
b) advise the flight crew of the result of any transponder/transmitter change, and request that the issue be checked post-flight; and
c) for unresolved ADS-B errors, instruct the pilot to contact the NOMC by telephone after arrival.

9.7.3.9.1 Error reporting

Submit an ATS Occurrence report for all unresolved transponder/transmitter errors. For SSR Mode A/C/S errors, include the transponder type in the report.

9.7.4 Flight ID management

9.7.4.1 FLTID discrepancy

Ask the pilot to reset the FLTID to match the FPL ACID or callsign as appropriate, if the situation display shows that the FLTID transmitted by a Mode S or an ADS-B equipped aircraft is different from that expected.

9.7.4.1.1 Discrepancy continues

If the discrepancy continues:

a) advise the pilot; and
b) notify the supervisor.

Note: *Military aircraft are not required to transmit FLTID or registration for some or all legs of a flight if prior coordination with ATC has been completed.*

9.7.5 Pressure altitude-derived level information

9.7.5.1 Application

You may use verified pressure altitude-derived information for:

a) the application of vertical separation; and

b) ascertaining if aircraft are maintaining, have vacated, passed or reached a level.

9.7.5.2 Determine level occupancy

Determine level occupancy by verified pressure altitude-derived level information as follows:

Level occupancy	Level information
Maintaining a level	Within +/- 200 FT of the assigned level
Vacating a level	A change of 400 FT or more in the anticipated direction from the previously assigned level
Passing a level on climb or descent	Passed the level in the required direction by 400 FT or more
Reaching a level	Within +/- 200 FT of the assigned level for the greater of three consecutive updates or 15 seconds

9.7.5.2.1 Below 10 000 FT

Note: *Pressure altitude-derived level information received from airborne equipment is QNH corrected below 10 000 FT.*

9.7.5.3 Verify accuracy

Verify the accuracy of displayed pressure altitude-derived level information:

a) as soon as possible after initial contact with an aircraft and prior to use; and

b) where continuous monitoring has not been carried out.

9.7.5.4 Methods of verifying accuracy

Verify by simultaneous comparison with:

a) altimeter-derived level information received from the same aircraft by radiotelephony; or

b) the aerodrome elevation during the take-off roll, provided that the level information subsequently indicates a positive climb after take-off.

9.7.5.5 Display tolerance

The tolerance for pressure altitude-derived level information displayed to the controller is +/- 200 FT.

9.7.5.5.1 Discrepancy

When the displayed pressure altitude-derived level information differs from the pilot reported or known altitude by more than 200 FT:

a) advise pilot;

b) request check of pressure setting; and

c) confirm current level.

9.7.5.5.2 Continuing discrepancy

Where there is a continuing discrepancy after confirmation of the correct pressure setting:

a) request the pilot to stop pressure altitude data transmission provided there is no loss of position and identification information; and

b) coordinate this action with the next ATC unit.

9.7.5.6 Changing information source

Verification is retained when an aircraft changes pressure altitude information source.

9.7.6 Transfer of identification

9.7.6.1 Relaying aircraft identification

When relaying the identification of an aircraft from one Controller to another, and transfer of control is not effected, the relaying Controller advises that the aircraft is FOR IDENT. The receiving Controller acknowledges identification by replying with the callsign for the aircraft.

Position	Phraseology
Relaying Controller	FOR IDENT (*callsign*)…(*additional coordination remarks if required*)
Receiving Controller	(*callsign*) (*additional remarks if required*)

9.7.6.1.1 Methods

Effect transfer of identification by one of the following methods:

a) designation of the position symbol by automated means, provided that only one position is indicated and there is no doubt as to the correct identification;

b) notification of the aircraft's discrete SSR code or aircraft address;

c) notification that the aircraft is SSR Mode S equipped with an aircraft identification feature when SSR Mode S coverage is available;

d) notification that the aircraft is ADS-B equipped with an ACID feature when ADS-B coverage is available;

e) direct designation (pointing with the finger) of the position symbol on a shared or an adjacent situation display. Be aware of errors resulting from parallax effects;

f) designation of the position symbol by reference to, or in terms of bearing and distance from, a geographical position or navigational facility accurately indicated on both situational displays (see Clause 9.7.6.1.2);

g) instruct the aircraft to change SSR code and the change is observed by the accepting Controller; or

h) instruct the aircraft to 'SQUAWK IDENT' or 'TRANSMIT ADS-B IDENT' and the change is observed by the accepting Controller.

Note: *(for point g) and h)) Prior coordination is required between Controllers as observed indications by the accepting Controller are of short duration.*

See MATS 9.7.6.1.2 Differences in situation displays

9.7.6.1.2 Differences in situation displays

Make allowance for any inherent differences in the situation displays which may cause the position of an aircraft in relation to a known point to vary between the two displays e.g. displays fed by equipment located at different sites.

9.7.6.1.3 Surveillance system label

Advise notification of an ATS surveillance system label if:

a) a discrete (four-digit) SSR code has been assigned to the aircraft; and

b) the transferring Controller describes the ATS surveillance system position symbol by bearing from a known point or fix using compass points and advises the callsign e.g. 'NORTH EAST THAT IS DELTA INDIA KILO'.

9.7.6.1.4 Non-linked RDP systems

Do not apply the method in Clause 9.7.6.1.3 across non-linked RDP systems unless:

a) approved by the Business Unit detailed in local instructions; and

b) an independent method of ensuring the integrity of the data in both systems is actioned prior to the aircraft reaching the hand-off point.

See MATS 9.7.6.1.3 Surveillance system label

9.7.6.1.5 Relay target identification using AGSS

Relay positive identification of an AGSS derived target position by:

a) direct designation; or

b) specifying the location of the AGSS derived target by reference to identifiable features of the movement area displayed on the AGSS.

9.7.6.2 Relative position information required

When aircraft are within 10 NM, or a distance otherwise specified in local instructions, of one or more other aircraft, pass relative position information to ensure correct relay of identification.

9.7.6.2.1 Positive identification

The receiving Controller may consider identification positive if only one return observed on the display agrees with the information specified. Points used are limited to those marked on the situation display.

9.7.6.3 ATS surveillance coverage

Only transfer identification from one Controller to another when the aircraft is within the accepting Controller’s ATS surveillance system coverage.

9.7.7 Hand-off and acceptance

9.7.7.1 Hand-off

Hand-off may be done verbally or by silent or system means.

9.7.7.1.1 Verbal hand-off

Do not transfer responsibility for an aircraft until the receiving Controller advises that identification is complete by use of the phrase:

Position	Phraseology
Transferring Controller	THAT IS..... (*callsign*)
Receiving Controller	ACCEPT..... (*callsign*)

9.7.7.1.2 Silent or system hand-off

Do not transfer responsibility for an aircraft until the receiving Controller indicates that identification is complete by use of the approved procedures:

Position	Requirement
Transferring Controller	Propose hand-off by approved procedure
Receiving Controller	Accept hand-off by approved procedure

9.7.7.1.3 Clean hand-off

Apply clean hand-offs unless otherwise coordinated or specified in local instructions.

9.7.8 ATS surveillance system position information

9.7.8.1 Providing position information

Provide position information when required by circumstances or when requested by another ATC unit. Pass the information with reference to:

a) a bearing or track and distance from any significant point (bearing may be magnetic or as points of a compass);
b) a well-known geographical position;
c) a distance to runway touchdown point if the aircraft is on final approach;
d) a distance to runway touchdown point as track miles to run; or
e) distance and direction from the centre line of an ATS route.

9.7.8.1.1 Pertinent positions

Whenever practicable relate position information to positions or routes pertinent to the navigation of the aircraft concerned and shown on the situation display.

9.7.8.2 When to provide position information

Advise an aircraft provided with an ATS surveillance service of its position:

a) on identification, unless identification is established:
   i) based on a pilot's report of the aircraft's position;
   ii) within 1 NM of the runway on departure, if the observed position on the situation display is consistent with the aircraft's time of departure;
   iii) by use of ADS-B aircraft identification, SSR Mode S aircraft identification or assigned discrete SSR codes if the location of the observed position symbol is consistent with the current flight plan of the aircraft; or
   iv) by transfer of identification;
b) after commencement of vectors by approach control as soon as a distance to run to touchdown becomes evident;
c) when a pilot requests position information;
d) when an identified aircraft's reported position differs significantly from its observed position;
e) when an identified aircraft is observed to have deviated from its previously approved or advised route;
f) when an aircraft is resuming its own navigation after vectoring, excluding military aircraft under the control of a Defence controller;
g) when a regular circuit pattern is used to vector an aircraft onto the final approach path, at least once on each leg; and
h) when provided with vectors for a straight-in approach, at least once before commencement of final approach.

See MATS 9.7.6.1.1 Methods

See MATS 9.7.6.1.4 Non-linked RDP systems

9.7.9 Enhanced Information Services

9.7.9.1 SIS

The SIS is an on-request traffic, position or navigation information service provided to assist pilots of VFR flights, within ATS surveillance system coverage in Class E and G airspace, to avoid other aircraft or to assist in navigation.

See MATS 9.1.5 Traffic information

9.7.9.1.1 Alerting service

Maintain an alerting service with respect to those flights provided with a SIS.

9.7.9.1.2 SIS Provision

Provide SIS unless workload or other factors prevents it.

Note 1: *To utilise these services, flights are to be in direct VHF communication with ATS and equipped with a serviceable SSR transponder or ADS-B transmitter.*

Note 2: *Responsibility for aircraft and terrain avoidance remains with the pilot.*

9.7.9.1.3 Unable to provide SIS

Advise the pilot when unable to provide a SIS.

9.7.9.1.4 Specific transponder code

Prior to providing a SIS, identify the aircraft and, unless the service requested is of a short duration and it would be impractical to do so, allocate the pilot a specific transponder code.

9.7.9.1.5 Snap shot service

Consider pilot requests for specific information as a snap shot service. Terminate the SIS after providing the requested information to the pilot.

9.7.9.1.6 Flight following

Consider pilot requests for flight following as an ongoing service, provided on a sector specific basis.

9.7.9.1.7 SIS annotation

Except within a BA where the service is mandatory, enter the annotation SIS into the aircraft's label when the pilot requests flight following and the flight is subject to an ongoing SIS.

9.7.9.1.8 Sector-specific basis

The provision of a SIS is on a sector-specific basis, however, when a pilot requests hand-off for flight following you may initiate coordination and transfer to an adjacent unit; any ongoing service is subject to the approval of the adjacent unit.

9.7.9.1.9 Terminating a SIS

A SIS may be terminated at any time:

a) by ATC due to workload considerations; or

b) on pilot advice.

9.7.9.1.10 Advise pilot

Terminate a SIS by advising the pilot that identification is terminated.

9.7.9.1.11 At sector boundary

If terminating SIS at a sector boundary, also advise that a frequency change is approved.

9.7.9.2 SFIS

Note: *SFIS is the mandatory provision of SIS and/or FIS to all aircraft operating within a Broadcast Area designated under section 99A of the Civil Aviation Regulations 1988. SFIS is not a separation or sequencing service.*

9.7.9.2.1 Traffic Information

Where data assessment indicates that the aircraft are not in conflict a statement of 'NO TRAFFIC' is not required to be passed.

9.7.9.2.2 Alerting service - SFIS

Maintain an alerting service with respect to those flights provided with a SFIS.

9.7.9.2.3 Service provision

Where SFIS is established, provide SFIS until:

a) the aircraft leaves the BA; or

b) an aircraft reports vacating the runway after landing.

Note: *Within the SFIS BA, the pilot remains responsible for terrain clearance and separation with other aircraft.*

9.7.9.2.4 Service continuation to adjacent sector

When a pilot requests hand-off for flight following you may initiate coordination and transfer to an adjacent unit subject to the approval of that unit.

9.7.10 Vectoring

9.7.10.1 General principles

You may vector aircraft being provided an ATS surveillance service to:

a) apply ATS surveillance system separation;
b) achieve an expeditious flow of aircraft;
c) maximise use of available airspace;
d) comply with noise abatement procedures;
e) adjust the arrival sequence;
f) establish aircraft on final approach course or track of a pilot-interpreted approach;
g) manoeuvre an aircraft into a suitable position clear of cloud to assist in maintaining or achieving required in-flight conditions; and
h) avoid areas of known hazardous weather or known severe turbulence.

9.7.10.2 Prohibition on vectoring

Do not vector:

a) aircraft displayed as a flight plan position symbol or ADS-C position symbol;
b) aircraft displayed as an ATS surveillance system position symbol for the purpose of remaining clear of an aircraft displayed as a flight plan or ADS-C position symbol when a procedural separation standard has not been established;
c) special VFR aircraft, except when warranted by emergency conditions;
d) an aircraft that is OCTA, except when warranted by emergency conditions; or
e) an aircraft at a pilot calculated LSALT that is below the lowest applicable LSALT.

9.7.10.3 Vectoring considerations

When vectoring aircraft:

a) vector aircraft along or in close proximity to routes which are likely to simplify pilot navigation in the event of ATS surveillance system failure, whenever possible;

b) advise the pilot:

  i) of the reason for the vector (unless obvious);

  ii) the extent of the vector in general terms (if known); and

  iii) expectation at the completion of vectoring; and

c) repeat the direction of turn when an aircraft is instructed to turn through 180 degrees or more;

d) request the pilot who reported unreliable directional instruments to make all turns at an agreed rate, and to carry out instructions immediately on receipt, before issuing manoeuvring instructions;

e) ensure that adequate terrain clearance exists at all times until the aircraft arrives at the point where the pilot resumes own navigation;

f) advise pilot of the aircraft's position sufficiently to permit the pilot to resume own navigation in the event of radio or ATS surveillance system failure;

g) ensure that intervals between transmissions are short to enable the pilot to recognise a failure in communications. Where minimum separation is provided with other aircraft, or where terrain clearance infringement may occur, the interval between transmissions should not exceed 30 seconds; and

h) avoid areas of known hazardous weather, including known severe turbulence, as indicated by all available information on weather conditions.

See MATS 9.7.10.7 Instructions to pilots

9.7.10.4 Issuing system derived distance

To allow an aircraft to carry out a descent to the minimum in accordance with a published DME or GPS arrival procedure, you may issue ATS surveillance system-derived distance and appropriate altitude assignments to an aircraft using a track for which a DME or GPS arrival procedure is specified, when:

a) DME is not available; or

b) a pilot conducting GPS arrival reports the loss of RAIM.

See MATS 10.2.1.5 ADS-B low-quality symbols

9.7.10.4.1 Ensure reference is displayed

When using ATS surveillance system-derived distances as a substitute for DME or GPS-derived distance information, ensure that the reference is displayed on the situation display.

9.7.10.5 Terminating a vector

When terminating vectoring of an aircraft provide the aircraft with position information (including displacement from nominal track if applicable) and one of the following:

a) A heading as necessary to intercept the nominal track of a pilot-interpreted navaid appropriate to its cleared route;
b) A clearance direct to a pilot-interpreted navaid (e.g. NDB or VOR site) for interception of its cleared route; or
c) A clearance direct to an area navigation waypoint for interception of the aircraft’s cleared route for approved SCNS aircraft.

9.7.10.5.1 Exception

Military aircraft under the control of a Defence controller do not need to be provided with position information when terminating vectors.

9.7.10.6 Terminating of vectoring

Do not terminate a vectoring service until the aircraft is established within the navigation tolerance of its cleared route.

9.7.10.7 Instructions to pilots

Issue instructions to pilots that leave them in no doubt of their responsibilities for terrain clearance and to self-navigate following the vector e.g. the use of 'VISUAL' when a pilot resumes own navigation and is below the applicable LSALT.

9.7.10.8 Continue vectoring

Subject to maintaining identification, continue a vectoring service when the aircraft transfers to the Tower frequency, if the service is requested by the pilot.

9.7.11 Terrain clearance

9.7.11.1 Vectoring and terrain clearance

When an aircraft is vectored, and the LSALT is in controlled airspace, assign altitudes no lower than the LSALT displayed on the Situation Display.

See MATS 9.7.10.2 Prohibition on vectoring

9.7.11.1.1 Assigning levels in accordance with an RTCC

Except when warranted by emergency conditions, altitudes specified on a civil or military RTCC may only be assigned to aircraft receiving an ATS surveillance approach service inside controlled airspace.

Note: *Airservices units may apply to the ATMSL for exemptions that will allow the use of RTCC levels outside controlled airspace.*

9.7.11.1.2 Assigning levels in accordance with an MSA chart

Only assign levels in accordance with an MSA chart when specified in local instructions.

9.7.11.1.3 Terrain clearance requirements

Inform a pilot of terrain clearance requirements for a particular sector prior to entering that sector, if necessary.

9.7.11.1.4 Grid boundaries

Ensure that an aircraft approaching a grid, within which a higher Grid LSALT applies, is at the higher altitude 5 NM before the grid boundary and when entering a grid with a lower Grid LSALT that the aircraft is not descended to the lower altitude until it is 5 NM past the boundary.

9.7.11.1.5 Cold temperature correction

When the temperature at an RTCC/MSA reference aerodrome may fall below ISA minus 15°C:

a) specify ISA minus 15°C in local instructions; and

b) if the temperature is below ISA minus 15°C:

   i) do not use the existing RTCC or MSA map when vectoring; and

   ii) where available, use a 'Cold Temperature RTCC' shown on the situation display.

Note: *'Cold Temperature RTCCs' must be designed by procedure design.*

9.7.11.2 Approving pilot terrain clearance

You may permit an aircraft being vectored or given a direct routing in VMC by day to arrange its own terrain clearance, provided that the responsibility is specifically assigned to the pilot.

See MATS 9.4.2.1 Issuing levels below LSALT

See MATS 12.9.2.3 VMC by day only

9.7.11.3 Terrain clearance and range scales

Ensure that aircraft are at an altitude which provides a minimum 1000 FT vertical clearance above any obstacle within a radius of:

a) 3 NM of the aircraft when the range scale is not greater than 50 NM; and

b) 5 NM of the aircraft when the range scale is greater than 50 NM.

9.7.11.3.1 Obstacle clearance requirements

The obstacle clearance requirements for the above clause do not apply:

a) when vectoring as part of an issued SID;

b) when conducting a visual departure;

c) in VMC by day only, when ATC assigns responsibility for arranging obstacle clearance specifically to the pilot; or

d) when conducting an ATS surveillance system cloud break procedure.

9.7.12 Monitoring flights

9.7.12.1 Flight path monitoring

Use information displayed by an ATS surveillance system to maintain flight path monitoring of air traffic.

9.7.12.2 Assessing aircraft deviation

When assessing whether an aircraft has deviated from its route or track, consider the extent of the deviation or continuing divergence in the context of location specific factors such as terrain clearance, separation assurance, traffic management and expected navigation performance.

9.7.12.3 Track deviation

When advising pilots of a route or track deviation, do not use pilot track keeping requirements and procedural navigation tolerances as parameters within which a pilot is permitted to navigate.

9.7.12.4 Flight path deviation

Provide deviation advice to a pilot when observed by ATC.

9.7.12.5 Advise pilot

Advise the pilot the extent of the deviation, position information and tracking advice.

9.7.13 Variation of services

9.7.13.1 Termination of surveillance

Inform aircraft provided with an ATS surveillance service of service interruptions or termination.

9.7.13.2 Termination of control

Where an aircraft exits controlled airspace into an area of continued ATS surveillance services, advise the pilot 'CONTROL SERVICE TERMINATED'.

9.7.13.3 Transferring aircraft

Do not advise a change of service for aircraft transferring from an Approach Unit providing ATS surveillance services to a control tower providing tower ATS surveillance services.

See MATS 11.1.1.7 Continue surveillance separation

9.7.13.4 Non-functioning ADS-B site monitor

The absence of a functioning ADS-B site monitor does not preclude the use of ADS-B by controllers.

9.7.14 Aircraft without operative or required surveillance equipment

9.7.14.1 Clearances for aircraft without operative or required surveillance equipment

You may only permit an aircraft without serviceable SSR transponder/ADS-B transmitter to operate in controlled airspace in which surveillance system separation is exclusively provided, when approved by the ATMD/Military Supervisor.

9.7.14.1.1 Exception - approved operations

The ATMD/Military Supervisor may issue an approval for an aircraft to operate in controlled airspace without operative surveillance equipment when:

a) the equipment becomes inoperative before or in flight, or the aircraft has been issued a CASA exemption;

b) all affected ATS units are satisfied that the clearance will not impact on the safe operation of other aircraft; and

c) the following is entered into the flight plan:
   i) RMK/ATC APPROVED NIL ADSB/SSR (as appropriate); or
   ii) RMK/ADSB/SSR EXEMPT (as appropriate) if subject to a CASA exemption.

9.7.14.1.2 Safety considerations

Consider the following when issuing an airways or onwards clearance to an aircraft without operative surveillance equipment:

a) Traffic density en route and at the destination aerodrome;
b) Current and forecast weather en route and at the destination aerodrome, including the possibility of a diversion;
c) Procedural control alternatives; and
d) Amended clearances at or below FL280.

Note: *An aircraft in receipt of an ATMD approval before departure will have been advised that clearances above FL280 may not be available.*

9.7.14.1.3 ATMD/Supervisor instruction to operator

When a civil aircraft operator requests approval to operate without required surveillance equipment, the ATMD/Military Supervisor must inform the operator that:

a) the ATC approval is only applicable for a single flight and subsequent flights will require a separate ATC approval;
b) the aircraft must flight plan below FL290;
c) preferred flight levels above FL280 should be included in Field 18 of the flight plan (e.g. RMK/REQ FL370);
d) clearance to operate is solely at the discretion of the controller and subject to operational conditions; and
e) Field 18 of the flight plan must include either:
    i) RMK/ATC APPROVED NIL ADSB/SSR (as appropriate), for a failure before flight; or
    ii) RMK/ADSB EXEMPT, when subject to a CASA exemption to operate without an ADS-B transmitter.

9.7.14.2 Occurrence report

Submit an occurrence report for civil IFR aircraft without the required surveillance equipment (SSR transponder or ADS-B transmitter) and not in receipt of a CASA exemption.

9.8 Data Link procedures

9.8.1 Data Link reporting and communication

9.8.1.1 Scheduled position reporting

Scheduled position reporting by CPDLC or voice is not required while ADS-C reporting indicates satisfactory in-flight progress.

9.8.1.1.1 Continuing reporting

Inform the pilot that only ADS-C reporting is required if CPDLC (or voice) reporting continues following an initial CPDLC position report.

9.8.1.1.2 Periodic reporting rates

Controller	Periodic reporting rate	Additional notes
Executive Controller	A minimum of 5 min intervals	Circumstances depending
Adjacent ATS units with ADS contracts established with the same aircraft	A minimum of 14 minute intervals	Circumstances depending. Liaise with controlling authority who must agree to reduce high reporting rate.

9.8.1.1.3 Demand Contract Request

Initiate a Demand Contract Request if an ADS-C periodic or waypoint report is not received within 3 min of the expected time.

9.8.1.2 CPDLC for DCPC

When utilising CPDLC for DCPC:

a) the separating Controller must be the current data authority; or
b) when transferring across an FIR boundary:
   i) the transferring Controller must be the current data authority;
   ii) the receiving Controller must have an inactive CPDLC connection prior to the FIR boundary; and
   iii) the receiving Controller must receive a CPDLC downlink within 3 minutes of the aircraft crossing the FIR boundary.

9.8.1.2.1 Request position report

Send the preformatted uplink message element REQUEST POSITION REPORT if a CPDLC position report is not received within 3 minutes at the FIR boundary.

9.8.2 Connection management

9.8.2.1 Control responsibility

The ATS unit with control responsibility for the aircraft:

a) controls ADS-C connection management;
b) gives the highest priority for connection to the next ATS unit with control responsibility; and
c) controls the allocation of contracts to adjacent ATS units via the address forwarding process, including adjacent ATS units which require a contract for monitoring purposes.

Note 1: *The establishment of an ADS-C connection is initiated by the ground system. Pilot interactions with ADS-C are limited to turning the application on and off and to activating and cancelling the ADS-C emergency mode. Pilots cannot initiate a normal ADS-C report.*

Note 2: *FANS 1/A equipped aircraft can have ADS-C connections with up to five different ground facilities. The fifth connection is usually reserved for the airline's operational control unit. All ADS-C connections have equal status within the system. There is no equivalent to the inactive CPDLC connection.*

9.8.2.1.1 LoA for monitoring units

Specify in a Letter of Agreement when an adjacent unit requires an ADS-C contract for monitoring purposes.

9.8.3 Data authority

9.8.3.1 AFN logon

If an adjacent FIR requires an ADS contract to allow monitoring of an aircraft's progress near the boundary, initiate an AFN logon from the aircraft via the address forwarding process.

9.8.3.2 Next data authority message

Send a NEXT DATA AUTHORITY message and perform address forwarding to the next data authority prior to address forwarding to any other unit. This ensures the next ATS unit with direct control responsibility for the flight can establish an ADS contract with the aircraft.

9.8.4 Data Link failures

9.8.4.1 FANS 1/A

Instruct pilots to send position reports via CPDLC when a FANS 1/A equipped aircraft is unable to report by ADS-C.

9.8.4.2 Establish voice communication

On recognising a CPDLC connection failure, establish voice communications immediately.

9.8.4.2.1 Alerting service

When voice communication is established, the alerting service becomes the responsibility of the voice operator.

9.8.4.3 CPDLC dialogue interruption

If a CPDLC dialogue is interrupted by a system failure, repeat the entire dialogue on the voice frequency.

9.8.4.4 Instructions to pilot

Depending on the circumstances and location of the aircraft, instruct the pilot to logon to the Centre again or to continue with control services by voice.

9.8.4.5 Message failed

If an open uplink exists when CPDLC fails, the uplink message is considered to have failed.

9.8.4.6 Planned system shutdown

During a data link system shutdown, advise FANS 1/A aircraft reporting by either ADS-C or CPDLC that voice position reports are required.

9.8.4.7 Unexpected system shutdown

When the data link system shuts down unexpectedly, inform:

a) adjacent ATS units by direct coordination;
b) all relevant parties via the publication of a NOTAM, if appropriate; and
c) all currently affected aircraft and advise them of the requirement for voice position reports.

9.8.4.8 Separation

If the loss of ADS-C impacts on separation standards, take action to implement an alternative form of separation between all affected aircraft pairs.

Note: *FOM data is not required for the validation or use of current separation standards. Consequently, the display of a low-quality ADS-C report may not have any impact on the application of current procedural separation standards.*

9.8.5 ADS-C level data

9.8.5.1 ADS-C level occupancy

Determine level occupancy by using ADS-C level information as follows:

ADS-C level occupancy	ADS-C level information
Maintaining or reaching a level	Within +/- 200 FT of the assigned level
Vacating a level	A change of 400 FT or more in the anticipated direction from the previously assigned level
Passing a level on climb or descent	Passed the level in the required direction by 400 FT or more

9.8.5.2 Level update

Send a Demand Contract Request to an aircraft when:

a) the ADS-C requires updating; and

b) the ADS-C information for an aircraft maintaining a level differs from the expected or cleared level by more than 200 FT.

9.8.5.2.1 ADS-C level discrepancy

If, following the update, the ADS-C level is still beyond the required tolerances, advise the pilot and request confirmation of the aircraft’s level.

9.8.5.2.2 Continuing ADS-C level discrepancy

If, following confirmation of the level, the displayed ADS-C level is still beyond the required tolerance, consider another method of determining level information.

9.9 Management of formation flights

9.9.1 Providing services to formation flights

9.9.1.1 Civil formation flights

Do not issue a clearance to civil formation flights to operate in RVSM airspace.

9.9.1.2 In-trail request

In response to an in-trail request, establish trail by the use of the phrase '(*callsign*) ADOPT (*number*) MILE TRAIL, REPORT ESTABLISHED'.

Note 1: *The formation leader normally initiates an in-trail procedure by either:*

a) reporting established;

b) establishing in-trail; or

c) requesting in-trail.

Note 2: *Aircraft use speed variation to achieve the required spacing during the transition from other formation types to in-trail.*

Note 3: *In-trail procedures may be established on departure as part of a formation stream take-off.*

9.9.1.3 Loss of trail

Instruct the formation to 'REPORT ANY LOSS OF TRAIL'.

9.9.1.4 Prefix formation instructions

Prefix all formation instructions with the words 'IN-TRAIL' e.g. 'IN-TRAIL DESCEND TO 5000' or 'IN-TRAIL TURN LEFT HEADING 350'.

9.9.1.4.1 Obtain readback

Ensure a readback of formation instructions is obtained from the formation leader.

9.9.1.5 In-trail turns

Limit in-trail turns to 60 degree increments or less to avoid exceeding the radar scan limits.

9.9.2 Loss of contact

9.9.2.1 Aircraft reports lost contact

In the event that an aircraft reports 'LOST CONTACT', the formation leader acknowledges with a report of current altitude and position.

9.9.2.2 Safe separation

Safe separation is achieved by the formation leader:

a) adopting snake trail procedures;
b) requesting ATC assistance; and
c) directing aircraft behind to shepherd the affected aircraft.

9.9.2.3 Lost contact formation flight

On notification of 'LOST CONTACT' within a formation flight:

a) pass traffic information until the aircraft regains contact if equal or greater than the applicable separation standard exists; or
b) take immediate steps to effect separation including the use of emergency separation standards if less than the applicable separation standard exists.

Note: *During a snake climb or descent the aircraft ahead of the no contact aircraft reports passing altitudes at regular intervals. The formation leader may make a PAN call if these procedures are conducted in or near controlled airspace.*

9.9.3 Breaking formation

9.9.3.1 Action a formation break

When requested to action a formation break:

a) When vectoring for separation:
    i) ensure that the aircraft concerned are correctly identified and formation position known;
    ii) achieve separation in the lateral plane by assigning individual headings that diverge by 30 degrees or more; and
    iii) assign headings appropriate to the aircraft's relative position in the formation; and
b) When achieving separation in the vertical plane assign different levels to each aircraft in the formation.

Note: *Breaks in formation are only initiated by the formation leader.*

9.9.4 Breaking trail

9.9.4.1 Split formation into individual aircraft units

If required, split the formation into individual aircraft units by:

a) establishing vertical separation;

b) applying speed control e.g. second aircraft performs cockpit checks for landing; or

c) changing heading of individual aircraft, generally at base turn stage by turning the preceding aircraft onto base and extending the downwind legs of subsequent aircraft.

Note: *Formation leaders normally request termination of in-trail procedures however ATC may need to split the formation into individual units for control purposes.*

9.9.4.1.1 In-trail speed control

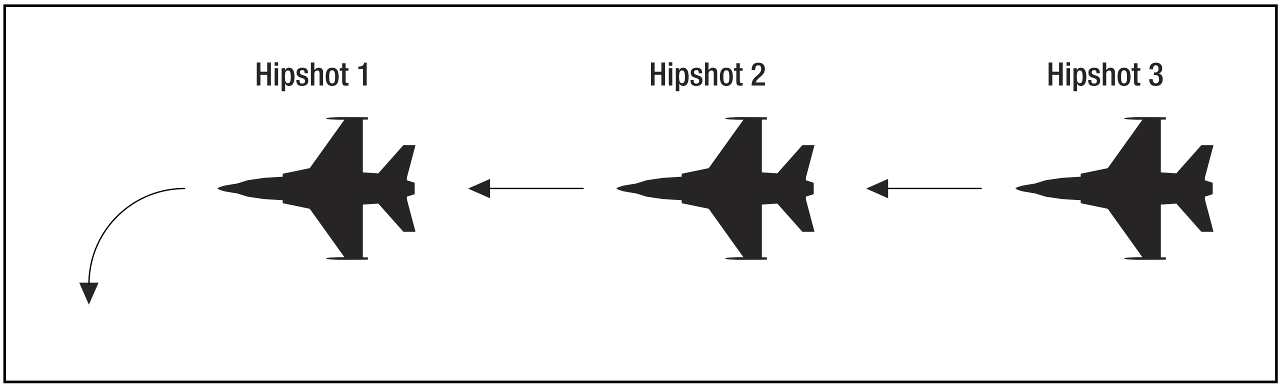
Avoid applying ATC speed restrictions when there are more than two aircraft in-trail.

9.9.4.2 Breaking trail

Issue positive instructions when breaking trail to all aircraft in the formation, whether they are being broken from the trail or not e.g. 'HIPSHOT BREAKING TRAIL, HIPSHOT 1: TURN LEFT HEADING 180 FOR BASE, HIPSHOT 2 AND 3: CONTINUE IN-TRAIL HEADING 270'.

Note: *The whole formation or individual aircraft may be broken from trail using 'BREAKING TRAIL'.*

9.9.4.2.1 Illustration



10 Separation

10.1 Responsibilities for separation

10.1.1 Responsibilities

10.1.1.1 Provide separation

Provide separation using approved separation standards, associated conditions and procedures ensuring spacing between aircraft is never less than a prescribed separation minimum.

See MATS 10.1.5 Transfer of separation responsibility

10.1.1.1.1 Assure separation

Assure separation through the process of assessing traffic, identifying conflicts, planning to ensure separation, executing the plan and monitoring the situation to ensure the standard is not infringed.

10.1.1.1.2 Maintain separation

Where the type of separation or minimum used to separate two aircraft cannot be maintained, establish another type of separation or another minimum prior to the time when the current separation minimum would be infringed.

10.1.1.2 Separation with unknown aircraft

When providing ATS within controlled airspace or Restricted/Military Operating Areas, ATC has no responsibility to maintain prescribed separation minima between a controlled flight and an unknown aircraft that can reasonably be assumed to be outside controlled airspace.

10.1.1.2.1 Likely hazard

If, in your judgement, the action of an observed ATS surveillance system position symbol or information received from other sources gives you good reason to believe that the unknown aircraft is likely to be a hazard to a controlled flight, you have complete discretion to take such action as considered necessary to maintain the safety of the controlled flight. This may comprise the provision of:

a) traffic information;

b) controller initiated traffic avoidance advice; or

c) a Safety Alert.

10.1.1.3 Responding to deviation advisories

ATC is not responsible for providing separation between an aircraft that is responding to a wind shear escape event or TCAS RA and any other aircraft, airspace, terrain or obstruction.

10.1.2 Military variations to standards

10.1.2.1 Authority to vary standards

Separation standards contained in this document may be varied by the appropriate military authority within ADF controlled/administered airspace. These variations are promulgated in the relevant Orders or Instructions.

10.1.2.1.1 Exceptions

Do not apply these varied separation standards and procedures to:

a) Head of State aircraft; or

b) civil IFR aircraft, except through prior agreement by the chief pilot with the appropriate military authority.

10.1.3 Application of separation

10.1.3.1 Expedition

Expedition is secondary to the absolute requirement for safety.

10.1.3.2 Operational advantage

Base the method of separation on operational advantage.

10.1.3.3 Using radio navaids for VFR

You may use separation based on radio navaids for VFR operations.

10.1.3.3.1 Exception

Do not apply time standards to VFR flights which require the use of radio navaids to determine position.

10.1.3.4 Speed confirmation

Where differing aircraft speed may compromise a separation standard, obtain speed confirmation from the aircraft concerned.

10.1.3.4.1 Adjust speed

If required, apply speed control to ensure separation is maintained.

10.1.3.5 In-flight advice

You may use the pilot’s in-flight advice of approval status in the application of separation.

10.1.4 Performance based navigation

10.1.4.1 Navigation equivalency for separation

You may use RNAV10 for the application of RNP10 separation standards.

10.1.5 Transfer of separation responsibility

10.1.5.1 Between units

When assigning separation for specific aircraft to another unit:

a) coordinate which ATC unit has the responsibility for separation; and
b) clearly define any restrictions, where applicable.

See MATS 6.3 ATS coordination

10.1.5.2 Assigning to pilot

When pilots are assigned responsibility for separation in controlled airspace, the responsibility:

a) takes effect when pilots acknowledge the clearance or instruction; and
b) continues to apply, with respect to all advised traffic, until an alternative ATC separation standard exists.

Note 1: *This transfer of responsibility includes flights conducting IFR Pick-up, VFR-on-top (excluding cancelling VFR-on-top), VFR departures or VFR climb/descent, flights joining or breaking formation and the application of visual separation standards.*

Note 2: *Pilot separation responsibility when using VFR-on-top, VFR departure, VFR climb/descent or IFR Pick-up may involve a transition to, or from, an alternative form of separation or a different class of airspace.*

10.1.5.2.1 Responsibility

Assign pilots responsibility for separation with any traffic in the airspace appropriate to the procedure.

10.1.5.3 Resume responsibility

When cancelling VFR-on-top, resume separation responsibility when the aircraft is cleared to maintain an IFR level.

Note: *When a flight changes from VFR to IFR resulting in ATC assuming responsibility for separation pilots remain responsible for separation with all advised traffic until an alternative ATC separation standard exists.*

10.1.5.4 IFR conducting VFR procedures

Regard IFR flights maintaining VFR-on-top in Class E airspace, conducting VFR departures from Class D aerodromes or operating VFR climb/descent in Class D or Class E airspace, as IFR flights, except that pilots assume responsibility for separation with other traffic.

10.1.6 Emergency separation

10.1.6.1 Reduction of vertical standard

If during an emergency situation, such as radar failure, it is not possible to ensure that the applicable procedural separation minima will be maintained, you may temporarily use half the applicable vertical separation minima.

Separate by	Flight level and airspace
500 FT	Up to and including FL290 or in RVSM airspace
1000 FT	At or above FL290 in non-RVSM airspace

10.1.6.1.1 Traffic information

Issue traffic information to affected aircraft.

10.2 ATS surveillance system

10.2.1 ATS surveillance system separation - conditions

10.2.1.1 Application

Only apply ATS surveillance system separation between identified aircraft when there is reasonable assurance that identification will be maintained.

10.2.1.2 Maintain direct communications

Maintain direct VHF/UHF communications between ATC and the aircraft prior to and during the provision of ATS surveillance separation.

See MATS 6.1.2 Control and communication responsibility

Note: *The use of VHF/UHF does not preclude the concurrent use of CPDLC.*

10.2.1.2.1 Exception, direct communications do not exist

You may provide surveillance separation to aircraft without direct VHF/UHF communications where special circumstances exist, such as emergencies, or when under normal operation there would be no possibility of intervention required, including where:

a) the disposition and relative performances of all aircraft concerned are such that ATS surveillance system separation exists and will continue to exist;

b) a procedural separation standard is established;

c) snap shot information is provided to another ATS unit, such as:

   i) position information, of the aircraft, or of the aircraft relative to airspace routes, boundaries or locations depicted on the situation display; or

   ii) the relative disposition of two or more aircraft e.g. definite passing;

d) aircraft are transferred to the appropriate tower frequency provided the aircraft:

   i) is established on the final approach track and has been cleared for final approach; or

   ii) has clearance for visual approach and is observed to be within 10 NM of the aerodrome; or

e) aircraft are approved to leave the frequency.

See MATS 5.1.5 Military Non-Continuous Communication (NOCOM) flights

See MATS 6.1.2.1 Responsible sector

See MATS 10.2.1.7 Leaving controlled airspace

10.2.1.2.2 Communication adequacy

Where direct communications do not exist, assess the adequacy of the available communication link prior to and during the application of surveillance-based separation minima. Consider the possibility of unexpected intervention, the time required to receive replies from two or more aircraft and the overall workload/ traffic volume.

10.2.1.3 Measuring between position symbols

Apply separation based on the distance between the centres of position symbols.

10.2.1.3.1 No overlap

Do not allow edges of the position symbols to touch or overlap unless vertical separation is applied between aircraft.

10.2.1.4 ADS-B position symbols

Only use high-quality ADS-B position symbols for the application of ATS surveillance system separation.

10.2.1.5 ADS-B low-quality symbols

Treat ADS-B low-quality position symbols, including symbols in a foreign FIR, as a procedural track for ATS purposes.

10.2.1.5.1 Use of low-quality symbols to separate

Except when a pilot reports 'GNSS UNAVAILABLE' (e.g. loss of RAIM or RAIM alert), you may use low-quality ADS-B symbols in lieu of position reports to establish procedural separation.

See MATS 10.3.5.4 GNSS unavailable

10.2.1.5.2 Use of ADS-B level

Only use the ADS-B level for separation once coordination has been received or the level has been verified.

Note: *The ADS-B level is a barometric level and not affected by GNSS availability.*

10.2.1.6 Outage monitoring

Report the absence of expected ADS-B position symbols to the Supervisor.

10.2.1.7 Leaving controlled airspace

You may apply ATS surveillance system separation between aircraft about to leave controlled airspace provided that:

a) the horizontal separation is not less than the prescribed minimum; and
b) you pass mutual traffic information to the aircraft concerned before they leave controlled airspace.

10.2.1.8 Procedural navigation tolerance

Where an aircraft is under ATS surveillance system control and will remain identified you may provide ATS surveillance system separation from the procedural navigation tolerance of an aircraft not under ATS surveillance system control provided:

a) the procedural navigation tolerance is shown on the situation display; or

b) a surveillance separation minimum and the procedural tolerance applicable to the non-surveillance aircraft are applied when constructing a lateral separation diagram or using an authorised lateral separation tool.

10.2.1.9 Separation - inside/outside coverage

Separation continues to exist between aircraft when one of the aircraft has passed beyond ATS surveillance system coverage provided that when proceeding:

a) on the same track, ATS surveillance system separation existed at the time the leading aircraft passed beyond ATS surveillance system coverage, and procedural separation is established before the following aircraft arrives within 5 NM of the last observed position of the leading aircraft; or

b) on reciprocal tracks, the aircraft in ATS surveillance system coverage has passed the last observed position of the outbound aircraft by the applicable ATS surveillance system separation minimum.

10.2.2 ATS surveillance system standards

10.2.2.1 Half the applicable standard

You may apply half the applicable ATS surveillance system separation minimum from a displayed system map boundary when:

a) the adjacent ATS unit, in controlled airspace, has the same ATS surveillance system processing and display system;

b) the Restricted/Military Operating Area activity is designated 'non-flying'; or

c) the ADF will apply the following separation between flying activity within the Military Airspace and the airspace boundary:

   i) Half the applicable ATS surveillance system separation minimum as detailed in MATS Supplementary Procedures; or

   ii) An appropriate procedural navigation tolerance.

See MATS 2.4.3.4.4 Military flying/non-flying classification for Restricted Area activity designation.

10.2.2.1.1 Different minima on either side of an airspace boundary

Where different ATS surveillance system separation minima apply on either side of an airspace boundary, apply half the larger of the two minima to the system map boundary.

10.2.2.1.2 Operations up to an airspace boundary

Apply ATS surveillance system separation minimum to a system map boundary that divides ATS units where one unit is authorised to operate up to the boundary.

10.2.2.2 S1 - 3 NM

Conditions	Exceptions
Aircraft are in communication with and under the control of either a TCU, or an associated control tower providing Class C or Class D services and are: a) within 100 NM of an MSSR sensor; b) within 30 NM of a radar sensor using: i) military high definition TAR; or ii) primary data from a civil high definition TAR; c) within ADS-B surveillance; or d) within MLAT surveillance.	a) Where the required wake turbulence distance separation minimum is greater than 3 NM; or b) Prevented from use by local instructions.

10.2.2.2.1 S1a - 2.5 NM

Conditions	Exceptions
Separation between aircraft meeting the conditions of S1 may reduce to 2.5 NM spacing when: a) aircraft are established on the same final approach track within 10 NM of the runway end; b) the average runway occupancy time of landing aircraft does not exceed 50 seconds; c) the runway is dry or braking action is reported as good; d) the aerodrome controller is able to observe the runway in use and associated exit and entry taxiways: i) visually; or ii) by means of AGSS; and e) approved by the ATMSL, or the appropriate Defence authority, for the specific runway and published in AIP or FIHA. ***Note:*** *The 'same final approach track' means both aircraft are inbound on the same instrument approach path or both aircraft are aligned with the runway centreline.*	a) Where the required wake turbulence distance separation minimum is greater than 2.5 NM; or b) Where the surveillance source is ADS-B only.

10.2.2.3 S2 - 5 NM

Conditions	Exceptions
No additional conditions	Where the required wake turbulence distance separation minimum is greater than 5 NM.

10.2.2.4 S3a - 5 NM, UFB or DRA (TMA/TCU)

Conditions	Exceptions
a) UFB or DRA; b) TMA/TCU; and c) Display range does not exceed 150 NM.	Not applicable

10.2.2.5 S3b - 10 NM, UFB

Conditions	Exceptions
a) UFB; and b) Display range does not exceed 500 NM.	Not applicable

10.3 Longitudinal

10.3.1 Separation standard conditions

10.3.1.1 Application of conditions

Apply separation conditions to separation standards in accordance with the following table:

Conditions	Application
Longitudinal separation - overall conditions	All longitudinal standards
Longitudinal time separation - general conditions	All longitudinal time standards and crossing track standards
Longitudinal distance separation - general conditions	All longitudinal distance standards
DME/GNSS distance conditions	All longitudinal distance standards - DME/GNSS i.e. those standards with a D prefix
Area navigation distance conditions	All longitudinal distance standards - area navigation i.e. those standards with an R prefix
ADS-C distance conditions	All longitudinal distance standards - ADS-C i.e. those standards with an A prefix
Departure separation conditions	All departure standards i.e. those standards with a DEP prefix

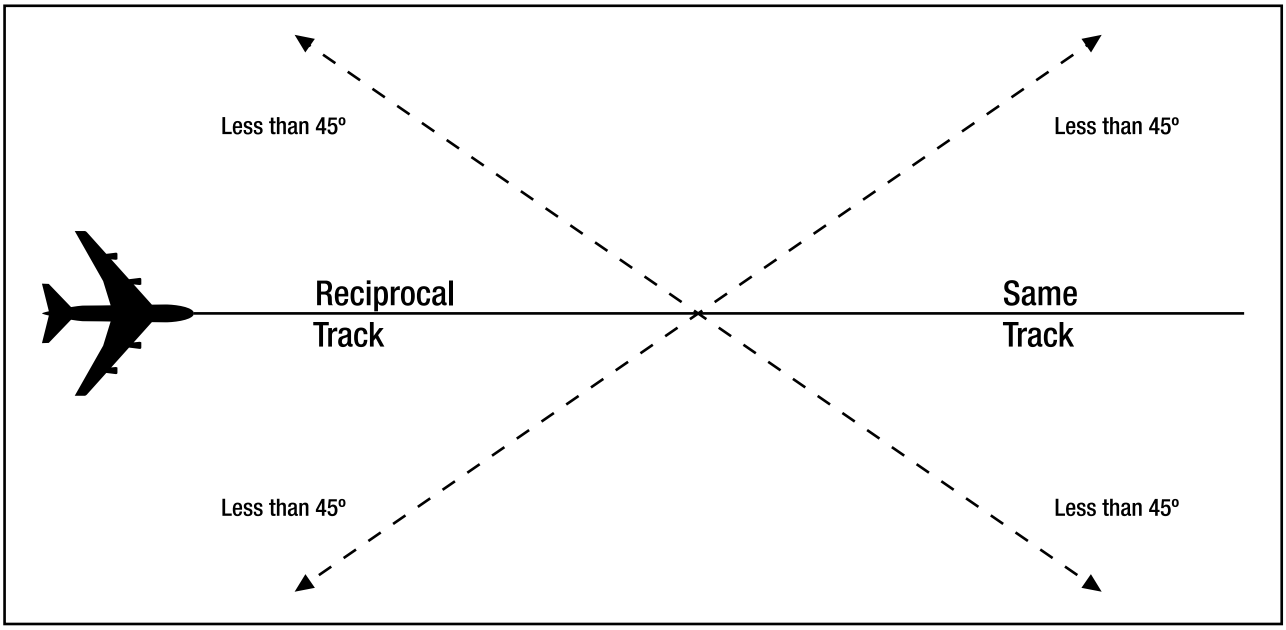
10.3.2 Longitudinal separation - overall conditions

10.3.2.1 Same or reciprocal track

Apply longitudinal separation between aircraft on the same or reciprocal tracks.

10.3.2.1.1 Reciprocal and crossing track definition

For separation purposes, reciprocal and same tracks are those tracks that intercept at less than 45 degrees. Crossing tracks are those tracks that intersect at or between 45 degrees and 135 degrees.



Note: *Time departure standards and the crossing track standard T8 allow some variation to this rule.*

See MATS 10.3.19.1 T8a - 15 min, at the crossing point

to MATS 10.3.19.2 T8b - 15 min, from the crossing point

10.3.2.2 Communication and navigation capability

Apply the separation standard appropriate to the communications and navigational capability of the aircraft concerned.

10.3.2.3 Methods of determining separation

Methods of determining longitudinal distance separation may include:

a) voice or CPDLC reports from aircraft;

b) the use of system tools to measure the distance between the displayed positions of two or more ADS-C or surveillance position symbols; or

c) a comparison of an ADS-C report symbol with the position of another aircraft determined by an alternative form of position fixing, such as surveillance, voice or CPDLC.

See MATS 10.3.4.1 DCPC or ATC monitoring

See MATS 10.3.7.2 Measurement between ADS-C and non-ADS-C

10.3.2.3.1 Tolerances

Take into account all system tool tolerances in any measurement.

10.3.2.4 Speed management

When aircraft are at, or expected to reduce to, the minimum separation standard apply speed control techniques to ensure that the separation minimum exists throughout the period of application of the standard.

Note: *When applying speed control, variations in environment, pilot and system accuracy may affect aircraft ability to strictly maintain an assigned speed.*

10.3.2.5 Integrity cross check

Cross check separation restrictions to ensure the integrity of calculations and to confirm the calculation is consistent with the traffic disposition.

10.3.2.5.1 Discrepancy

On finding a significant discrepancy or inconsistency:

a) perform the initial calculation again and re-apply the integrity cross check; or

b) perform further verification using an alternative means.

10.3.3 Longitudinal time separation - general conditions

10.3.3.1 Calculating longitudinal time separation

Calculate the time interval between aircraft using the speed of the following aircraft.

10.3.3.1.1 Computing times

When applying separation, you may need to compute the time at which:

a) opposite direction flights will pass; and

b) separation between two same direction flights of differing speeds will be reduced or increased to the minimum permissible.

10.3.3.1.2 Computing methods

You may compute the times required using:

a) actual or estimated times at a common point;

b) authorised system tools;

c) the Appleyard Scale; and

d) the time of passing calculation matrix.

See MATS 10.3.20 Manual calculation tables - longitudinal separation

10.3.3.2 Mach number technique

When applying Mach number technique:

a) only apply between jet aircraft with approved SCNS;

b) do not assign a block level clearance;

c) use a common point, defined as:

   i) a geographical point on the aircraft's track over which both aircraft will fly; or

   ii) a point along the individual track of each aircraft which is equidistant from the geographical point described in 'i)'; and

d) base application on the requirement that the last assigned Mach number will be maintained at all times, including during any climbs or descents.

10.3.4 Longitudinal distance separation - general conditions

10.3.4.1 DCPC or ATC monitoring

Only apply distance-based longitudinal separation standards when:

a) DCPC exist; or

b) ATC monitors all distance reports made by the aircraft.

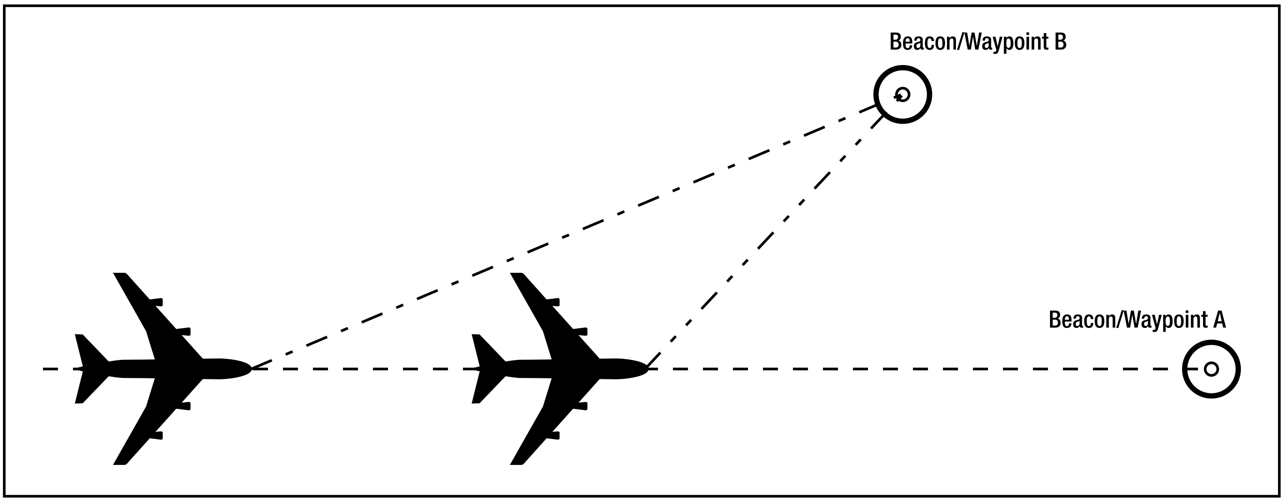
Note: *The requirement for DCPC is met by the use of CPDLC.*

10.3.4.1.1 Communication adequacy

Assess the adequacy of the available communication link prior to and during the application of distance-based separation minima. Consider the time required to receive replies from two or more aircraft and the overall workload/traffic volume associated with the application of such minima.

10.3.4.2 Same beacon/waypoint

Obtain all distance reports with reference to the same DME beacon or waypoint. As shown in the following diagram, you may use beacon/waypoint A or B, provided that both aircraft use the same beacon.



10.3.4.3 Co-sited DME beacon and waypoint

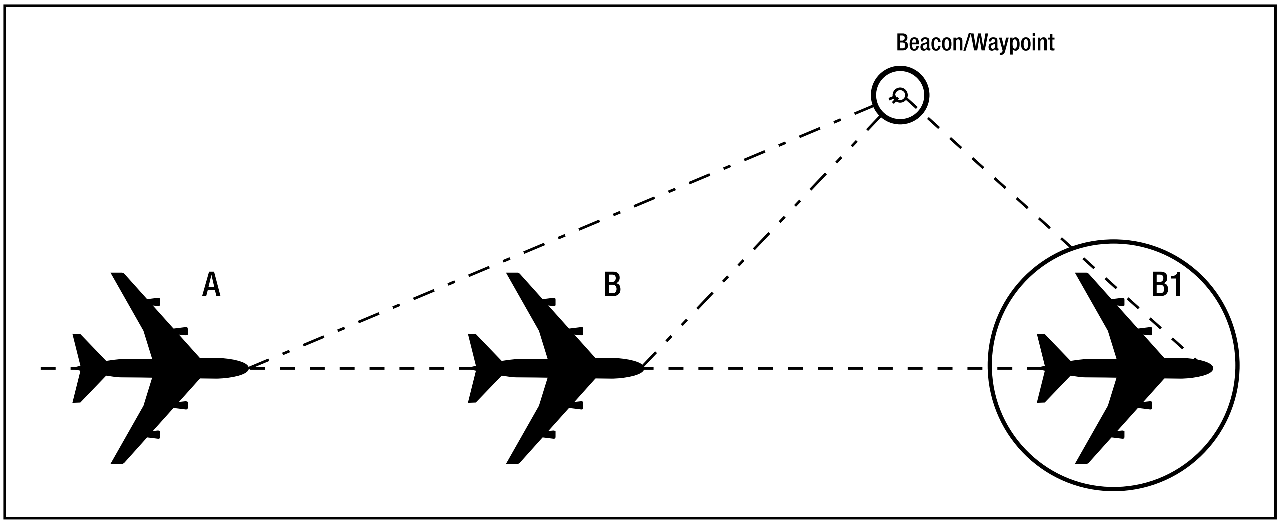
Consider a DME beacon to be co-sited with a waypoint or the azimuth navaid providing tracking guidance, when the DME site is located within 600 metres of the waypoint or azimuth navaid.

10.3.4.4 Off-track waypoint

When applying same direction distance separation, you may use an off-track waypoint or beacon provided that the distance reports from both aircraft are together increasing or decreasing.

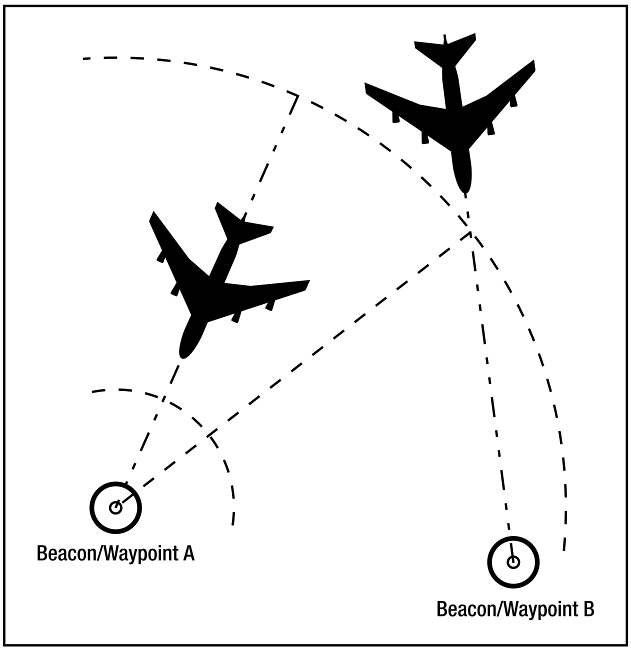
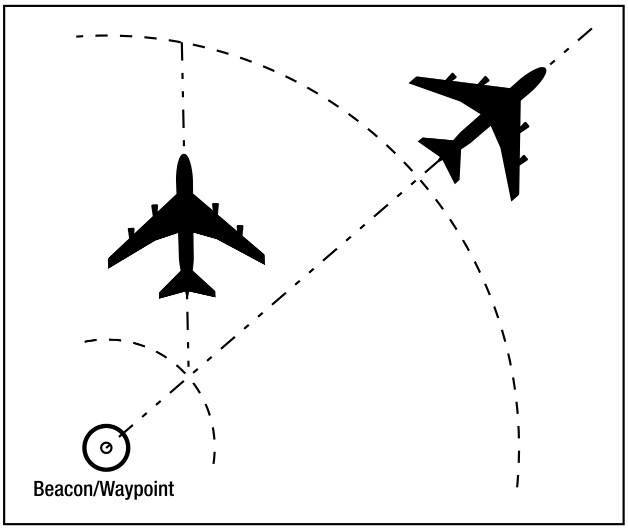
10.3.4.4.1 Relative to waypoint

Do not apply same direction distance separation if aircraft B1 is in this position relative to A, as shown in the following diagram.



10.3.4.5 Different route clearances

When applying same direction distance separation to aircraft during a period when different route clearances apply, track the leading aircraft directly to or from the beacon/waypoint or co-sited navaid.

Tracking to	Tracking from
	

10.3.4.6 Mix of distances

When using a mix of DME and approved SCNS distances, only base the SCNS distance information on the coordinates of an en route tracking navaid that is co-sited with the DME, not on the location of the DME site.

10.3.4.7 Distance requests

Where distance information is required from a DME or GNSS, include the required source in the distance request e.g. 'REPORT DISTANCE FROM NWN DME' or 'REPORT GNSS DISTANCE FROM BEZZA'.

10.3.4.8 Checking the distance

During the application of same direction distance standards, check the distance between aircraft:

a) at least every 30 min; or

b) at sufficient intervals to ensure that the required separation is maintained.

Note: *Separation checked by an ATS surveillance system satisfies this requirement.*

10.3.4.8.1 Voice distance check

When the ATS surveillance system-derived distance between aircraft is less than the sum of the distance required by the procedural separation minimum and the applicable ATS surveillance system separation minimum, conduct a voice distance check with the aircraft before the first aircraft leaves ATS surveillance system coverage.

10.3.4.8.2 CPDLC distance check

For distance reports obtained by CPDLC, check to ensure the reports have been sent:

a) from both aircraft at the same time; or

b) from the leading aircraft first.

10.3.4.9 Closing speeds

Closing speed between aircraft may exist, provided that:

a) separation is in excess of the minimum distance required;

b) distance checks are made at intervals not exceeding 15 min; and

c) when aircraft are cruising at levels not vertically separated, the closing speed is not greater than 35 kt IAS or Mach 0.06.

Note: *When applying same direction distance standards during a change of level and/or where different routes apply, aircraft spacing may reduce despite similarities in aircraft performance.*

10.3.4.10 Diverging or converging route clearances

If aircraft are on diverging or converging route clearances, measurements may be either to or from a common point on the route clearances, or taken from where the abeam position of one aircraft intersects the route of the other.

10.3.5 DME/GNSS distance conditions

10.3.5.1 DME includes TACAN

You may use TACAN distances for the same purpose as DME provided all tolerances and conditions shown for DME are applied.

10.3.5.2 Using GNSS for standards D1 to D4

In CTA only, GNSS distance information may be provided by RNP2 or RNP4 approved aircraft for the application of standards D1 to D4, subject to the following conditions:

a) where a mix of GNSS and DME distances is used, do not use distance reports if one aircraft is within 20 NM of the reference point; and

b) when GNSS is used by both aircraft, you must apply the standard with reference to published waypoints.

10.3.5.3 Separation standards D4, D7 and R3

You may also apply separation standards D4, D7 and R3 (change of level) between two aircraft if:

a) the aircraft are confirmed to be on opposite sides of an en route navaid, and one aircraft's distance is established to be not closer to that navaid than the distance required by the separation minimum;

b) the distance determined by an ATS surveillance system, or by the position of one identified aircraft and a distance report from the other, establishes that the distance between the aircraft is not less than the distance required by the procedural separation minimum plus the applicable ATS surveillance system separation minimum; or

c) one aircraft's distance is established by approved SCNS/DME and the second aircraft's position is established, by day, with reference to a visual fix, provided that:

   i) the fix is a prominent geographic feature within 10 000 FT of the aircraft; and

   ii) the feature is displayed on maps available to ATC.

See MATS 10.3.12.1 D4e - 15 NM, aircraft inbound to a controlled aerodrome

See MATS 10.3.14.3 R3 - 30 NM

See MATS 10.3.14.8 D4d - 15 NM DME/GNSS - leading aircraft descending through level of climbing aircraft

See MATS 10.3.16.1 D4a - 15 NM

See MATS 10.3.16.2 D4b - 15 NM

See MATS 10.3.16.3 D4c - 15 NM

See MATS 10.3.16.4 D7, DME/GNSS distance proportional to closure rate and level change

10.3.5.4 GNSS unavailable

Do not use GNSS as the basis for separation when a pilot advises 'GNSS UNAVAILABLE' (e.g. loss of RAIM or RAIM alert).

10.3.5.5 GNSS available

Reassess the implementation of GNSS-based separation standards following pilot use of the phrase 'GNSS AVAILABLE'.

10.3.6 Area navigation distance conditions

10.3.6.1 Area navigation distance standards

Apply area navigation distance standards between aircraft with approved SCNS or approved SCNS and DME where permitted.

10.3.6.2 Operation outside criteria

Do not apply area navigation standards after pilot advice of:

a) operation of approved SCNS equipment outside prescribed criteria including deterioration or failure;

b) operation of an INS/IRS outside the following time limits specified in the operational approval:

   i) CTA - 5 hrs multiple sensor/3 hrs single sensor; or

   ii) OCA - 12 hrs multiple sensor/5 hrs single/4.5 hrs MNPS; or

c) continuous operation of GNSS equipment in the DR mode for more than one minute or non-RAIM operation for more than five minutes.

10.3.6.2.1 Confirm update interval

Obtain the time of the last update from the pilot if the limits specified in Clause 10.3.6.2 b) might not be met throughout the application of an area navigation standard.

See MATS 10.3.6.2 Operation outside criteria

10.3.7 ADS-C and RSP 180 distance conditions

10.3.7.1 Using ADS-C

You may apply ADS-C separation between:

a) ADS-C tracks; and
b) an ADS-C track and an aircraft whose position information is derived from an ATS surveillance system (including low-quality ADS-B).

10.3.7.1.1 Reporting rate

When applying ADS-C separation, you need only ensure the appropriate maximum reporting interval for the ADS-C track(s) is satisfied.

10.3.7.2 Measurement between ADS-C and non-ADS-C

When determining longitudinal distance separation between ADS-C and non-ADS-C aircraft, only commence the measurement after receiving an ADS-C report from the ADS-C aircraft.

10.3.7.2.1 Request for voice report

Make the request for the voice report as soon as possible after the ADS-C report symbol displays. Only use this procedure when a distance greater than the minimum of the applicable standard is available.

10.3.7.2.2 Comparing report symbol with voice report

When comparing an ADS-C report symbol with a voice report from another aircraft, measure from the ADS-C symbol to the beacon or waypoint reported by the other aircraft.

10.3.7.3 ADS-C reports

If an ADS-C report is not received within:

a) 3 min of the time it should have been sent, take action to obtain the report; and
b) 6 min of the time the original report should have been sent, take action to resolve any potential conflict(s) within a further 7.5 min.

10.3.7.4 ADS-C position symbols

You may determine longitudinal separation by reference to extrapolated ADS-C position symbols.

10.3.7.4.1 Demand contract request

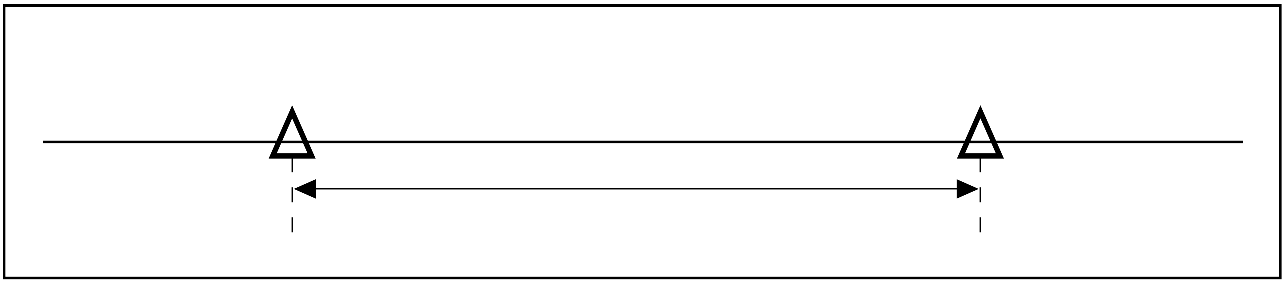
If any doubt exists as to the integrity of the information displayed by an extrapolated ADS-C position symbol, send a demand contract request. If doubt still exists, consider using an alternative method of separation.

10.3.7.4.2 Extrapolated positions off-track

Do not use extrapolated ADS-C position as the sole information source for the planning or application of separation while the aircraft is off-track.

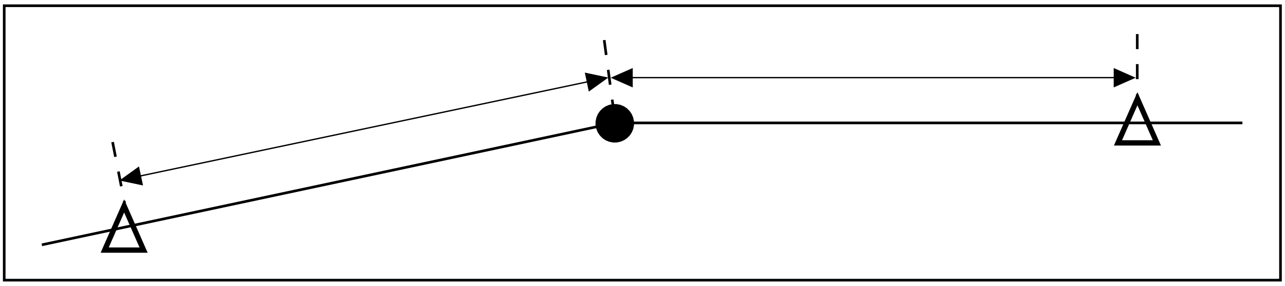
10.3.7.5 Measuring aircraft on same identical track

When two aircraft reporting by ADS-C are flying on the same identical track (same or opposite direction), you may use system tools to measure directly between the two ADS-C symbols.



10.3.7.6 Measuring aircraft with a bend in track

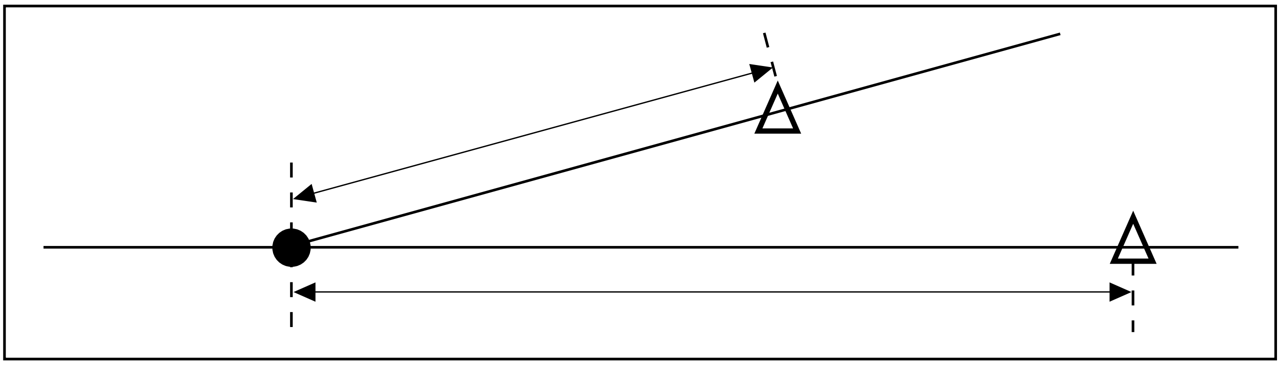
For a bend in track only take the measurements between each symbol and the turning point not between the two symbols.

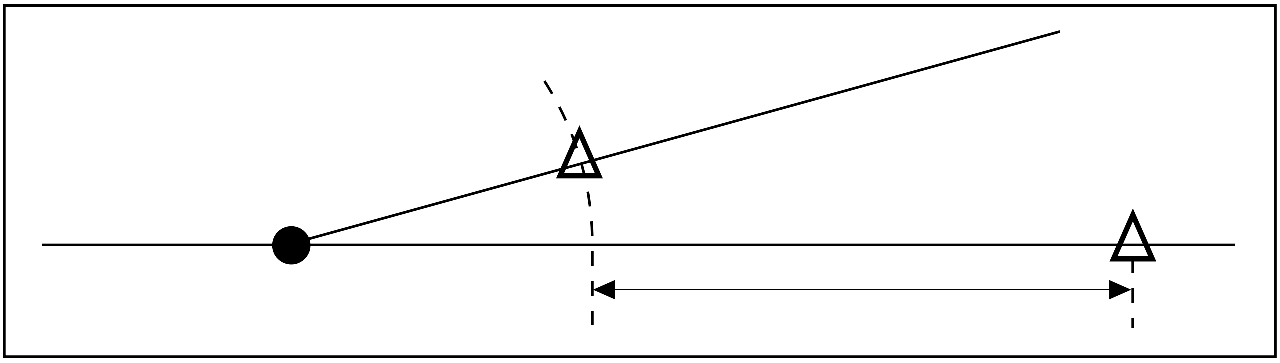


10.3.7.7 ADS-C diverging or converging

If two ADS-C aircraft are flying on diverging or converging route clearances, you may take measurements to/from:

a) a common point on the route clearances; or
b) where the abeam position of one aircraft intersects the route of the other.





10.3.8 Performance-based communication and surveillance (PBCS) conditions

10.3.8.1 Using PBCS

PBCS capability may be used to meet the conditions of PBCS separation standards.

10.3.8.2 Required Communication Performance (RCP) 240

To meet the condition of RCP 240 capability:

a) the aircraft's FDR must indicate 'P2' in Field 10;
b) DCPC exists; and
c) an alternative means of communication is available that would allow controller intervention within 10.5 minutes.

Note: *HF is an acceptable alternative means of communication.*

10.3.8.3 Required Surveillance Performance (RSP) 180

To meet the condition of RSP 180 capability the aircraft's FDR must indicate 'SUR/RSP180' in Field 18.

10.3.9 Departure separation - conditions

10.3.9.1 Application

Apply the time departure standards only during initial climb until reaching the cruising level.

10.3.9.1.1 Climbing/cruising speeds

Where the planned speed differential between aircraft is at or near the minimum prescribed, assign climbing/cruising speeds where appropriate to ensure the integrity of the standard.

10.3.9.2 General aviation VFR flights

Do not amend the notified CLIAS of general aviation VFR flights.

10.3.9.2.1 Other VFR

You may alter the CLIAS of other VFR flights if the pilot agrees.

10.3.9.3 DEP 1 to 7

Apply departure standards 1 to 7 when:

a) both aircraft proceed on the same route where a turn of 40 degrees or less is specified; or

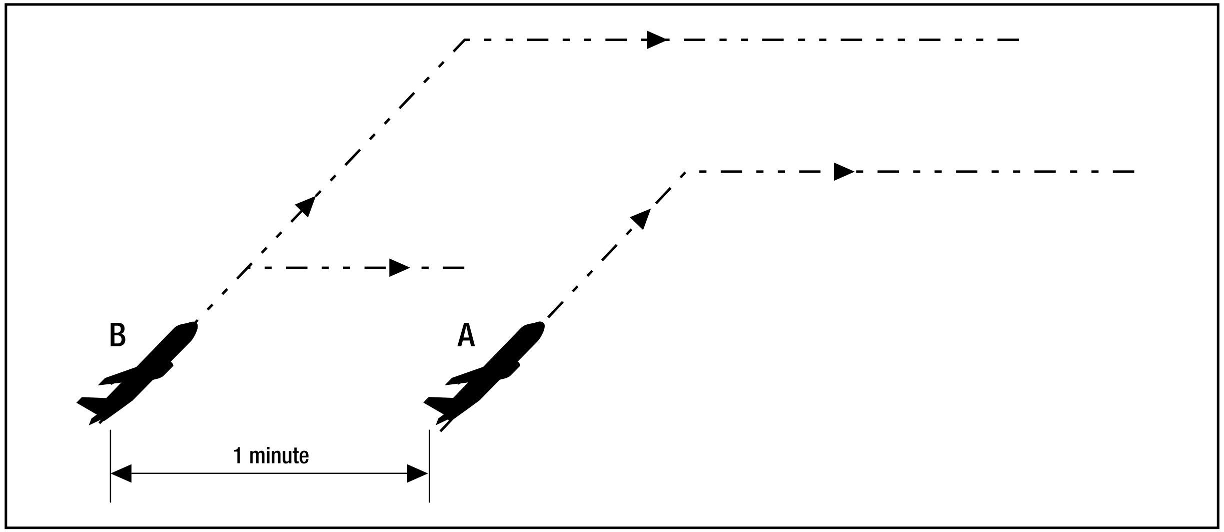
b) the subsequent aircraft's route involves a turn of more than 40 degrees and the preceding aircraft continues straight ahead or turns by 30 degrees or less.

10.3.9.4 DEP 2A to 7A

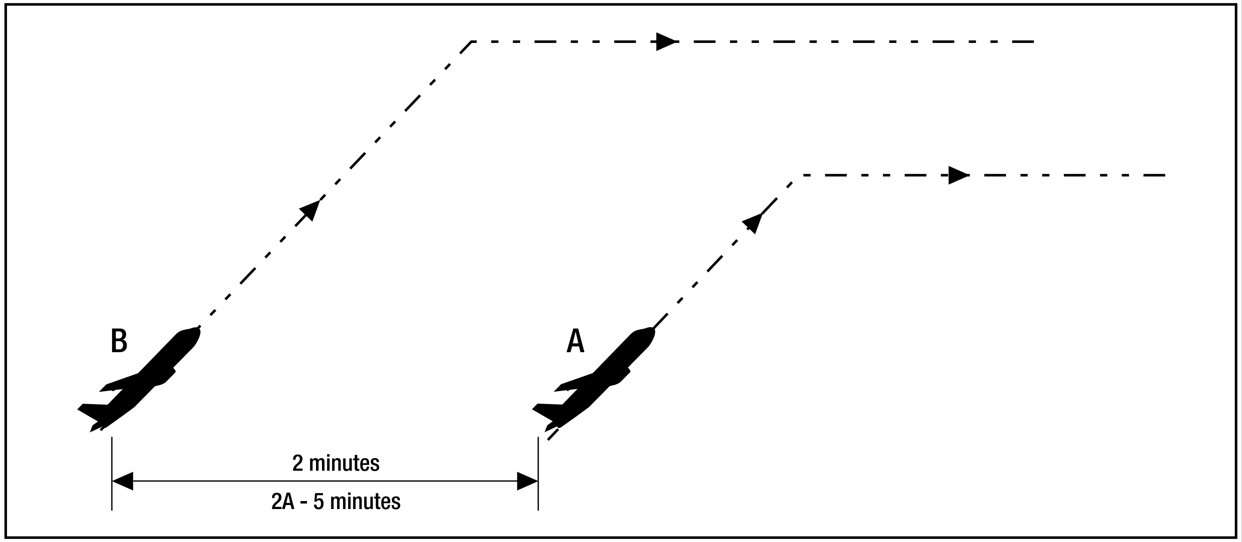
Apply departure standards 2A to 7A when both aircraft proceed on the same route on which a turn of 41 degrees to 65 degrees is specified.

10.3.10 Departing aircraft - time separation

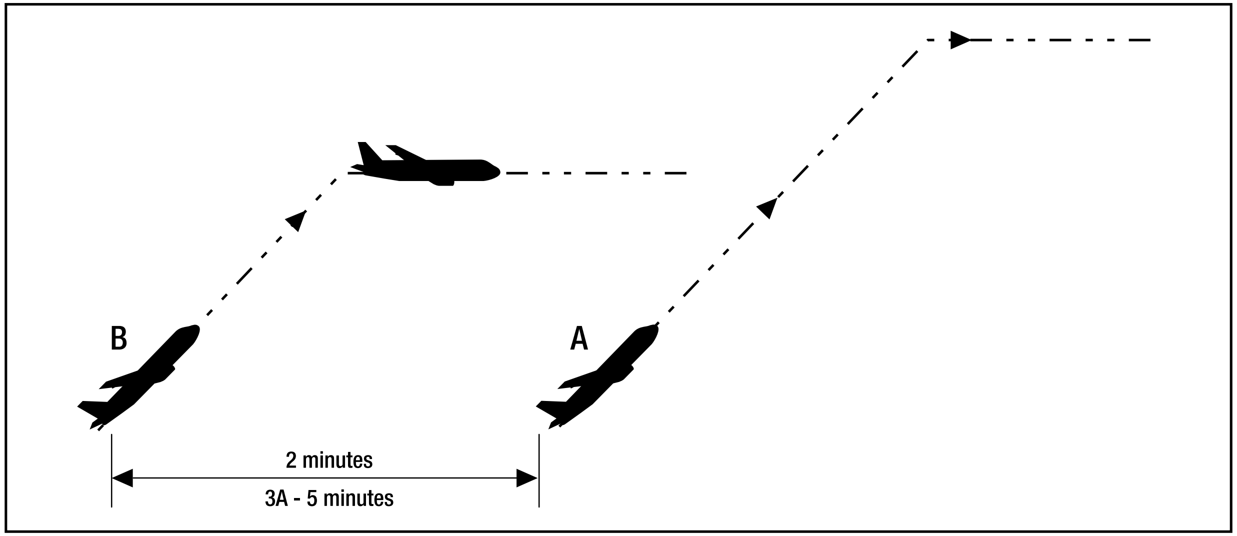
10.3.10.1 DEP 1 - 1 min, following aircraft climbing to a higher or lower level

Conditions	Diagram
a) CLIAS of the leading aircraft is at least: i) 50 kt faster than the CLIAS of the following aircraft; and ii) 30 kt faster than the cruising IAS of the following aircraft; and b) Either: i) the bearing from a point 1 NM along the runway extension to a point 5 NM along the departure track is within 30 degrees of the runway bearing; or ii) you can visually separate the aircraft until they have intercepted the departure track with the required separation.	

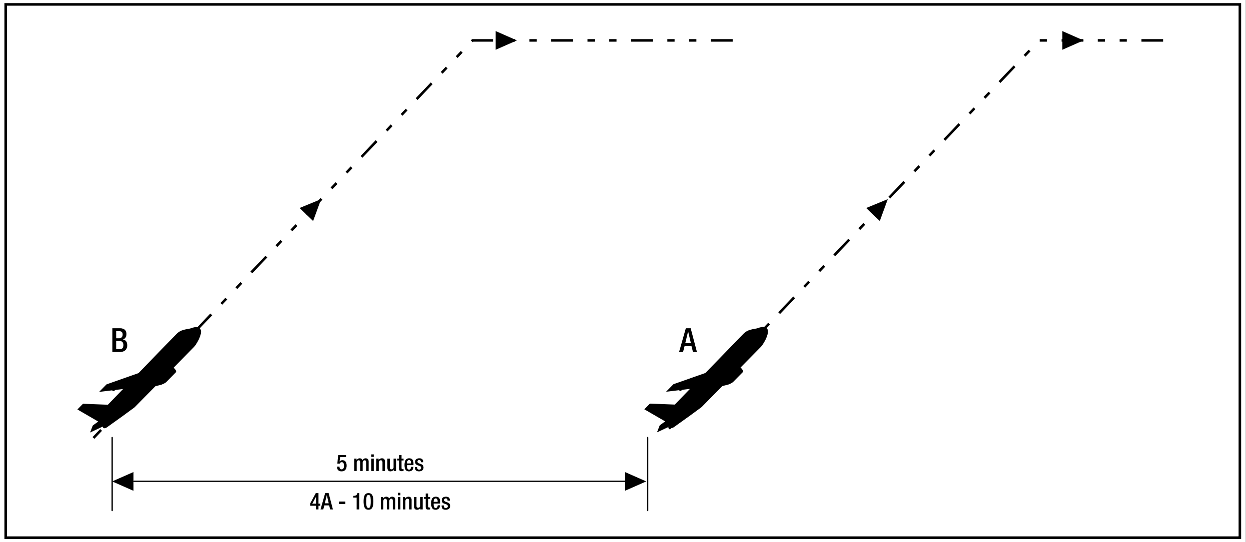
10.3.10.2 DEP 2/2A - 2/5 min, following aircraft climbing to a higher level

Conditions	Diagram
CLIAS of the following aircraft is at least 10 kt slower and not more than 90% of the CLIAS or Mach number of the leading aircraft.	

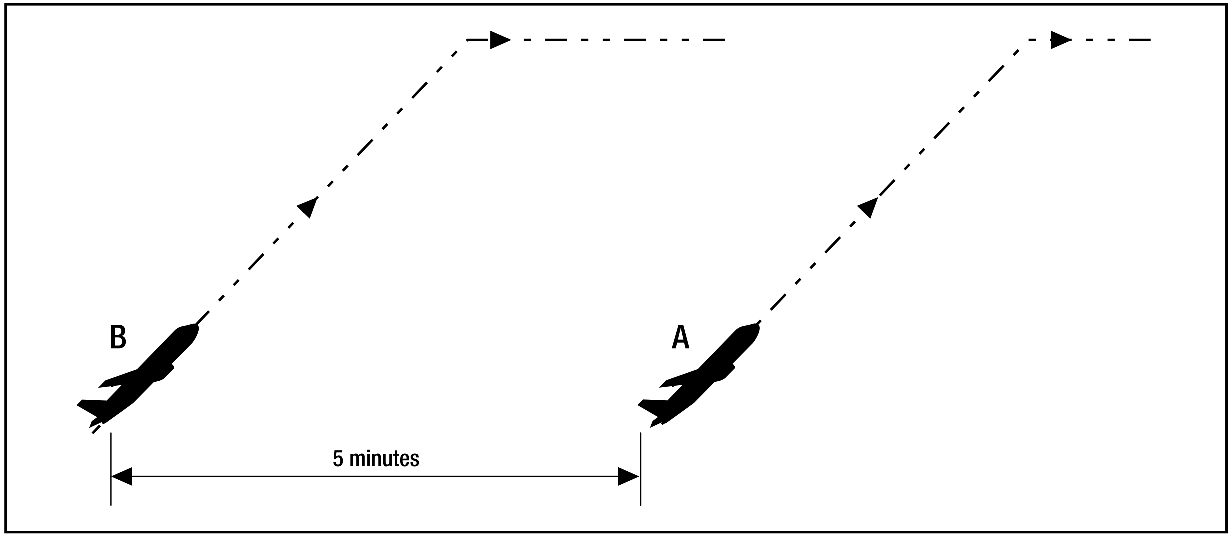
10.3.10.3 DEP 3/3A - 2/5 min, following aircraft climbing to a lower level

Conditions	Diagram
a) Both aircraft report reaching the lower cruising level; b) If the following aircraft reaches the cruising level first, apply another form of separation immediately; c) CLIAS of the following aircraft is at least 10 kt slower and not more than 90% of the CLIAS or Mach number of the leading aircraft; and d) Cruising IAS of the following aircraft is less than or equal to the CLIAS or Mach number of the leading aircraft.	

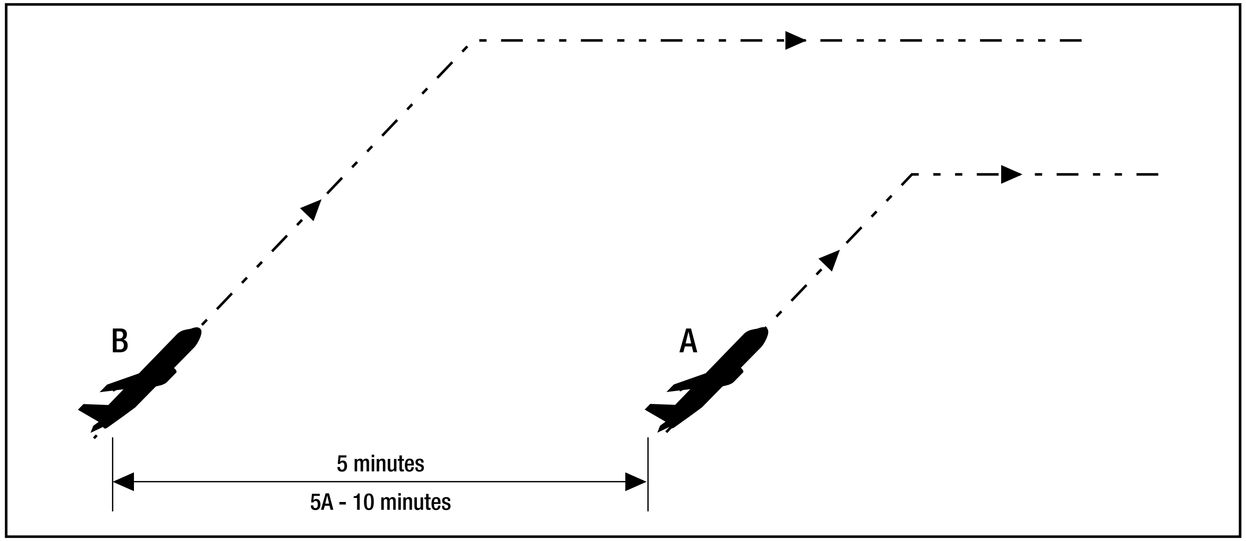
10.3.10.4 DEP 4/4A - 5/10 min, following aircraft climbing to the same level

<table>
<tr><th>Conditions</th><th>Diagram</th></tr>
<tr><td>a) Both aircraft report reaching the cruising level;
b) If the following aircraft reaches that level first, apply another form of separation immediately; and
c) CLIAS and cruising IAS of the following aircraft is at least 10 kt slower and not more than 90% of the CLIAS and cruising IAS or Mach number of the leading aircraft.</td><td>
</td></tr>
</table>

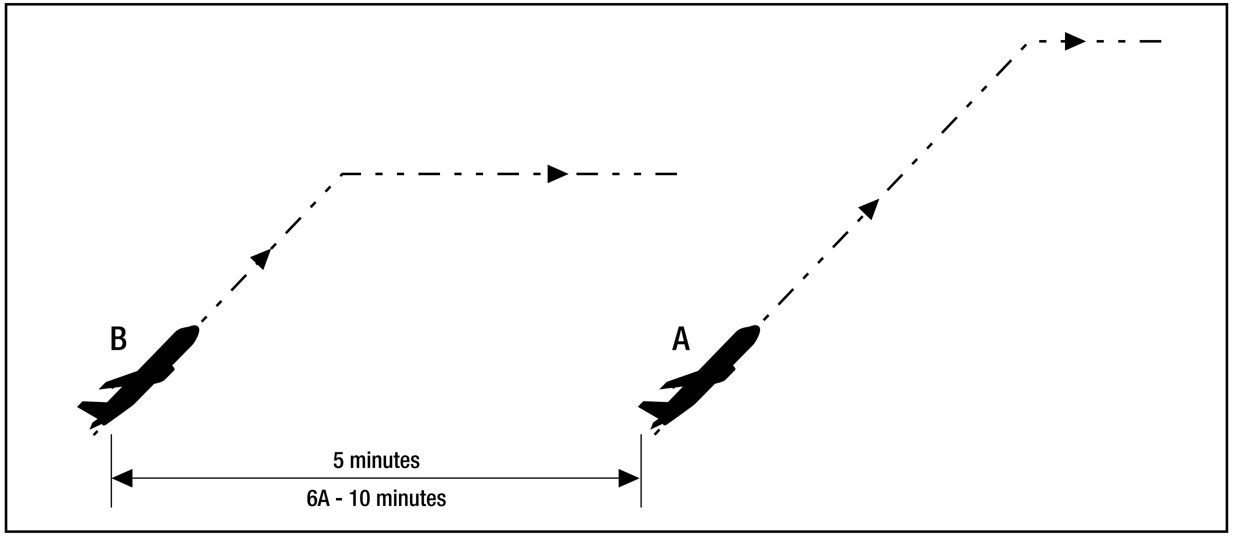
10.3.10.5 T1c - 5 min, aircraft cruising in a continuation of DEP 4

Conditions	Diagram
The cruising IAS of the following aircraft is at least 10 kt less than and not more than 90% of the cruising IAS of the leading aircraft.	

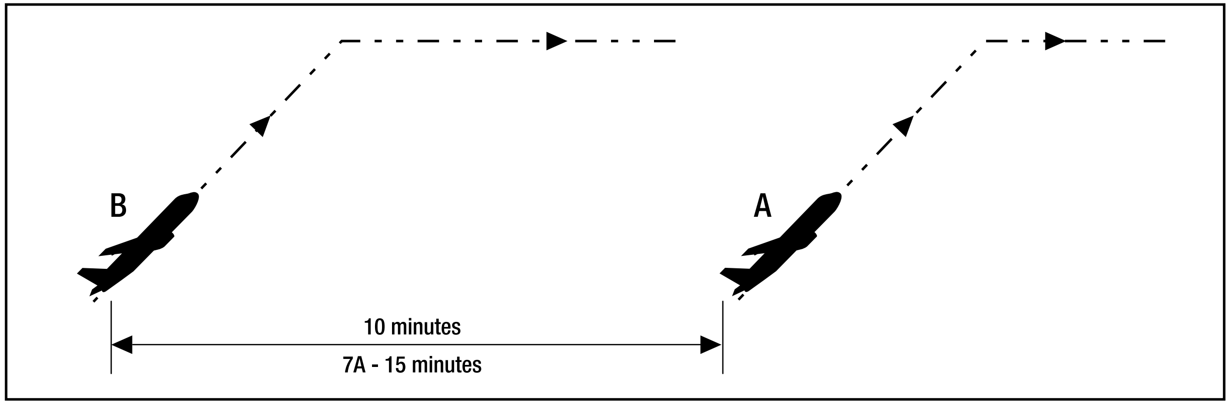
10.3.10.6 DEP 5/5A - 5/10 min, following aircraft climbing to a higher level

Conditions	Diagram
a) CLIAS of the following aircraft is less than or equal to the CLIAS of the leading aircraft; and b) If the turn in track is between 31 and 40 degrees: i) the turning point must be defined as a radio navaid; or ii) an ATS surveillance system must be used to observe the turn and ensure the departure standard does not decrease until the aircraft is established on the new track.	

10.3.10.7 DEP 6/6A - 5/10 min, following aircraft climbing to a lower level

Conditions	Diagram
a) Both aircraft report reaching the lower cruising level; b) If the following aircraft reaches cruising level first, apply another form of separation immediately; c) CLIAS of the following aircraft is less than or equal to the CLIAS of the leading aircraft; and d) If the turn in track is between 31 and 40 degrees: i) the turning point must be defined as a radio navaid; or ii) an ATS surveillance system must be used to observe the turn and ensure the departure standard does not decrease until the aircraft is established on the new track.	

10.3.10.8 DEP 7/7A - 10/15 min, following aircraft climbing to the same level

Conditions	Diagram
a) Both aircraft report reaching the cruising level; b) If the following aircraft reaches cruising level first, apply another form of separation immediately; and c) CLIAS of the following aircraft is less than or equal to the CLIAS of the leading aircraft.	

10.3.11 Departing aircraft - distance separation

10.3.11.1 DEP 8 - distance determined by height, faster following aircraft climbing to a higher level

Conditions

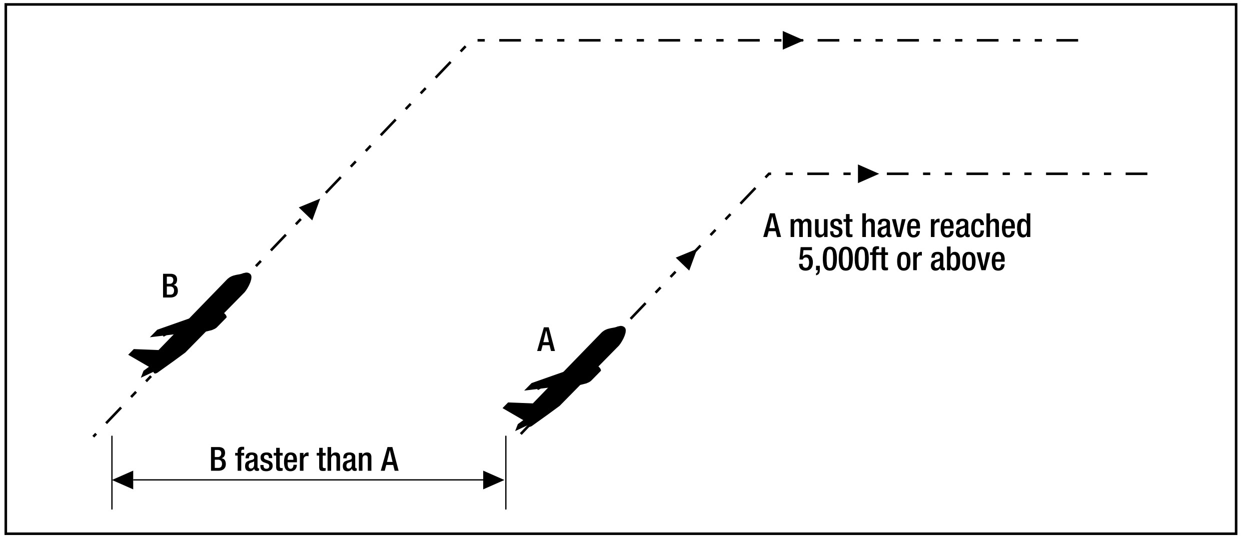
a) Distance information is provided by:
   i) DME; or
   ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint;
b) Do not mix GNSS and DME distances;
c) Only usable when the leading aircraft has reached 5000 FT or above;
d) Determine the distance and level:
   i) for both aircraft, when they are both airborne; or
   ii) for the leading aircraft, when the following aircraft has not departed. Update the restriction once the following aircraft has departed;
e) Use the vertical difference between the aircraft to determine the appropriate distance required between the aircraft and:
   i) subtract this distance from the distance of the leading aircraft when referencing a waypoint/DME behind; or
   ii) add this distance to the distance of the leading aircraft when referencing a waypoint/DME ahead; and
f) Instruct the following aircraft to reach a separated level above the leading aircraft's cruising or maintained level by the distance from the waypoint/DME determined at 'e)'.

Note: *This standard is designed to provide separation of not less than 15 NM when the following aircraft reaches 1000 FT above the level the leading aircraft has maintained.*

Diagram

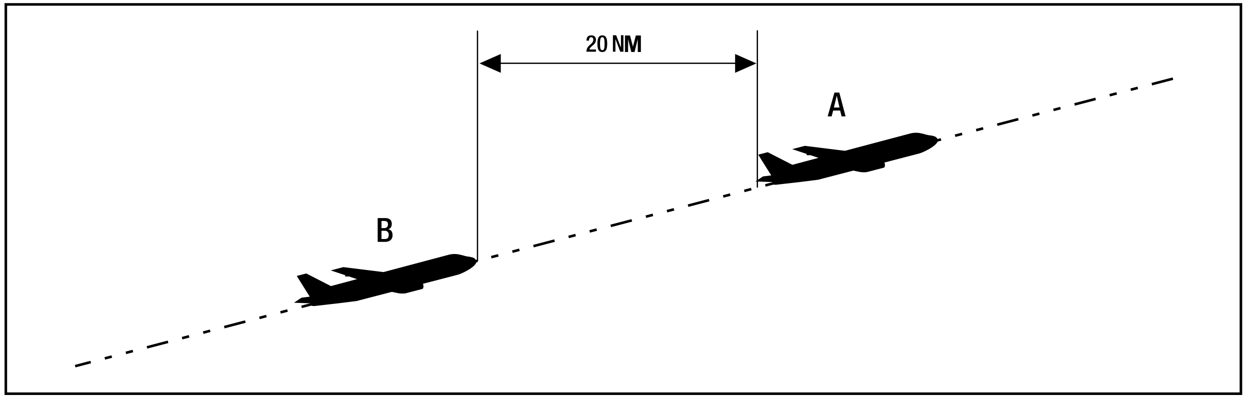
Vertical distance between aircraft	5000 FT to 7000 FT	7001 FT to 10 000 FT	10 001 FT to 20 000 FT	More than 20 000 FT
NM to be subtracted or added	15	10	5	0

Subtract or add nautical miles for vertical distance between aircraft



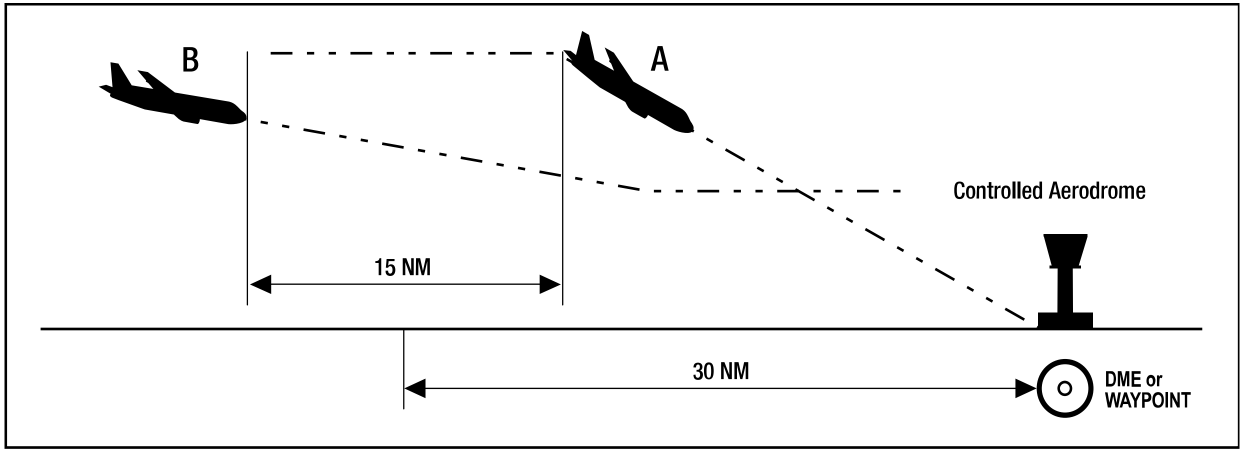
Conditions	Diagram
Example 1: An F50 climbing to FL160 reports 50 DME. An A320 ready for departure is required to reach FL170 by 45 DME. After departing, the A320 reports 7000 FT at 9 DME and the F50 65 DME, cruising FL160; the A320 may be given an updated restriction to reach FL170 by 55 DME.	
Example 2: A DHC8 reports cruising 9000 FT at 30 DME. A B737 just departed is required to reach 10 000 FT on climb to FL250 by 20 DME.	
Example 3: A SAAB 340 climbing to FL190 reports passing FL137 at 65 GNSS to run FRUIT. A DH8D climbing to FL210 reports passing A047 114 GNSS to run FRUIT. The DH8D is required to reach FL200 x 75 GNSS FRUIT.	
Example 4: A C130 climbing to FL230 reports at 45 TACAN leaving 10 000 FT. An F18 ready for departure is instructed to reach FL240 by 35 TACAN.	

10.3.11.2 R1 - 20 NM, aircraft climbing to a higher or lower level

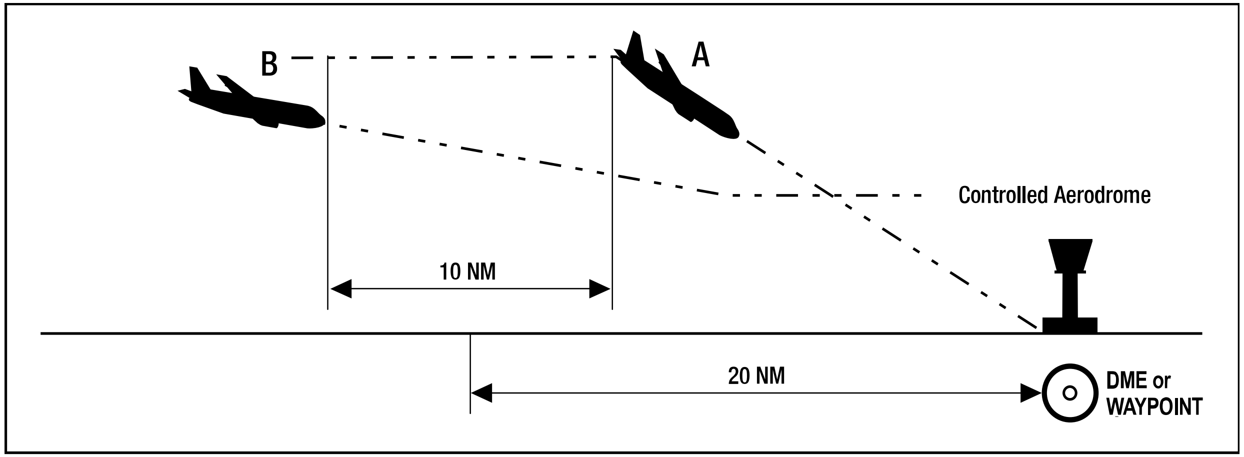
Conditions	Diagram
a) In CTA only and between: i) aircraft with approved SCNS; or ii) between an aircraft with approved SCNS and an aircraft with DME; b) Where the following aircraft is climbing to the lower level, both aircraft report reaching their cruising levels; and c) If the following aircraft reports at the cruising level first, apply another form of separation immediately.	

10.3.12 Arriving aircraft - distance separation

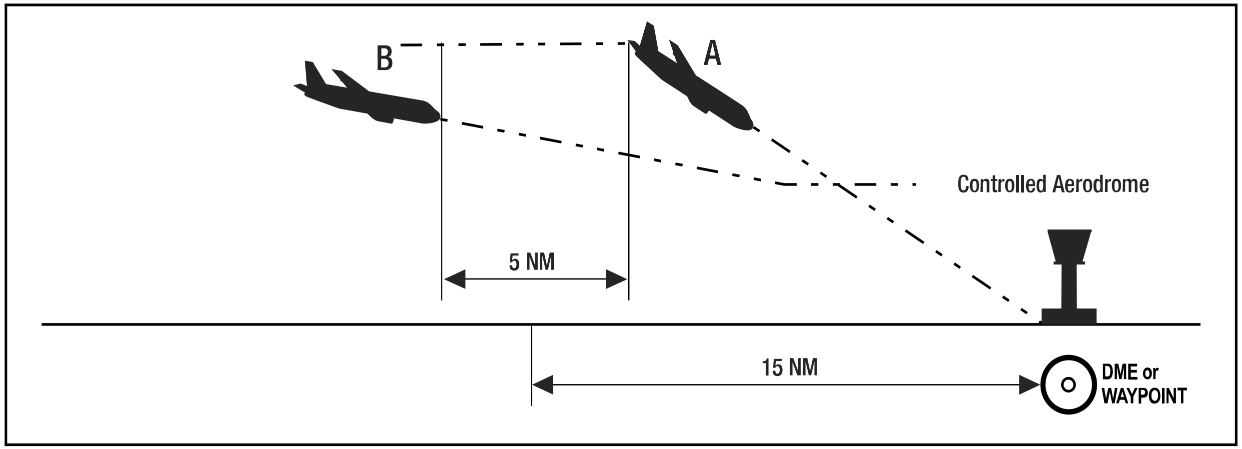
10.3.12.1 D4e - 15 NM, aircraft inbound to a controlled aerodrome

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Both aircraft are inbound and the leading aircraft is within 30 NM of a controlled aerodrome with DME or a published waypoint; and c) The aircraft are assigned vertically separated levels. See MATS 10.3.5.2 Using GNSS for standards D1 to D4 See MATS 10.3.5.3 Separation standards D4, D7 and R3	

10.3.12.2 D5 - 10 NM, aircraft inbound to a controlled aerodrome

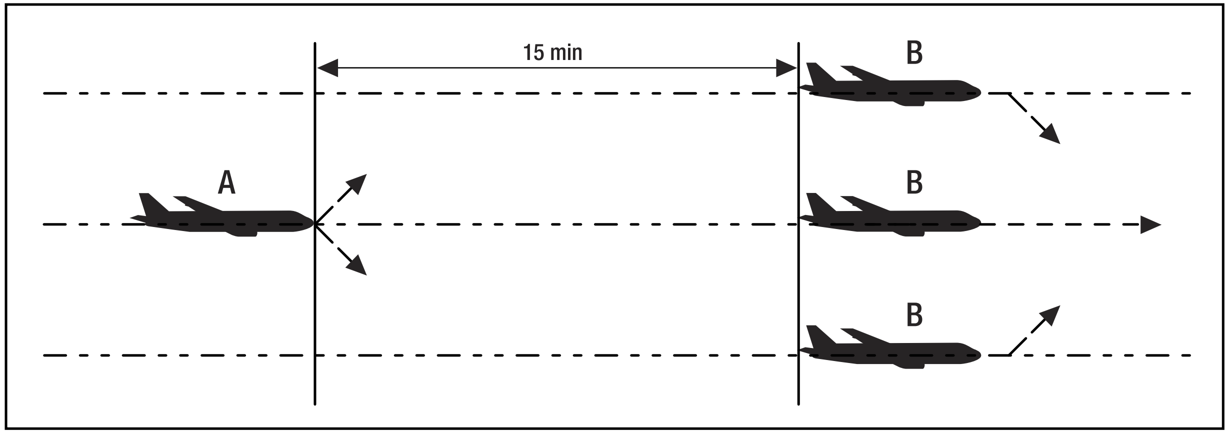
Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Do not mix GNSS and DME distances; c) Both aircraft are inbound and the leading aircraft is within 20 NM of a controlled aerodrome with DME or a published waypoint; and d) The aircraft are assigned vertically separated levels.	

10.3.12.3 D6 - 5 NM, aircraft inbound to a controlled aerodrome

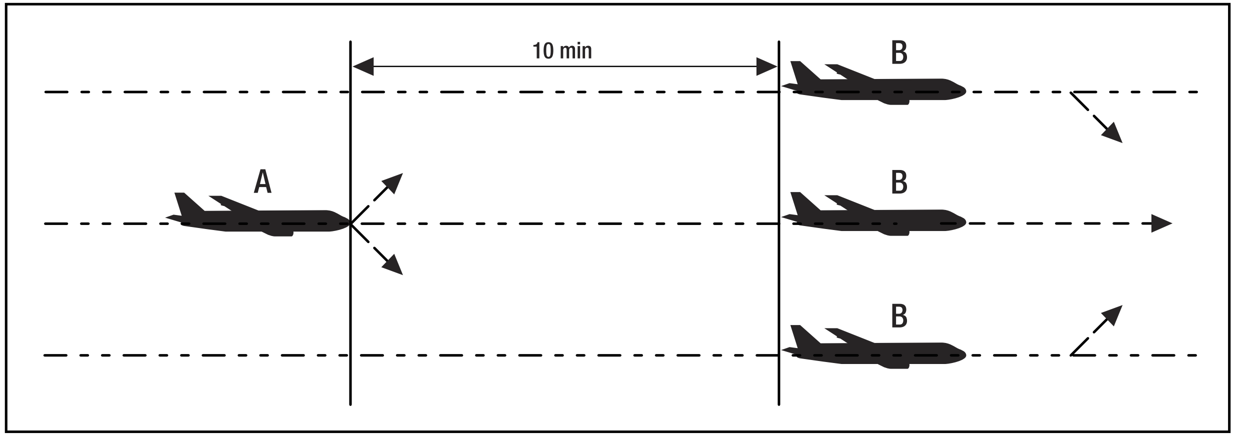
Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Do not mix GNSS and DME distances; c) Both aircraft are inbound aircraft and the leading aircraft is within 15 NM of a controlled aerodrome with DME or a published waypoint; d) The aircraft are assigned vertically separated levels; and e) Wake turbulence standards are applied.	

10.3.13 Climb, cruise and descent on the same track - time separation

10.3.13.1 T3 - 15 min

Conditions	Diagram
Within all CTA and OCA.	

10.3.13.2 T2 - 10 min

Conditions	Diagram
Frequent determination of position and speed is possible by: a) use of navaids; b) use of approved SCNS (INS/IRS minimum GS 300 kt) within CTA; c) use of RNAV10/RNP10 or RNP4 within RNP airspace; or d) visual reference to the ground by day (or night for VFR aircraft).	

10.3.13.3 T4 - 10 min, Mach number technique

Conditions

Use the following table to apply Mach number technique between aircraft:

a) on the same track where the aircraft have reported over a common point and 10 min will be maintained until another form of separation is established; or

b) on converging tracks and it is confirmed that 10 min:

   i) will exist at the point the aircraft concerned enter lateral conflict; and

   ii) will be maintained until another form of separation is established.

Note: *For this standard, a common point is:*

   a) a geographical point on the aircraft's track over which both aircraft will fly; or

   b) a point along the individual track of each aircraft which is equidistant from the geographical point described in 'a)'.

See MATS 10.3.3.2 Mach number technique

Diagram

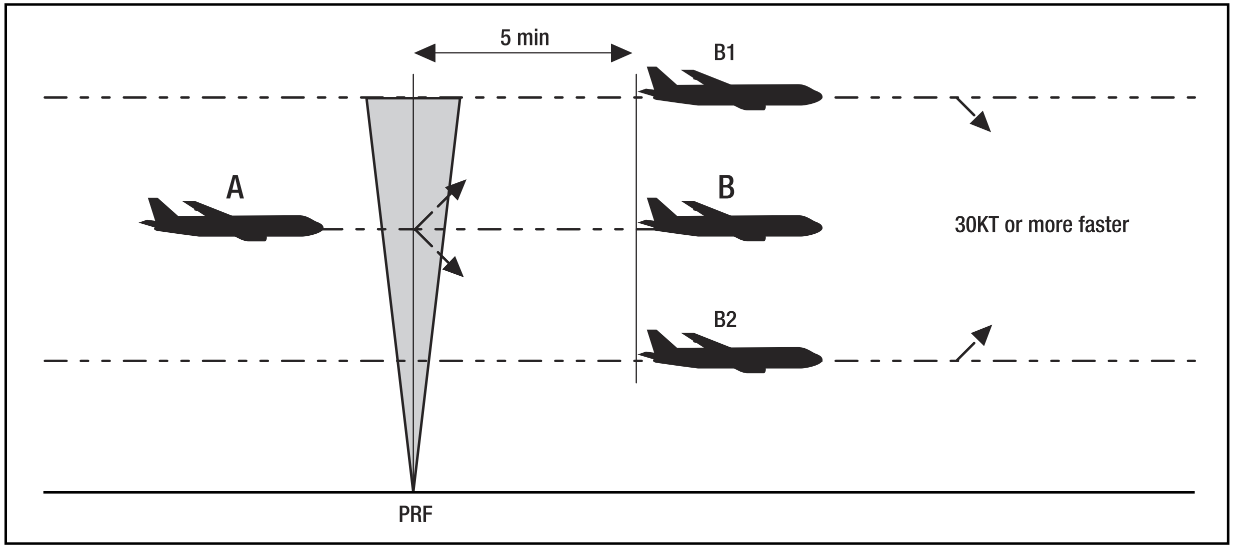
Distance to fly and separation (in minutes) required at entry point					
Difference in Mach	**000 - 600 NM**	**601 - 1200 NM**	**1201 - 1800 NM**	**1801 - 2400 NM**	**2401 - 3000 NM**
0.01	11	12	13	14	15
0.02	12	14	16	18	20
0.03	13	16	19	22	25
0.04	14	18	22	26	30
0.05	15	20	25	30	35
0.06	16	22	28	34	40
0.07	17	24	31	38	45
0.08	18	26	34	42	50
0.09	19	28	37	46	55
0.10	20	30	40	50	60

10.3.13.4 T5 - 9 to 5 min, Mach number technique

Conditions	Diagram
Apply Mach number technique between aircraft where opening speed exists provided that: a) the required time interval will exist at the common point, observed by: i) ATS surveillance system; or ii) passage over the same on-track, positive radio fix; and b) the leading aircraft is maintaining a greater Mach number than the following aircraft, in accordance with the following table. ***Note:*** *For this standard, a common point is:* *a) a geographical point on the aircraft's track over which both aircraft will fly; or* *b) a point along the individual track of each aircraft which is equidistant from the geographical point described in 'a)'.* See MATS 10.3.3.2 Mach number technique	9 min: Mach 0.02 faster 8 min: Mach 0.03 faster 7 min: Mach 0.04 faster 6 min: Mach 0.05 faster 5 min: Mach 0.06 faster

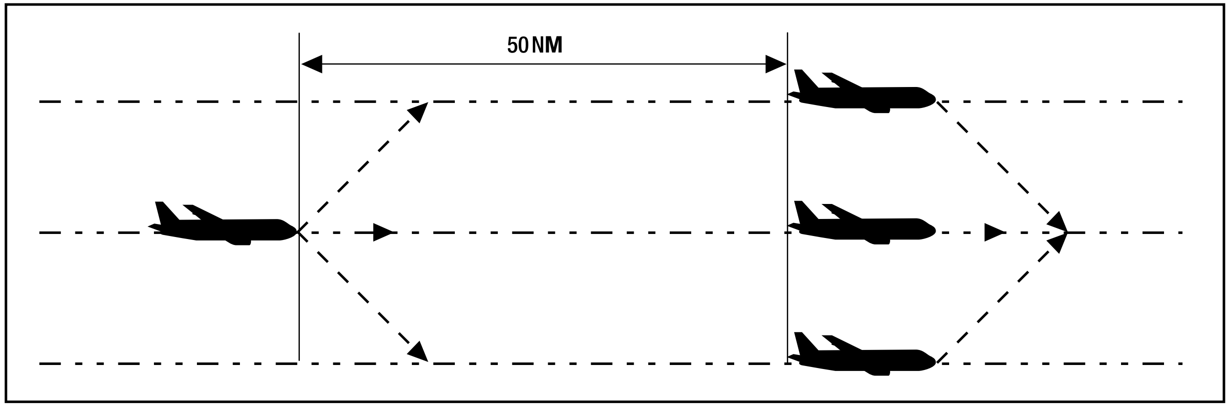
9 min	Mach 0.02 faster
8 min	Mach 0.03 faster
7 min	Mach 0.04 faster
6 min	Mach 0.05 faster
5 min	Mach 0.06 faster

10.3.13.5 T1a - 5 min

Conditions	Diagram
a) The leading aircraft has maintained and will continue to maintain an indicated airspeed at least 30 kt greater than the following aircraft; b) 5 min separation has been established by passage of both aircraft over: i) the same positive radio fix; or ii) the same ATS surveillance system position; c) One aircraft maintains level while vertical separation does not exist; and d) Vertical separation at the commencement of the level change does not exceed 4000 FT.	

10.3.14 Climb, cruise and descent on the same track - distance separation

10.3.14.1 R4 - 50 NM

Conditions	Diagram
a) Both aircraft have either RNAV10/RNP10 or RNP4 approval and are within RNP airspace; b) Separation is established: i) by reference to the same on-track waypoint, whenever possible ahead of both aircraft; or ii) by use of ADS-C; c) If an aircraft fails to report its position within 3 min, take action to establish communication. If communication is not established within 8 min from the time the report should have been received, apply an alternative form of separation; and d) Obtain distance reports at least every 24 min. See MATS 10.3.4.9 Closing speeds	

10.3.14.2 A1 - 50 NM, ADS-C and PBCS

Conditions

ADS-C

a) Both aircraft have either RNP10 or RNP4 approval and are within RNP airspace; and

b) The maximum ADS-C periodic reporting interval is not greater than 24 min.

PBCS

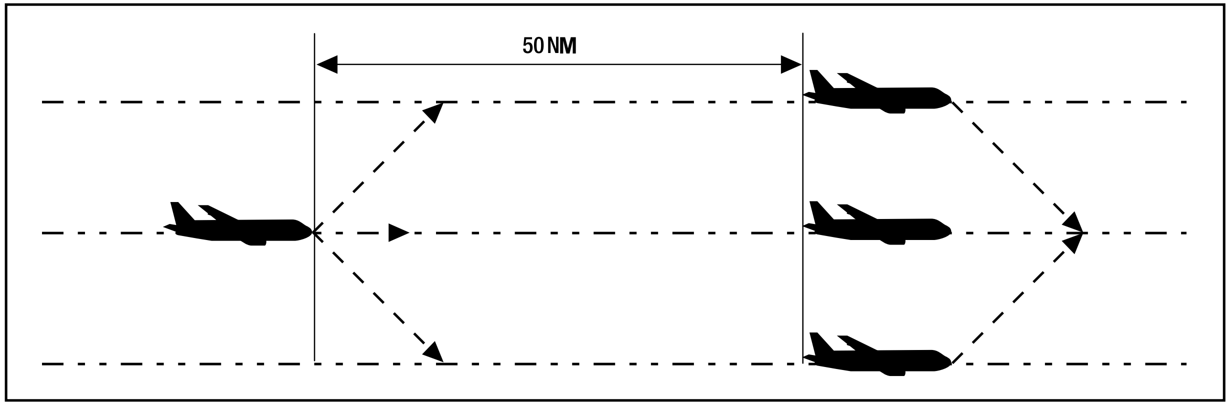
Both aircraft:

a) are within RNP airspace; and

b) meet the following performance-based capabilities and maximum reporting interval:

RNP	RCP	RSP	Max ADS-C reporting interval
10	240	180	27 min
4	240	180	32 min

Diagram



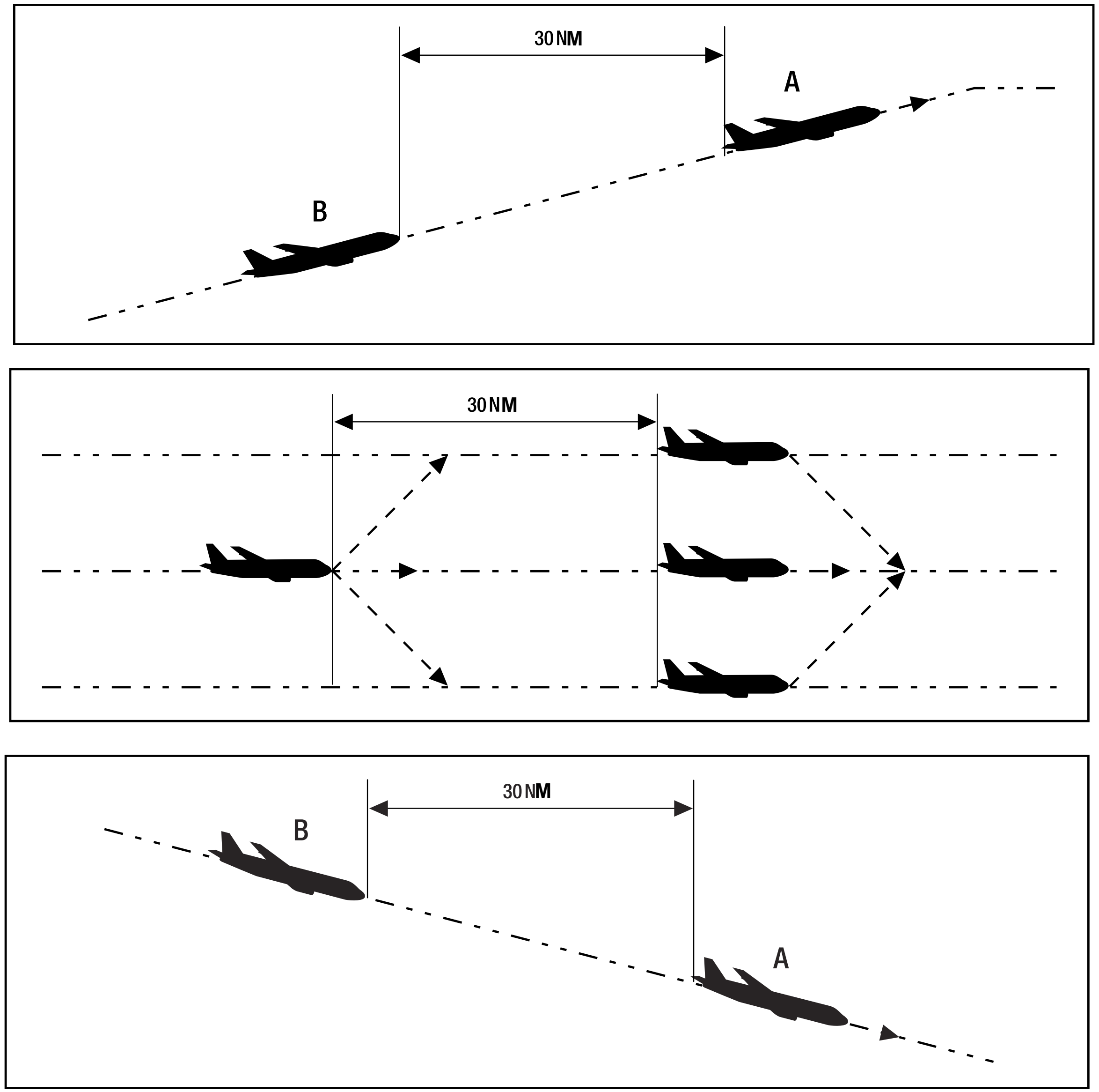
Note: *RNAV10 is equivalent to RNP10.*

See MATS 10.3.7 ADS-C and RSP 180 distance conditions

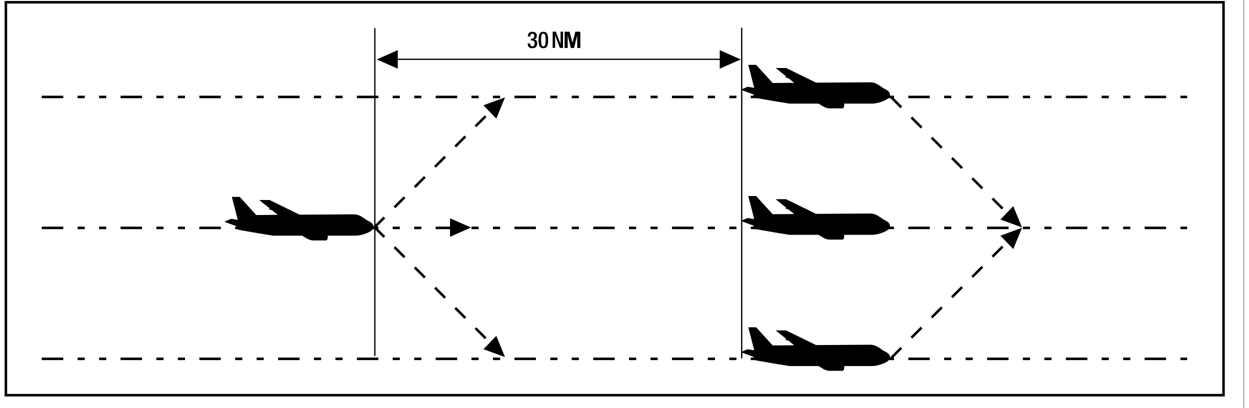
See MATS 10.3.8 Performance-based communication and surveillance (PBCS) conditions

See MATS 10.3.4.9 Closing speeds

10.3.14.3 R3 - 30 NM

Conditions	Diagram
a) In CTA only and between: i) aircraft with approved SCNS; ii) an aircraft with approved SCNS and an aircraft with DME; b) Above FL290, when a DME distance is supplied by either aircraft, both aircraft are on the same side of the DME beacon; c) Both aircraft report reaching their cruising levels; d) If the following aircraft reports at the cruising level first, take immediate action to ensure separation is maintained; and e) Separation standards A3 and R3 may be transitioned across the CTA/OCA boundary provided that the conditions for both standards apply prior to transitioning. See MATS [10.3.5.3 Separation standards D4, D7 and R3]	

10.3.14.4 A3 - 30 NM, ADS-C and PBCS

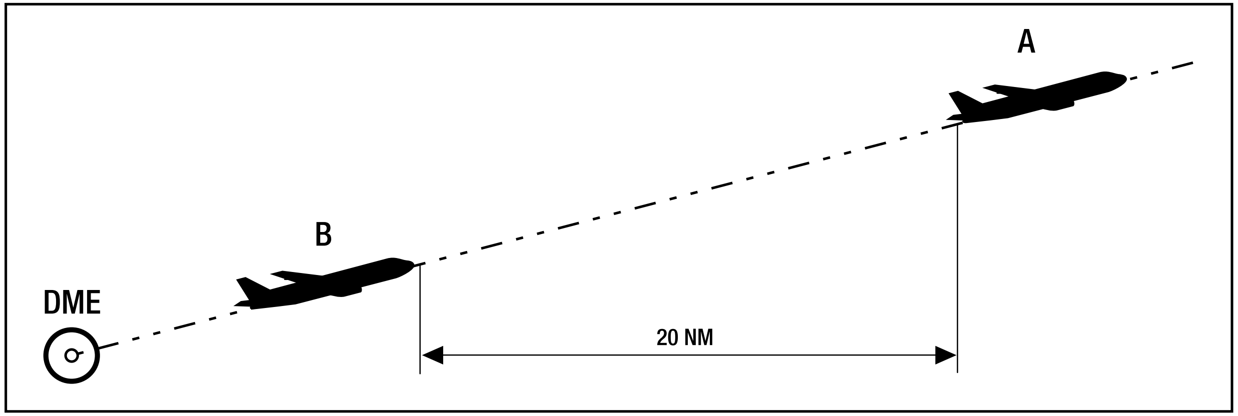
Conditions	Diagram
ADS-C a) Both aircraft are RNP4 approved and are within RNP airspace; b) The maximum ADS-C periodic reporting interval is not greater than 12 min; and c) Separation standards A3 and R3 may be transitioned across the CTA/OCA boundary provided that the conditions for both standards apply prior to transitioning.	
PBCS Both aircraft: a) are within RNP airspace; and b) meet the following performance-based capabilities and maximum reporting interval:	

RNP	RCP	RSP	Max ADS-C reporting interval
4	240	180	12 min

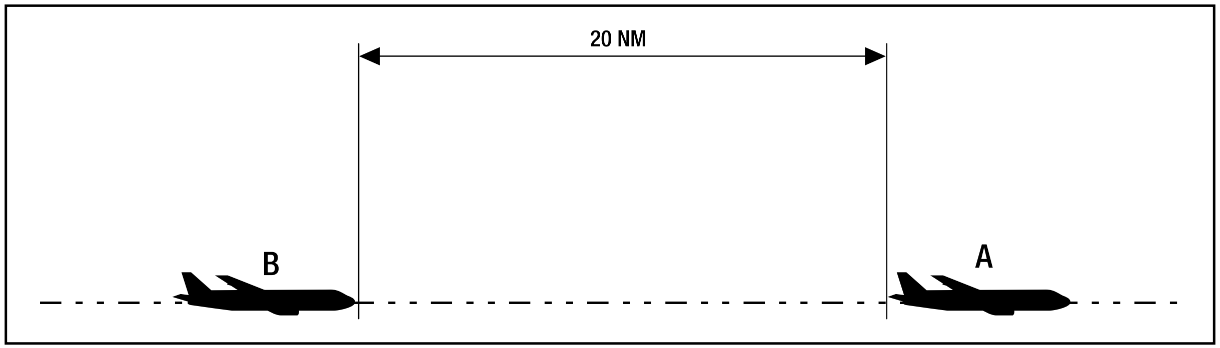
See MATS 10.3.7 ADS-C and RSP 180 distance conditions

See MATS 10.3.8 Performance-based communication and surveillance (PBCS) conditions

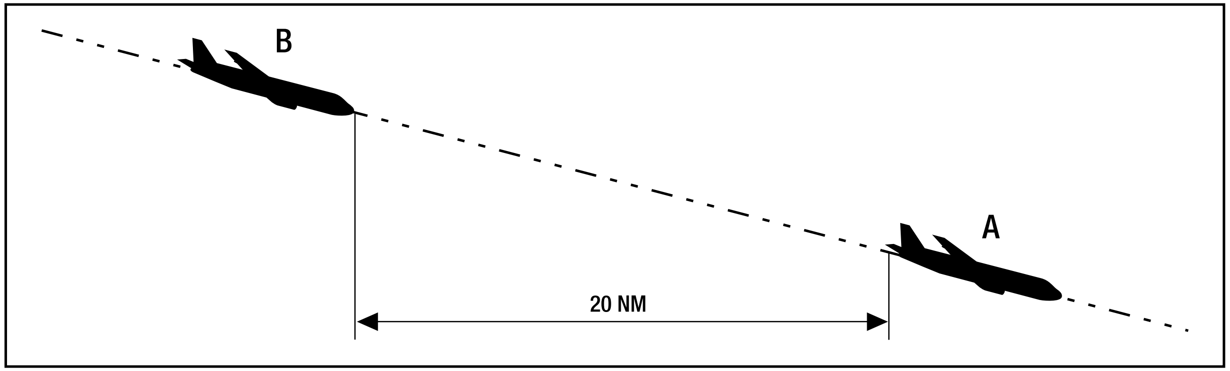
10.3.14.5 D1 - 20 NM DME/GNSS climb to cruise

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft; b) Where the following aircraft is climbing to the lower cruising level or both aircraft are climbing to levels which are not vertically separated, both aircraft report reaching their cruising levels; and c) If the following aircraft reports at cruising level first, apply another form of separation immediately. See MATS 10.3.5.2 Using GNSS for standards D1 to D4	

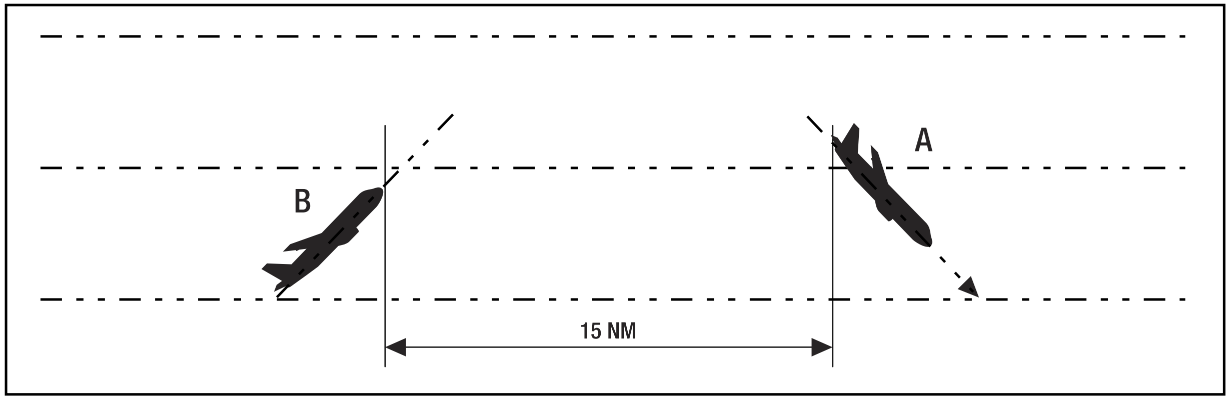
10.3.14.6 D2 - 20 NM DME/GNSS cruise

Conditions	Diagram
Distance information is provided by: a) DME; or b) GNSS in CTA only, by RNP2 or RNP4 approved aircraft. See MATS 10.3.5.2 Using GNSS for standards D1 to D4	

10.3.14.7 D3 - 20 NM DME/GNSS descending

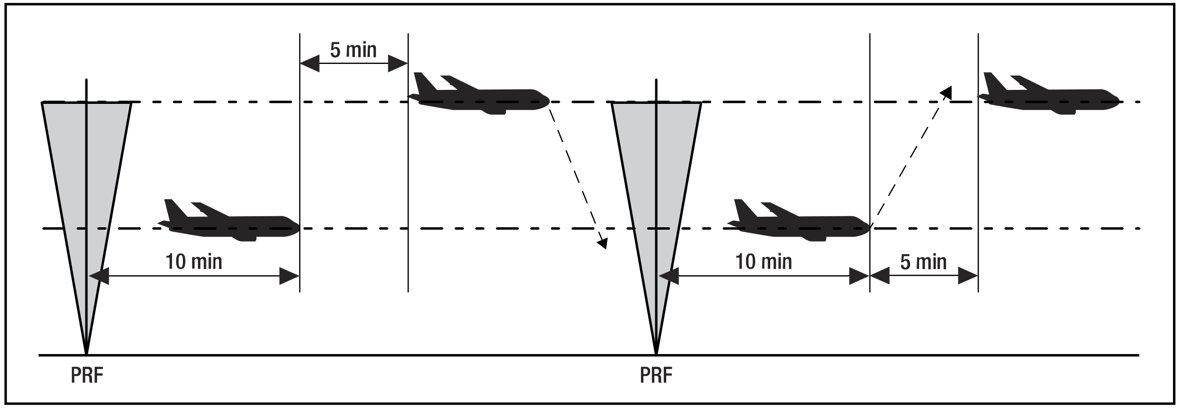
Conditions	Diagram
Distance information is provided by: a) DME; or b) GNSS in CTA only, by RNP2 or RNP4 approved aircraft. See MATS 10.3.5.2 Using GNSS for standards D1 to D4	

10.3.14.8 D4d - 15 NM DME/GNSS - leading aircraft descending through level of climbing aircraft

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft; b) The leading aircraft is descending through the level of the following aircraft (climbing); and c) Above FL290, when a DME distance is provided and the aircraft are on opposite sides of the same on-track DME used by both aircraft, increase the standard to 20 NM by DME. See MATS 10.3.5.2 Using GNSS for standards D1 to D4 See MATS 10.3.5.3 Separation standards D4, D7 and R3	

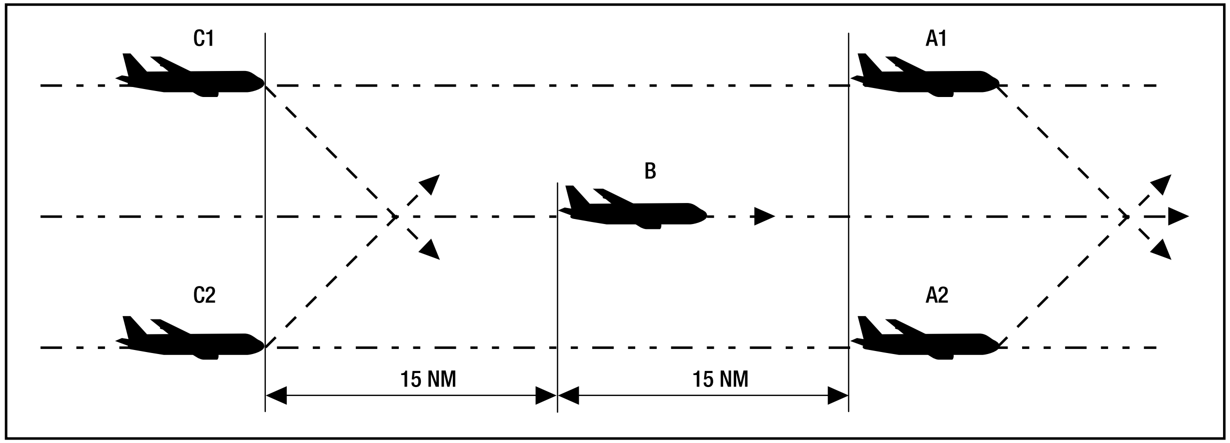
10.3.15 One aircraft maintains while other changes level - time separation

10.3.15.1 T1b - 5 min

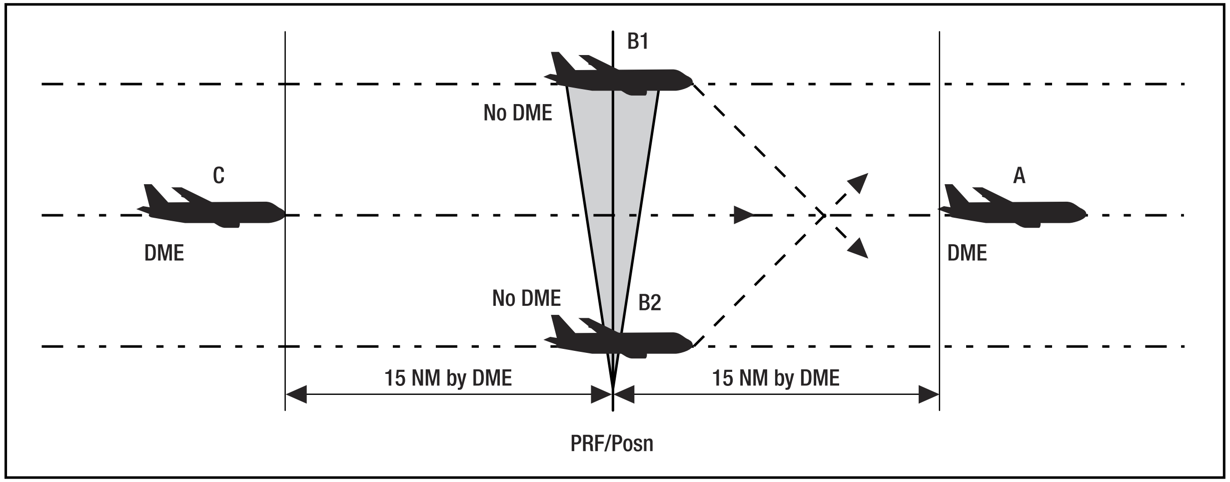
Conditions	Diagram
a) Apply to a: i) preceding aircraft descending through a following aircraft's level; or ii) following aircraft climbing through a preceding aircraft's level; b) One aircraft maintains level while vertical separation does not exist; c) The vertical separation at the commencement of the change does not exceed 4000 FT; d) No closing speed (IAS or Mach number) exists; e) Separation has been established by the passage of both aircraft over the same: i) positive radio fix; or ii) ATS surveillance system position; and f) The level change is commenced within 10 min of the time the second aircraft passed over the: i) positive radio fix; or ii) ATS surveillance system position.	

10.3.16 One aircraft maintains while other changes level - distance separation

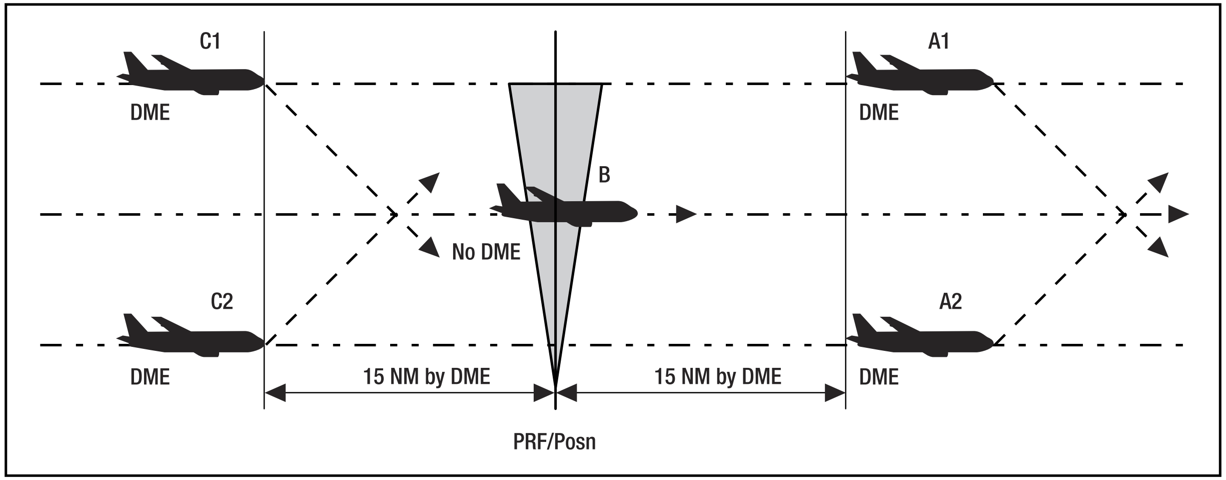
10.3.16.1 D4a - 15 NM

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft; b) One aircraft maintains level while vertical separation does not exist; and c) Above FL290, when a DME distance is provided, both aircraft must be on the same side of the DME beacon. See MATS 10.3.5.2 Using GNSS for standards D1 to D4 See MATS 10.3.5.3 Separation standards D4, D7 and R3	 ***Note:*** *A descending following aircraft (C1) may be faster than the cruising aircraft (B), or a climbing lead aircraft (A2) may be slower than the cruising aircraft (B) causing a reduction in spacing.*

10.3.16.2 D4b - 15 NM

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft; and b) Aircraft are established on opposite sides of an en route navaid as follows: i) The non-DME/GNSS aircraft is descending or climbing on the safe side of the navaid at the commencement of the level change while the DME/GNSS aircraft maintains level; and ii) The DME/GNSS aircraft is at least 15 NM from the navaid. See MATS [10.3.5.2 Using GNSS for standards D1 to D4] See MATS [10.3.5.3 Separation standards D4, D7 and R3]	 ***Note:*** *A descending following aircraft (B1) may be faster than the cruising aircraft (A), or a climbing lead aircraft (B2) may be slower than the cruising aircraft (C) causing a reduction in spacing.*

10.3.16.3 D4c - 15 NM

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS in CTA only, by RNP2 or RNP4 approved aircraft; and b) Aircraft are established on opposite sides of an en route navaid as follows: i) The non-DME/GNSS aircraft maintains level on the safe side of the navaid at the commencement of the level change and the DME/GNSS aircraft is descending or climbing; and ii) The DME/GNSS aircraft is 15 NM or more from the navaid. See MATS 10.3.5.2 Using GNSS for standards D1 to D4 See MATS 10.3.5.3 Separation standards D4, D7 and R3	 ***Note:*** *A descending following aircraft (C1) may be faster than the cruising aircraft (B), or a climbing lead aircraft (A2) may be slower than the cruising aircraft (B) causing a reduction in spacing.*

10.3.16.4 D7, DME/GNSS distance proportional to closure rate and level change

Conditions

a) Distance information is provided by:
   i) DME; or
   ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint;

b) Do not mix GNSS and DME distances;

c) One aircraft maintains level while vertical separation does not exist;

d) Above FL290, both aircraft must be on the same side of an on-track DME beacon or published waypoint used by both aircraft;

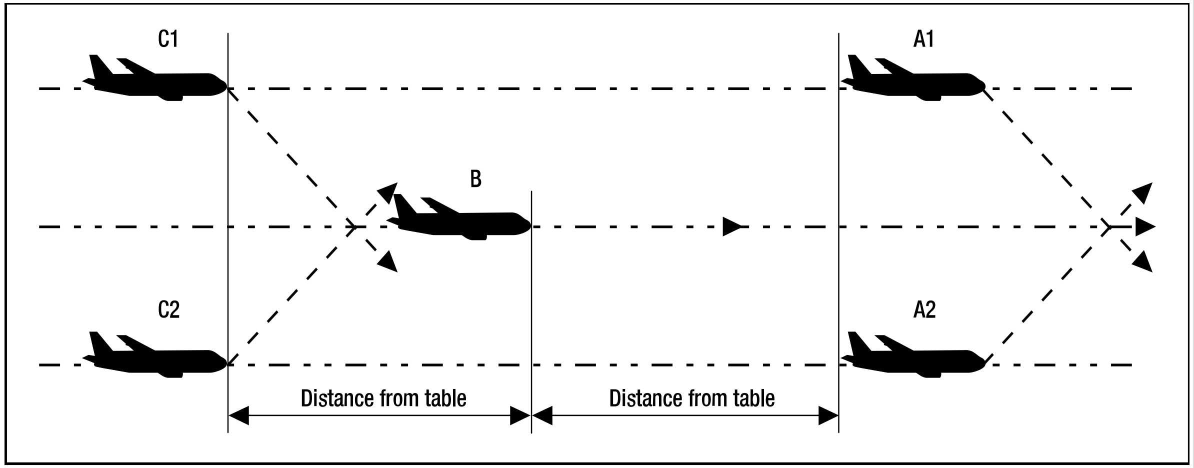
e) Check distances when the aircraft are vertically separated by the minimum amount appropriate to the table to be used;

f) Determine the separation required, proportional to the aircraft rate and amount of level change, from the tables:
   i) where the position of one aircraft is determined by an ATS surveillance system, add the applicable ATS surveillance system separation minimum; and
   ii) when applying to an aircraft transiting the transition level and the Area QNH is higher than 1013 HPA, add 1000 FT to the amount of level change and utilise that value in the table, e.g. for a 3000 FT level change, use 4000 FT table; and

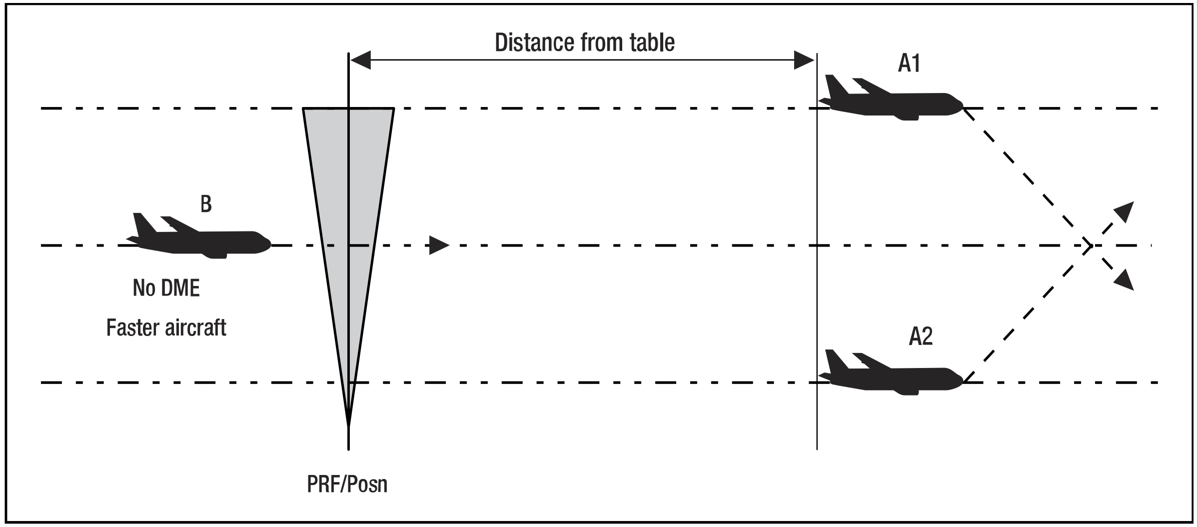
g) The level change commences within 1 minute of obtaining distances. When the separation is on the minimum, issue instructions to ensure that the level change is commenced within this time.

See MATS 10.3.5.3 Separation standards D4, D7 and R3

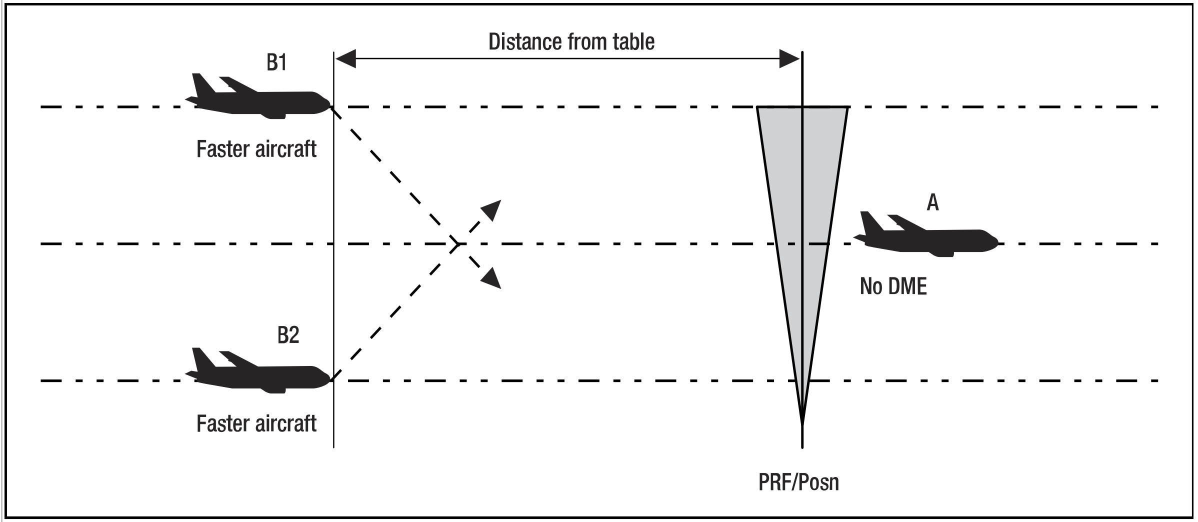
Diagram



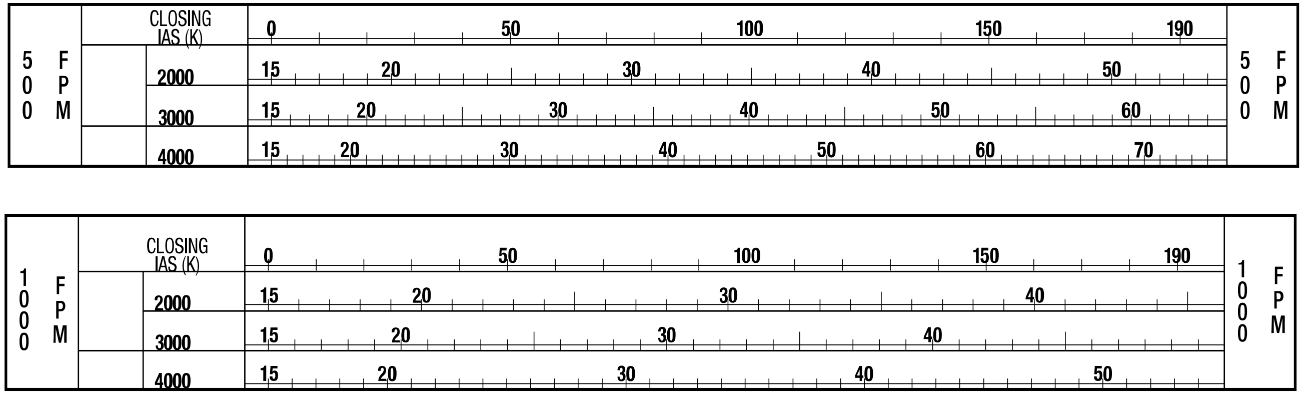
One aircraft B without DME



Conditions	Diagram
	One aircraft A without DME

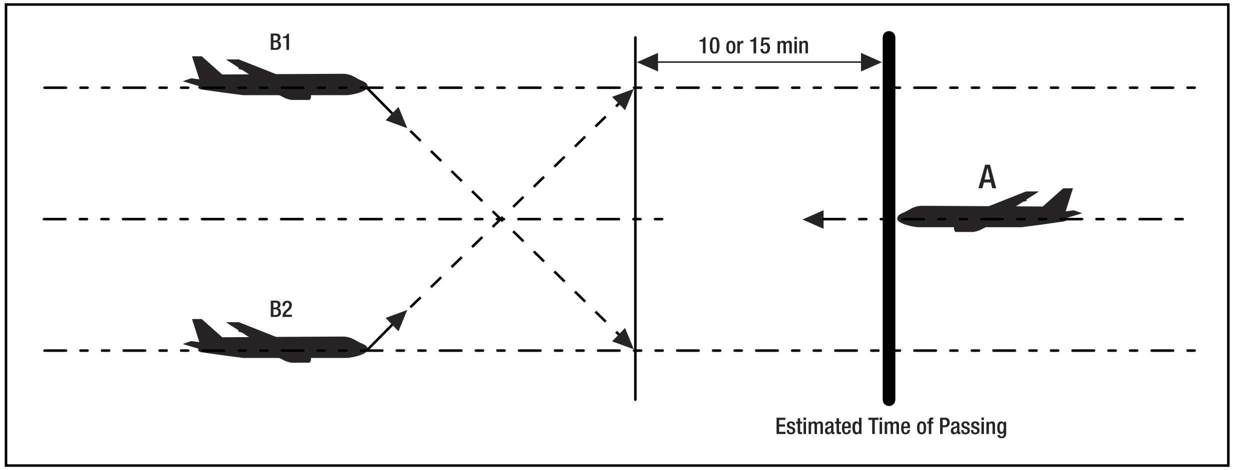


Closing IAS table

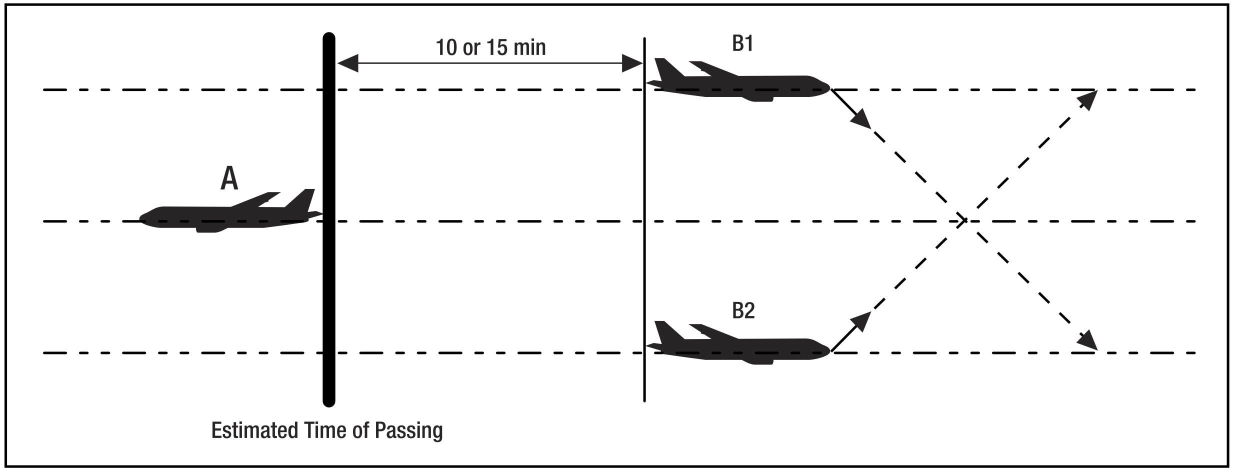


10.3.17 Opposite direction climb/descent - time separation

10.3.17.1 T6a, 10/15 min before time of passing

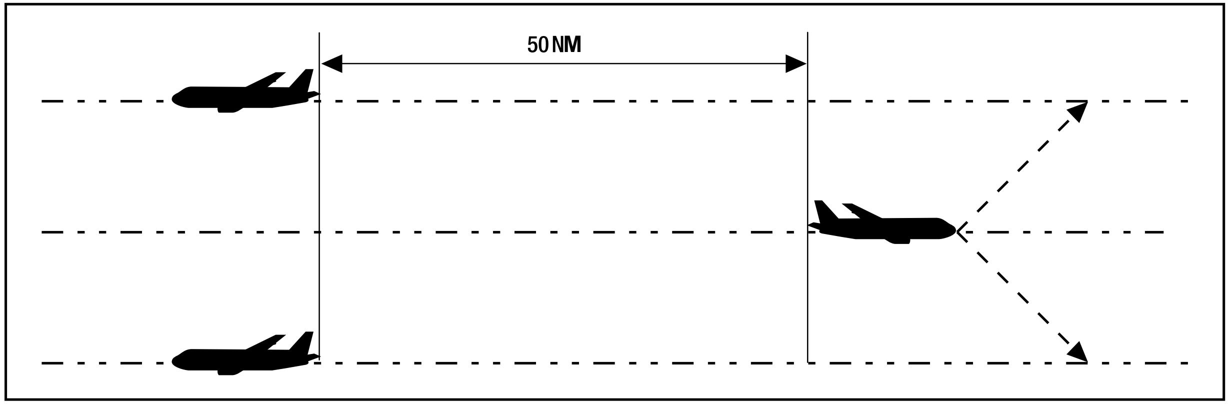
Conditions	Diagram
During a change of level, vertical separation must exist by the estimated time of passing minus: a) the time standard (10 or 15 min), as applicable to the route; or b) 10 min between aircraft equipped with approved SCNS.	

10.3.17.2 T6b, 10/15 min after time of passing

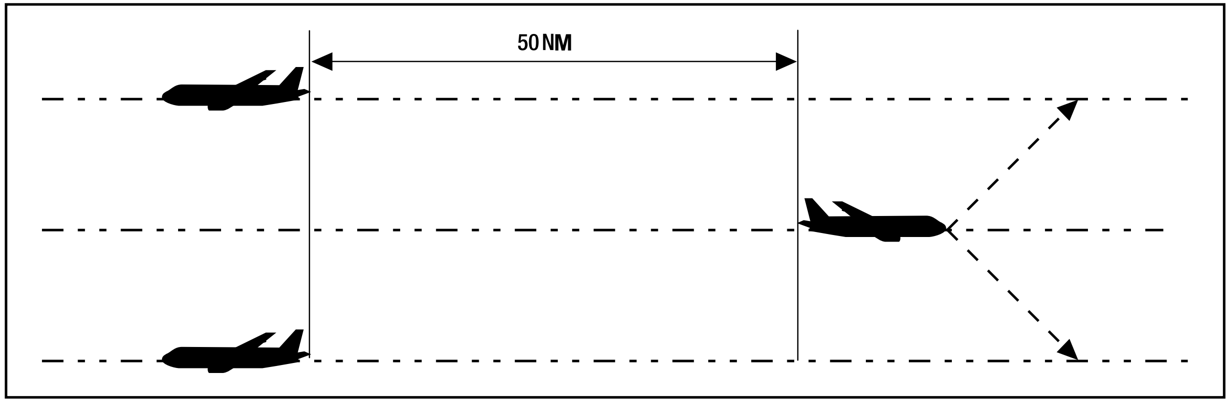
Conditions	Diagram
During a change of level, vertical separation must exist until the estimated time of passing plus: a) the time standard (10 or 15 min), as applicable to the route; or b) 10 min between aircraft equipped with approved SCNS.	

10.3.18 Opposite direction climb/descent - distance separation

10.3.18.1 R5 - 50 NM, definite passing

Conditions	Diagram
a) Reports (including ADS-C reports) indicate that the aircraft have passed and the distance between them is opening; and b) Both aircraft have either RNAV10/RNP10 or RNP4 approval and are within RNP airspace.	

10.3.18.2 A2 - 50 NM, ADS-C and PBCS definite passing

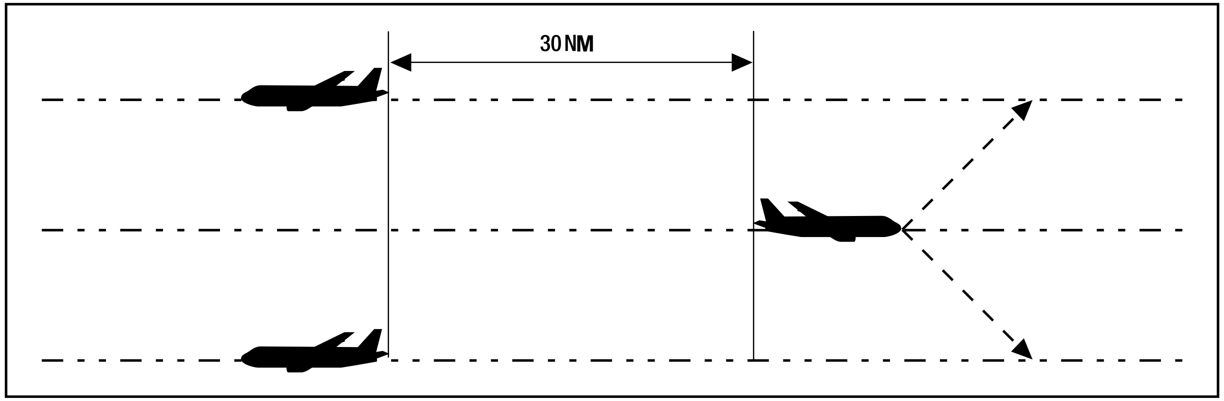
Conditions	Diagram
ADS-C a) Prior to the application of this standard, a demand contract request is sent to each aircraft, the ADS-C reports indicate that the aircraft have passed and the distance between them is opening; and b) Both aircraft have either RNP10 or RNP4 approval and are within RNP airspace.	
PBCS Both aircraft: a) are within RNP airspace; b) ADS-C reports show the aircraft have passed by 50 NM; and c) meet the following performance-based capabilities: RNP: 10 / RCP: 240 / RSP: 180	

RNP	RCP	RSP
10	240	180

Note: *RNAV10 is equivalent to RNP10*

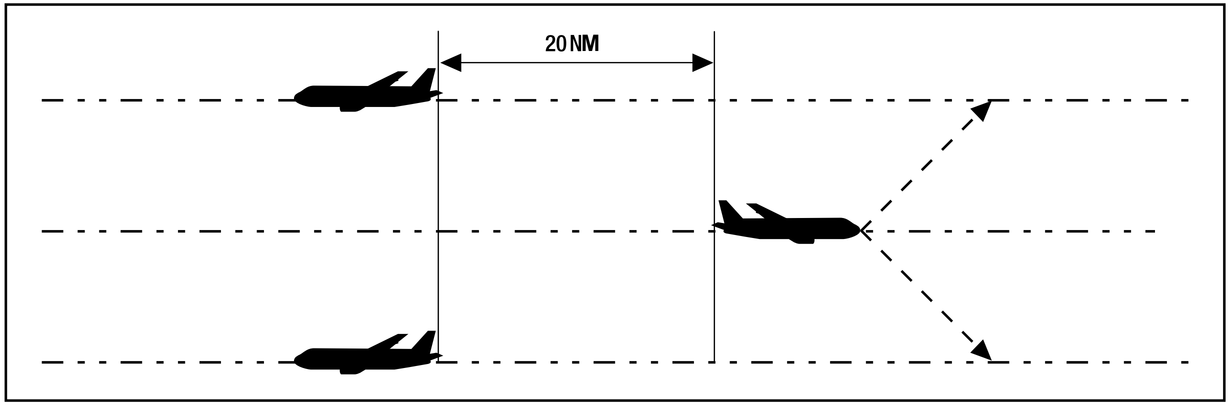
See MATS 10.3.7 ADS-C and RSP 180 distance conditions
See MATS 10.3.8 Performance-based communication and surveillance (PBCS) conditions

10.3.18.3 A4 - 30 NM, ADS-C and PBCS definite passing

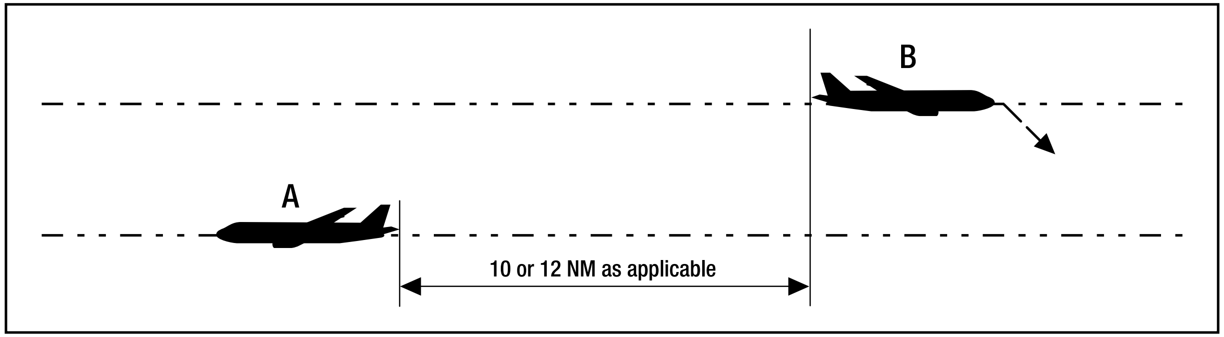
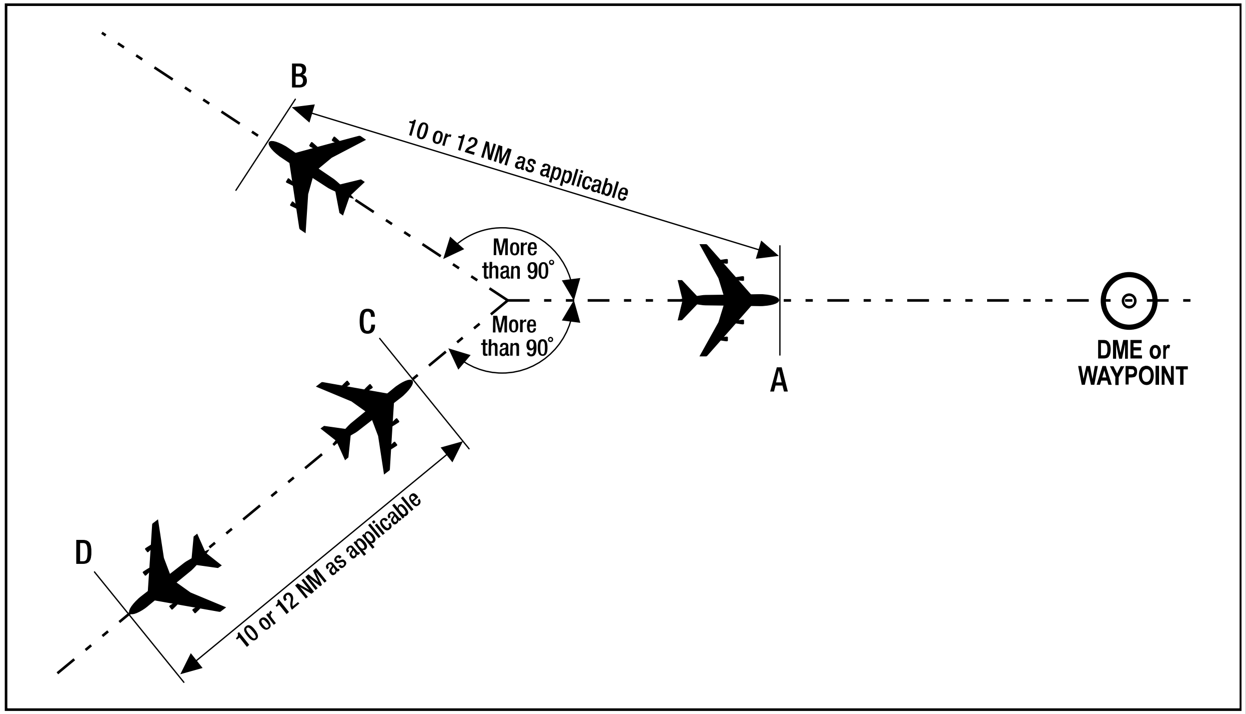
Conditions	Diagram
ADS-C a) Prior to the application of this standard, a demand contract request is sent to each aircraft, the ADS-C reports indicate that the aircraft have passed and the distance between them is opening; and b) Both aircraft have RNP4 approval and are within RNP airspace.	
PBCS Both aircraft: a) are within RNP airspace; b) ADS-C reports show the aircraft have passed by 30 NM; and c) meet the following performance-based capabilities: RNP: 4 · RCP: 240 · RSP: 180	
See MATS 10.3.7 ADS-C and RSP 180 distance conditions See MATS 10.3.8 Performance-based communication and surveillance (PBCS) conditions	

RNP	RCP	RSP
4	240	180

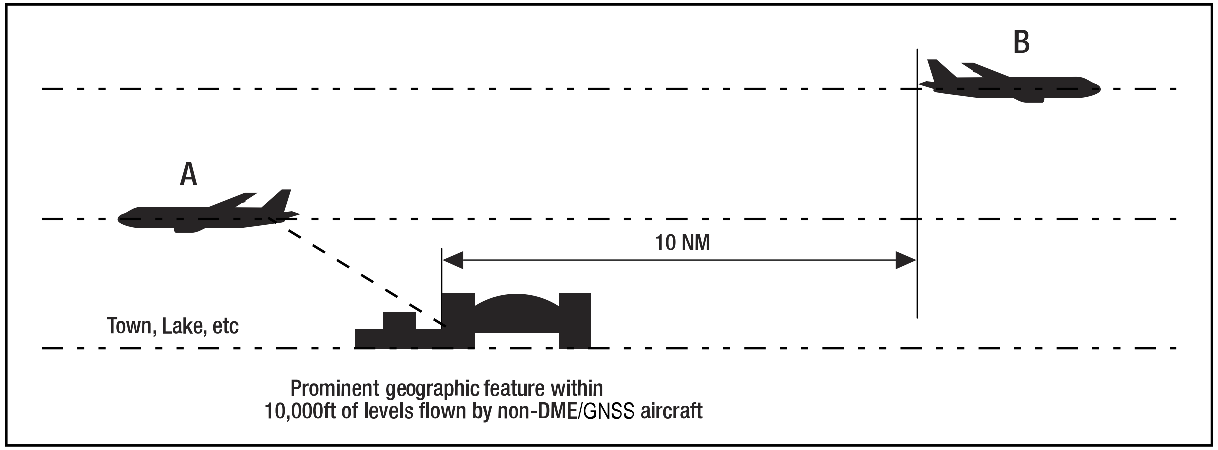
10.3.18.4 R2 - 20 NM, definite passing

Conditions	Diagram
a) In CTA only and between: i) aircraft with approved SCNS; or ii) an aircraft with approved SCNS and an aircraft with DME; b) Using the same waypoint, reports indicate that the aircraft have passed and the distance between them is opening; and c) Whenever a DME derived distance is 30 NM or less, you apply a correction for DME slant range error.	

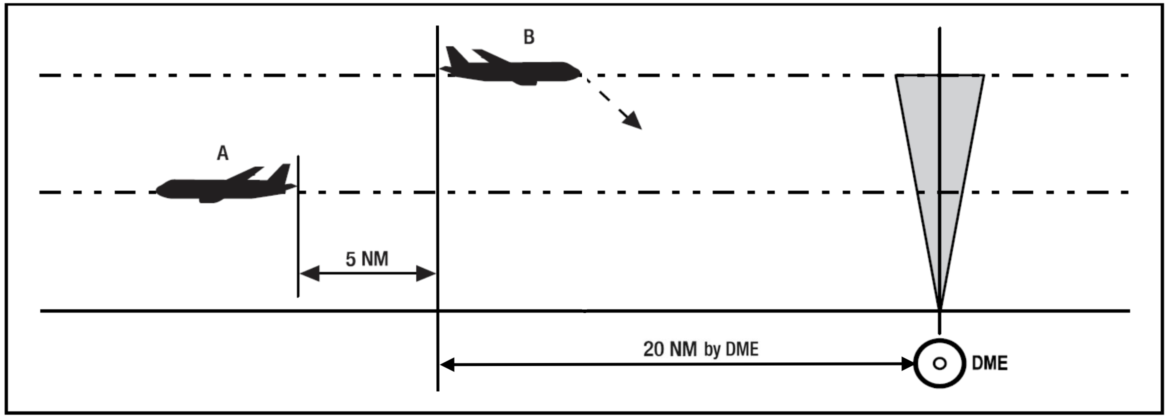
10.3.18.5 D8a - 10/12 NM, definite passing

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Do not mix GNSS and DME distances; c) Use on reciprocal tracks and tracks differing by more than 90 degrees; d) Reports indicate that the aircraft have passed and the distance is opening; and e) Increase the standard to 12 NM if DME distances are greater than 180 NM.	 

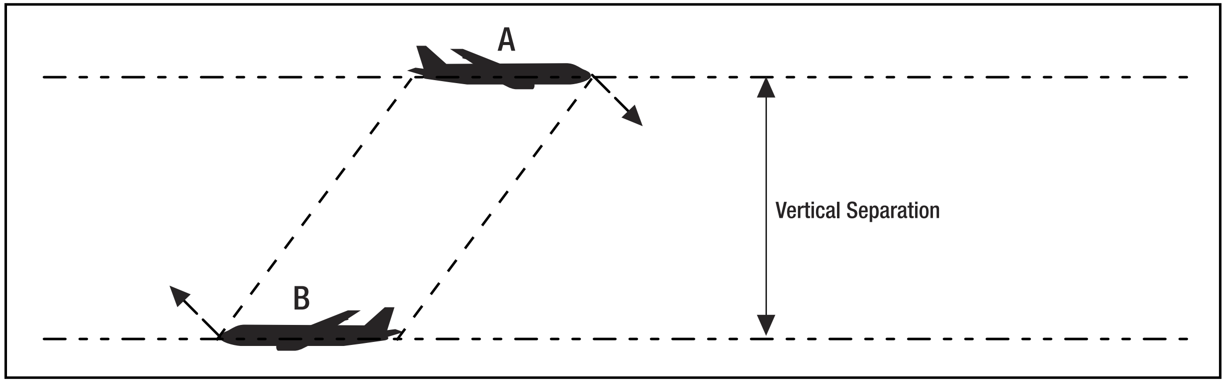
10.3.18.6 D8c - 10 NM, definite passing

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Reports by reference to a prominent geographic feature by one aircraft and a DME beacon or published waypoint by the other aircraft indicate that the aircraft have passed by at least 10 NM; c) The non-DME/GNSS-equipped aircraft passes over and within 10 000 FT of the geographic feature; and d) The geographic feature together with its distance from the DME beacon or published waypoint is specified in local instructions.	

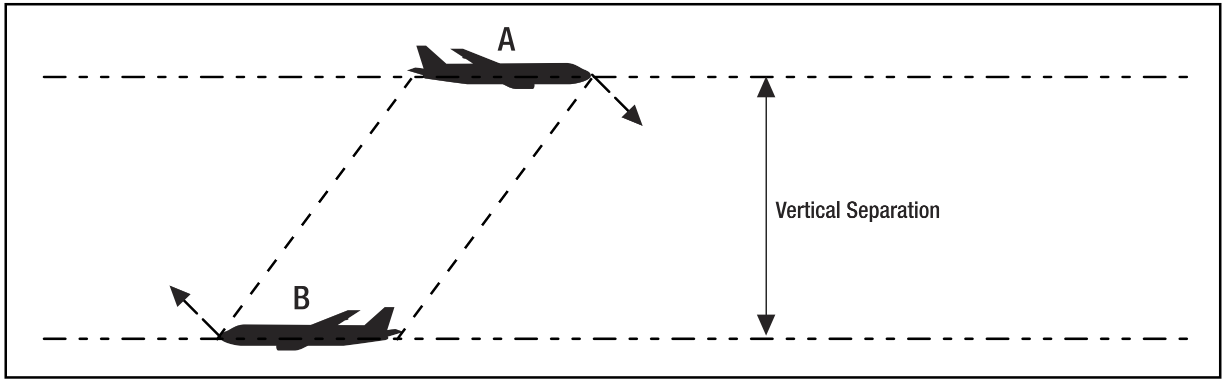
10.3.18.7 D8b - 5 NM, definite passing

Conditions	Diagram
a) Distance information is provided by: i) DME; or ii) GNSS, in CTA only, by RNP2 or RNP4 approved aircraft with reference to a published waypoint; b) Do not mix GNSS and DME distances; c) Reports indicate that the aircraft have passed and the distance is opening; and d) If using a DME distance, one aircraft is within 20 NM of the DME beacon. See MATS 10.6.1.6 Wake turbulence caution	

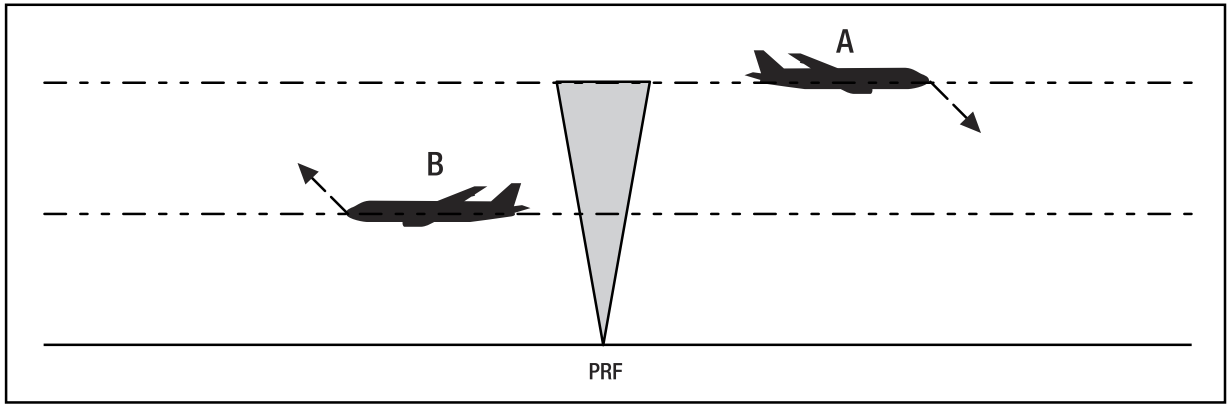
10.3.18.8 T7c - sight and pass

Conditions	Diagram
a) Both aircraft report sighting and passing the other by day (and in OCA by night); b) Both aircraft are above 10 000 FT; and c) You ensure there is no possibility of incorrect identification by either aircraft. See MATS 10.6.1.6 Wake turbulence caution	

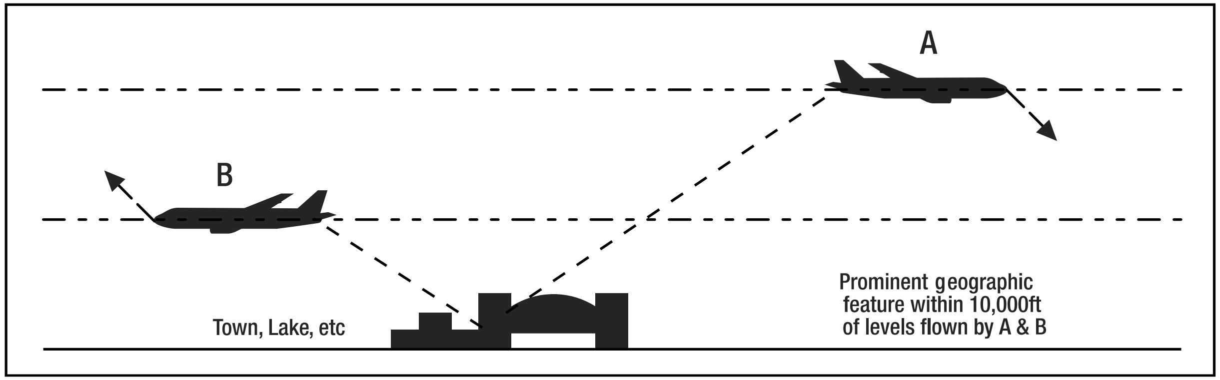
10.3.18.9 T7d - surveillance passing

Conditions	Diagram
a) Aircraft are on reciprocal tracks; b) Aircraft are observed by an ATS surveillance system to have definitely passed and position symbols are not touching; and c) Not applicable to low-quality ADS-B symbols. See MATS 10.6.1.6 Wake turbulence caution	

10.3.18.10 T7a - opposite sides of a navaid

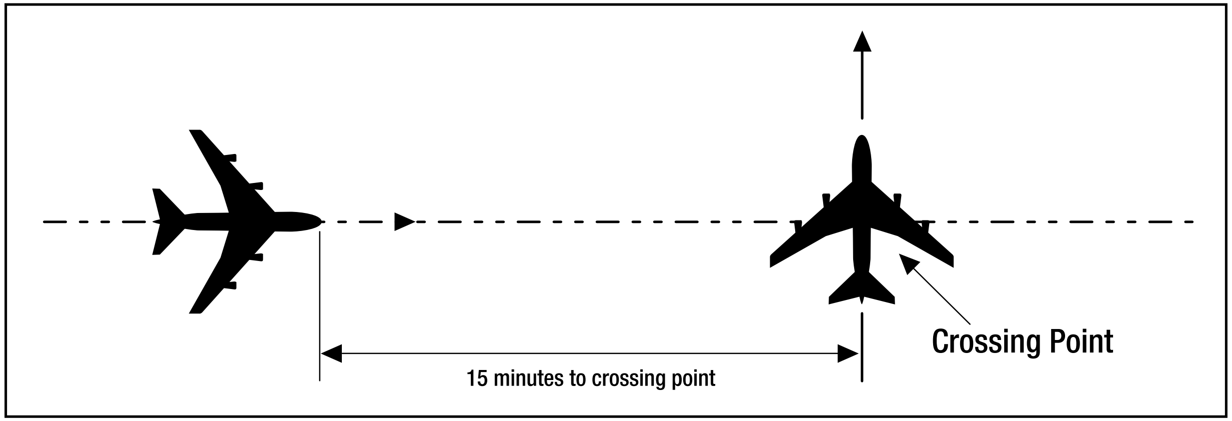
Conditions	Diagram
Both aircraft report passing the same positive radio fix. See MATS 10.6.1.6 Wake turbulence caution	

10.3.18.11 T7b, opposite sides of a visual fix

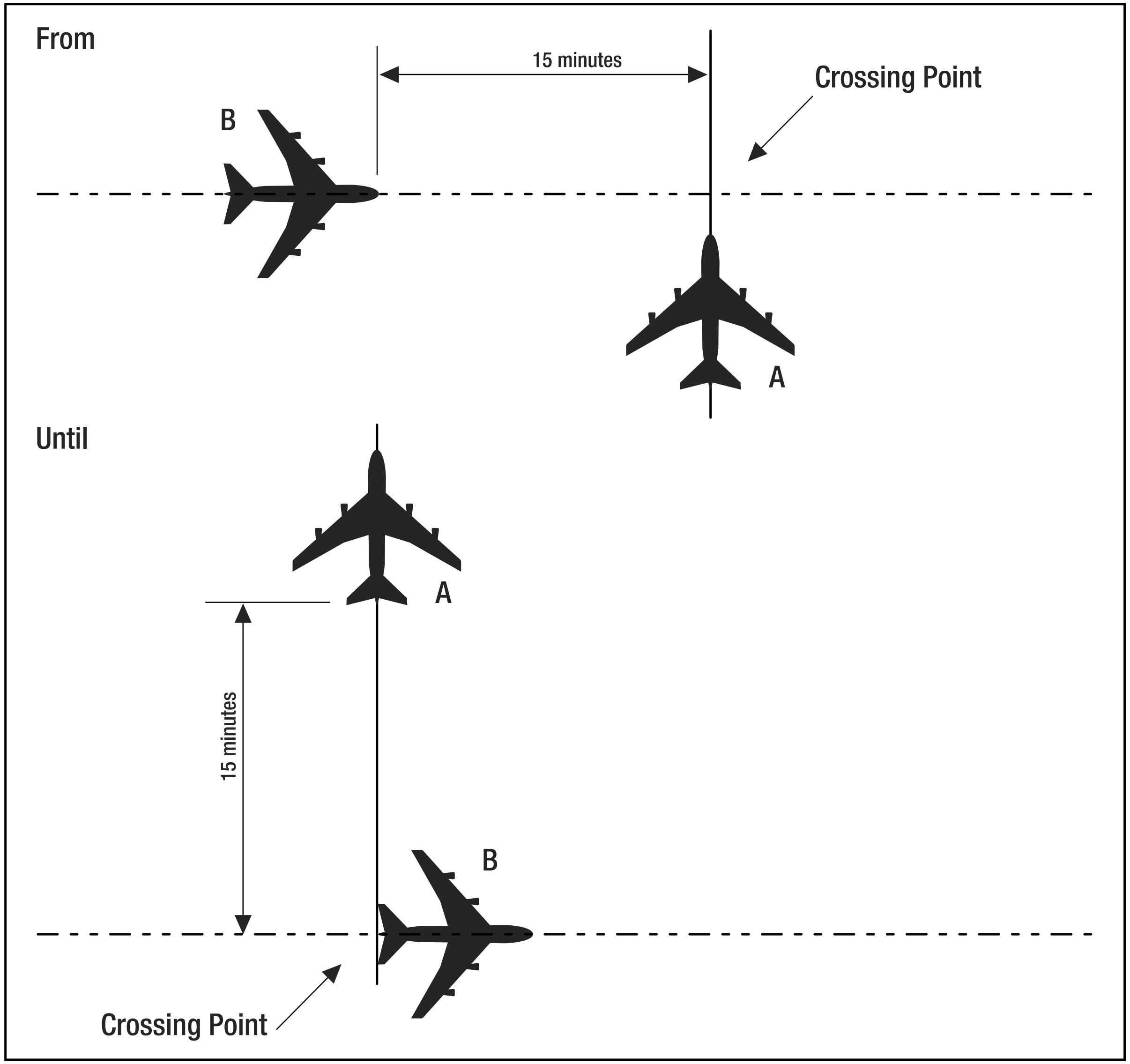
Conditions	Diagram
a) Both aircraft report passing the same visual fix, by day, or by night if both aircraft are VFR at night; and b) The visual fix must be a prominent geographic feature within 10 000 FT of the levels of each aircraft. See MATS 10.6.1.6 Wake turbulence caution	

10.3.19 Crossing track - time separation

10.3.19.1 T8a - 15 min, at the crossing point

Conditions	Diagram
a) Each aircraft has either an approved SCNS or MNPS; b) Ground speeds are a minimum of 300 kt; and c) Separation exists when there is at least 15 min between estimates at the intersection of the tracks.	

10.3.19.2 T8b - 15 min, from the crossing point

Conditions	Diagram
a) Each aircraft has either an approved SCNS or MNPS; b) Ground speeds are a minimum of 300 kt; and c) Vertical separation must exist: i) from 15 min prior to the estimate for B at the intersection; and ii) until 15 min after A has passed the intersection.	

10.3.20 Manual calculation tables - longitudinal separation

10.3.20.1 Same traffic direction

Calculate reducing or increasing separation to the minimum on the Appleyard Scale as shown below.

See MATS 10.3.20.1.1 Reduction using ground speed to MATS 10.3.20.1.5 Increase using time

10.3.20.1.1 Reduction using ground speed

Reduction of separation to the minimum using ground speed	
SET	difference of ground speeds on outer scale
OVER	ground speed of following aircraft on inner scale
AGAINST	difference in times at fix, less minimum separation required, on outer scale
READ	increment on inner scale
ADD	increment to time of first aircraft at fix

10.3.20.1.2 Reduction using time

Reduction of separation to the minimum using time	
SET	total reduction in separation between two common fixes on outer scale – that is, the difference in times at second fix less the difference in times at first fix
OVER	time interval of leading aircraft on inner scale
AGAINST	difference in times at first fix, less minimum separation required, on outer scale
READ	increment on inner scale
ADD	increment to time of first aircraft at first fix.

10.3.20.1.3 Reduction using Mach number technique

Reduction of separation to the minimum using Mach number technique	
Method:	For every 600 NM travelled, add 1 min to the basic time separation for each 0.01 Mach closing.
Example:	1200 NM route segment with Mach 0.04 closing plus 10 min minimum time separation required at the exit gate.
Calculation:	Required multiplier: 1200 ÷ 600 = 2 Mach 0.04 ÷ 0.01 = 4 2 x 4 = 8 min. Therefore, the minimum time required at the entry gate to ensure 10 min at the exit gate, is: Result: 8 + 10 = 18 min.

10.3.20.1.4 Increase using ground speed

Increase of separation to the minimum using ground speed	
SET	difference of ground speeds on outer scale
OVER	ground speed of slower aircraft on inner scale
AGAINST	required increase in separation to that indicated at fix, on outer scale
READ	increment on inner scale
ADD	increment to time of faster aircraft at fix

10.3.20.1.5 Increase using time

Increase of separation to the minimum using time	
SET	total increase in separation between two common fixes on outer scale – that is, difference in times at second fix less the difference in times at first fix
OVER	time interval of leading aircraft on inner scale
AGAINST	required increase in separation to that indicated at fix on outer scale
READ	increment on inner scale
ADD	increment to time of first aircraft at first fix

10.3.20.2 Time of passing

Calculate time of passing on the Appleyard Scale or using a calculation matrix as described below.

See MATS 10.3.20.2.1 Using ground speed
to MATS 10.3.20.2.5 Time of passing calculation matrix example

10.3.20.2.1 Using ground speed

Time of passing using ground speed	
SET	sum of ground speeds of the two aircraft on the outer scale
OVER	ground speed of later aircraft on the inner scale
AGAINST	difference in time over the common fix point on the outer scale
READ	increment on the inner scale
ADD	increment to the time of the first aircraft over fix to obtain time of passing

10.3.20.2.2 Using time intervals

Time of passing using time intervals	
SET	sum of time intervals between fixes on the outer scale
OVER	the time interval of the first aircraft to arrive over fix on the inner scale
AGAINST	the difference in time over the same fix on the outer scale
READ	the increment on the inner scale
ADD	increment to the time of the first aircraft over fix to obtain time of passing

10.3.20.2.3 Using position reports and the matrix

Calculate the time of passing graphically using the time of passing calculation matrix as follows:

1) determine common waypoints between which aircraft are anticipated to pass;
2) for each aircraft
    i) mark the ETA at the respective waypoints – ensure the waypoints selected on either side of the matrix are common to both aircraft; and
    ii) draw a straight line connecting respective waypoint ETAs;
3) intersection of lines will indicate time of passing (minutes only); and
4) interpolation between minutes may be necessary to achieve accurate results.

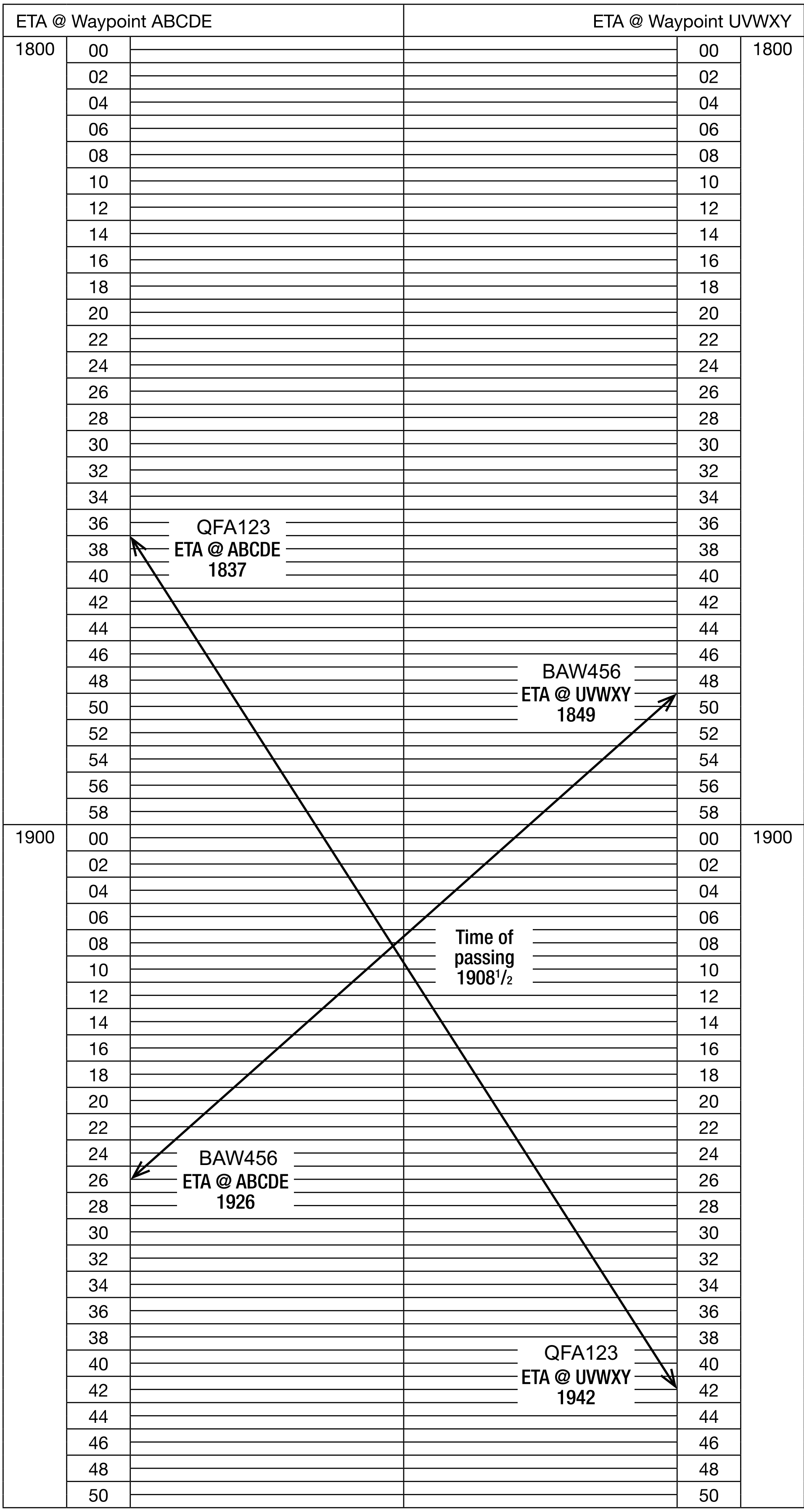
10.3.20.2.4 Time of passing calculation matrix

ETA @ Waypoint					ETA @ Waypoint .....
Hour	00			00	Hour
	02			02	
	04			04	
	06			06	
	08			08	
	10			10	
	12			12	
	14			14	
	16			16	
	18			18	
	20			20	
	22			22	
	24			24	
	26			26	
	28			28	
	30			30	
	32			32	
	34			34	
	36			36	
	38			38	
	40			40	
	42			42	
	44			44	
	46			46	
	48			48	
	50			50	
	52			52	
	54			54	
	56			56	
	58			58	
Hour	00			00	Hour
	02			02	
	04			04	
	06			06	
	08			08	
	10			10	
	12			12	
	14			14	
	16			16	
	18			18	
	20			20	
	22			22	
	24			24	
	26			26	
	28			28	
	30			30	
	32			32	
	34			34	
	36			36	
	38			38	
	40			40	
	42			42	
	44			44	
	46			46	

Calculating Time of Passing

1) Determine common waypoints between which aircraft are anticipated to pass;
2) For each aircraft:
   i) mark the ETA at the respective waypoints. (Ensure the waypoints selected on either side of the matrix are common to both aircraft); and
   ii) Draw a straight line connecting respective waypoint ETAs;
3) Intersection of lines will: indicate Time of Passing (minutes only); and
4) Interpolation between: minutes may be necessary to achieve accurate results.

10.3.20.2.5 Time of passing calculation matrix example



Calculating Time of Passing

1) Determine common waypoints between which aircraft are anticipated to pass;
2) For each aircraft:
   i) mark the ETA at the respective waypoints. (Ensure the waypoints selected on either side of the matrix are common to both aircraft); and
   ii) Draw a straight line connecting respective waypoint ETAs;
3) Intersection of lines will: indicate Time of Passing (minutes only); and
4) Interpolation between: minutes may be necessary to achieve accurate results.

10.4 Lateral

10.4.1 General

10.4.1.1 Lateral separation buffer

The lateral separation buffer, where required, is 1 NM between the possible positions of two aircraft.

10.4.1.2 Data sources

Apply lateral separation using authorised:

a) lateral separation diagrams;
b) tables; or
c) lateral conflict tools.

10.4.1.2.1 Manual plotting exception

If you cannot resolve the conflict using authorised lateral separation diagrams, tables or lateral conflict tools, use the information contained in this chapter to calculate or plot the appropriate lateral separation requirements.

10.4.2 Lateral separation

10.4.2.1 Approved application of lateral separation

Approved means for the application of lateral separation are:

a) establishing an aircraft's position outside lateral conflict;
b) applying an appropriate ATS surveillance system separation minimum; or
c) by day only, applying a 1 NM buffer to the track or position of an aircraft which is determined relative to a prominent geographic feature provided that the aircraft is:
    i) tracking visually; and
    ii) not more than 10 000 FT above the geographic feature.

See MATS 10.4.5.1 Establishing entry and exit points

10.4.2.1.1 Establishing an aircraft's position outside lateral conflict

Establish an aircraft's position outside lateral conflict by:

a) determination of lateral separation through:
    i) application of the appropriate tolerance(s);
    ii) determination of the area of conflict;
    iii) identification of the relevant BLSP; and
    iv) calculation of entry and exit points;

b) visual observation of a departing aircraft's position relative to another aircraft or activity in accordance with Clause 10.4.5.2 or Clause 10.4.5.3; or

c) the application of navigation tolerances and visual observation of an aircraft in accordance with Clause 10.4.5.3.

See MATS 10.4.5.2 Lateral separation using visual observation - departures

See MATS 10.4.5.3 Lateral separation using visual observation - PJE operations

10.4.3 Determining aircraft position

10.4.3.1 Tolerances

To determine the possible position of an aircraft, apply appropriate tolerances and range limitations to the route or area of operation.

10.4.3.1.1 Minimum tracking tolerance

Apply a minimum tracking tolerance of 1 NM to aircraft except for:

a) CASR Part 173 applications where other tolerances are less than 1 NM; and

b) establishing lateral separation by visual observation in accordance with Clause 10.4.5.2 or Clause 10.4.5.3.

See MATS 10.4.5.2 Lateral separation using visual observation - departures

See MATS 10.4.5.3 Lateral separation using visual observation - PJE operations.

10.4.3.2 Selecting dependent or independent tolerances

Apply independent tolerances to aircraft on an individual (per aircraft) basis. Apply dependent tolerances only between aircraft pairs with the appropriate navigation approval.

10.4.3.3 Identified and non-identified aircraft

When applying lateral separation between an identified aircraft and a non-identified aircraft:

a) apply a tolerance equal to the applicable ATS surveillance separation minima to the identified aircraft;

b) apply the appropriate independent tolerance to the non-identified aircraft; and

c) ensure the identified aircraft will remain identified until another standard is in place.

Note: *The 1 NM lateral separation standard is incorporated in the tolerances specified.*

See MATS 10.2.1.8 Procedural navigation tolerance

10.4.3.4 Transiting airspace tolerances

Where an aircraft is transiting into an airspace in which larger tolerances than that being exited are applied, consider separation to exist provided:

a) the smaller separation standard exists;
b) the aircraft are established on flight paths that will diverge by 15 degrees or more until the larger separation standard is established; and
c) both aircraft have approved SCNS.

10.4.3.5 Transitioning OCA and CTA standards

The 30 NM dependent tolerance may be transitioned with independent tolerances across the CTA/OCA boundary provided that the conditions for both standards apply prior to transitioning.

10.4.4 Area of conflict and Basic Lateral Separation Points (BLSP)

10.4.4.1 Determining the area of conflict

Determine an area of conflict by applying tolerances between:

a) two aircraft; or
b) an aircraft and an airspace boundary.

10.4.4.1.1 Smallest tolerance

Use the smallest tolerance applicable to the aircraft or aircraft pair.

Note: *An area of conflict exists where applied tolerance(s) overlap, or infringe an airspace boundary. BLSP exist where the possible position of each aircraft are no closer than 1 NM.*

10.4.4.2 Determining the BLSP

Determine the BLSP for the area of conflict by using an applicable tolerance type(s) and adding the 1 NM lateral separation buffer as required from the following table:

Separation between	Tolerance type(s)	1 NM lateral buffer
Two aircraft	A dependent tolerance	Included
	Two independent tolerances	Add 1 NM for lateral separation
	An independent tolerance and a surveillance tolerance	Included
	A surveillance tolerance	Included
An aircraft and an airspace boundary	An independent tolerance	Add 1 NM for lateral separation
	A surveillance tolerance	Included

Note: *Airspace containment and lateral separation for aircraft on instrument flight procedures may also be determined by designers approved under CASR Part 173 where the protected areas do not overlap.*

10.4.4.2.1 Lateral separation from non-flying areas

The addition of a 1 NM buffer for lateral separation is not required for:

a) parachutists within a PJE drop area; or

b) airspaces with non-flying activity.

10.4.4.2.2 Selecting BLSP

Use the most conservative BLSP for the tolerances selected. For entry, this is the first BLSP that the aircraft could pass. For exit, this is the last BLSP that the aircraft could pass.

10.4.4.2.3 Calculating the BLSP distance

Calculate the BLSP distance by measuring from a significant point on the aircraft's route to the BLSP.

See MATS 10.4.10 Manual plotting examples - diagrams

See MATS 10.2.2.1 Half the applicable standard

10.4.5 Entry and exit points

10.4.5.1 Establishing entry and exit points

Establish entry and exit points by one of the following:

a) Applying time buffers to the estimate for a BLSP;

b) Applying area navigation tolerances;

c) Applying slant range and DME equipment error corrections to a BLSP;

d) Passage over a visual fix located on the opposite side of a BLSP from the area of conflict; or

e) Passage over a positive radio fix located on the opposite side of a BLSP from the area of conflict.

Note: *Entry and exit points are used to establish an aircraft outside lateral conflict.*

See MATS 10.4.2.1 Approved application of lateral separation

10.4.5.2 Lateral separation using visual observation - departures

By day, establish lateral separation using visual observation by:

a) ensuring that the extended runway centreline is greater than 1 NM from the tracking tolerances of the other aircraft; and

b) visually monitoring the departing aircraft until such time as:

   i) an alternate form of separation is achieved; or

   ii) a turn away from the runway centreline is made and the 1 NM will not be infringed.

See MATS 10.4.6.4 Visual lateral separation of departures - examples

10.4.5.3 Lateral separation using visual observation - PJE operations

By day, lateral separation exists between a non-PJE aircraft and a PJE drop area provided:

a) the navigation tolerances of an IFR non-PJE aircraft do not overlap the drop area;

b) ATC ensure the non-PJE aircraft:

   i) is visually monitored on the runway centre line;

   ii) is visually monitored turning away from the runway centre line and drop area; or

   iii) operates in accordance with local instructions;

c) in the event of a missed approach, the non-PJE aircraft will either remain on, or turn away from, the runway centre line and PJE drop area;

d) wake turbulence is managed, where necessary, by agreement with the PJE operator; and

e) use is approved by the ATMSL or SO1 CM ANSP, and specified in local instructions.

Note 1: *In the application of this clause, the navigation tolerance is as per the relevant CASA Instrument and can be obtained from ATS Integrity or STD ANSP.*

Note 2: *ATMSL or SO1 CM ANSP approval will ensure that local instructions are supported by a local implementation plan detailing how it remains acceptably safe to apply a minimum tracking tolerance of less than 1 NM.*

See MATS 10.4.6.5 Visual lateral separation of PJE operations - example

10.4.5.4 Lateral separation using time

When assessing lateral separation, calculate the times for entering or leaving lateral conflict for each aircraft using the following method:

1) Calculate the estimate for the BLSP;

2) Calculate a time buffer equal to half the longitudinal time standard applicable to the aircraft;

3) Subtract the time buffer from the first BLSP estimate to calculate the entry point; and

4) Add the time buffer to the last BLSP estimate to calculate the exit point.

10.4.5.4.1 Lateral separation exists

Consider lateral separation to exist if the estimate for the first aircraft's exit point is the same or earlier than the estimate for the second aircraft's entry point.

Note: *The time buffer allows for ambiguities associated with the aircraft's progress along track.*

See MATS 10.4.10.3 Entry and exit points - example 2

10.4.5.5 Lateral separation does not exist

Where lateral separation using time does not exist, establish another form of separation by the estimate or distance for the second aircraft's entry point.

10.4.5.5.1 Level restrictions based on distance

Issue and obtain acceptance of distance based level restrictions before the estimate for the second aircraft's entry point.

Note: *Lateral separation is re-established at the time or distance of the first aircraft's exit point. The pilot must report passing the required distance where this method is used.*

10.4.5.6 Lateral separation using area navigation

To calculate an entry or exit point using an area navigation distance:

1) calculate the distance to the BLSP; and
2) if the area of conflict is based on one or more cross track tolerances, apply a distance buffer equal to the area navigation CEP of the aircraft, to a position outside the area of conflict.

See MATS 10.4.4.2.3 Calculating the BLSP distance

See MATS 10.4.10.5 Entry and exit points - example 4

10.4.5.7 Lateral separation using DME

Calculate a DME based lateral separation entry or exit point as follows:

1) Determine the distance from the DME site to the BLSP;
2) If the area of conflict (or part of it) is between the BLSP and the DME site, add the slant range correction to the BLSP distance;
3) Apply the correction for DME equipment error to the distance derived from steps 1 and 2, away from the area of conflict; and
4) Where the lateral separation point is less than 60 NM from and between the area of conflict and the reference DME site, subtract 1 NM from the distance derived at step 3.

10.4.5.7.1 GNSS in lieu of DME

Where the navigation tolerance is determined with reference to ground-based navaids, you may use GNSS distances in lieu of a co-sited DME in the steps above.

10.4.5.8 DME equipment error

DME equipment error		
Tolerance	**Condition**	
± 0.25 NM plus 1.25% of the slant range	**Slant range**	**Correction**
	300 NM or less	4 NM
	220 NM or less	3 NM
	140 NM or less	2 NM
	60 NM or less	1 NM

10.4.5.9 Slant range correction - NMs

Ground distance	< = FL150	< = FL290	< = FL460	< = FL600
3 NM	2	3	6	8
4-5 NM	1	3	5	7
6-7 NM	1	2	4	6
8 NM	1	2	4	5
9-10 NM	1	2	3	5
11-12 NM	1	2	3	4
13-14 NM	1	1	3	4
15 NM	1	1	2	4
16-24 NM	1	1	2	3
25-30 NM	1	1	2	2
31-50 NM	1	1	1	2
> 50 NM	1	1	1	1

10.4.5.9.1 Disregard slant range error

Disregard slant range error at or below:

a) 2000 FT AGL at distances of 10 NM or greater from the DME site; or

b) 4000 FT AGL at a distance of 30 NM or greater from the DME site.

10.4.5.9.2 Precise slant range correction

Where required for a particular lateral separation problem, local instructions may specify a lateral separation point based on a precise slant range correction for the levels concerned.

10.4.6 Outside lateral conflict - other methods

10.4.6.1 Surveillance position symbol

Consider lateral separation to exist when an ATS surveillance system position symbol is observed beyond an exit point displayed or calculated on the screen:

a) by the appropriate ATS surveillance system separation minimum; or
b) without applying an ATS surveillance separation minimum, provided:
    i) no cross track tolerances are applied; and
    ii) the tolerance for the identified aircraft is equal to or greater than the applicable ATS surveillance system separation minimum.

Note: *For the purpose of this clause, a TSAD position symbol is not an ATS surveillance system position symbol.*

See MATS 10.4.5.6 Lateral separation using area navigation

10.4.6.2 ADS-C report symbol

Consider lateral separation to exist when an ADS-C report symbol is observed beyond an exit point displayed or calculated on the screen provided:

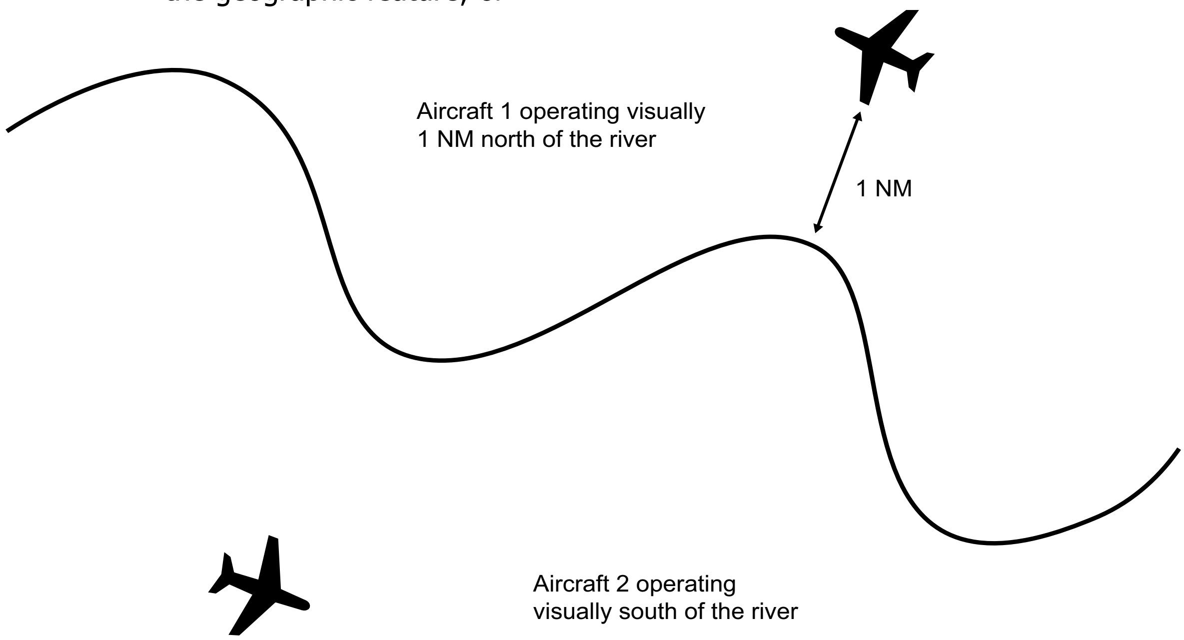
a) no cross track tolerances are applied; or
b) you apply the appropriate area navigation tolerance where one or more cross track tolerances are used.

See MATS 10.4.5.6 Lateral separation using area navigation

10.4.6.3 Geographic feature examples

The following examples illustrate application of a 1 NM buffer to the track or position of an aircraft determined relative to a prominent geographic feature:

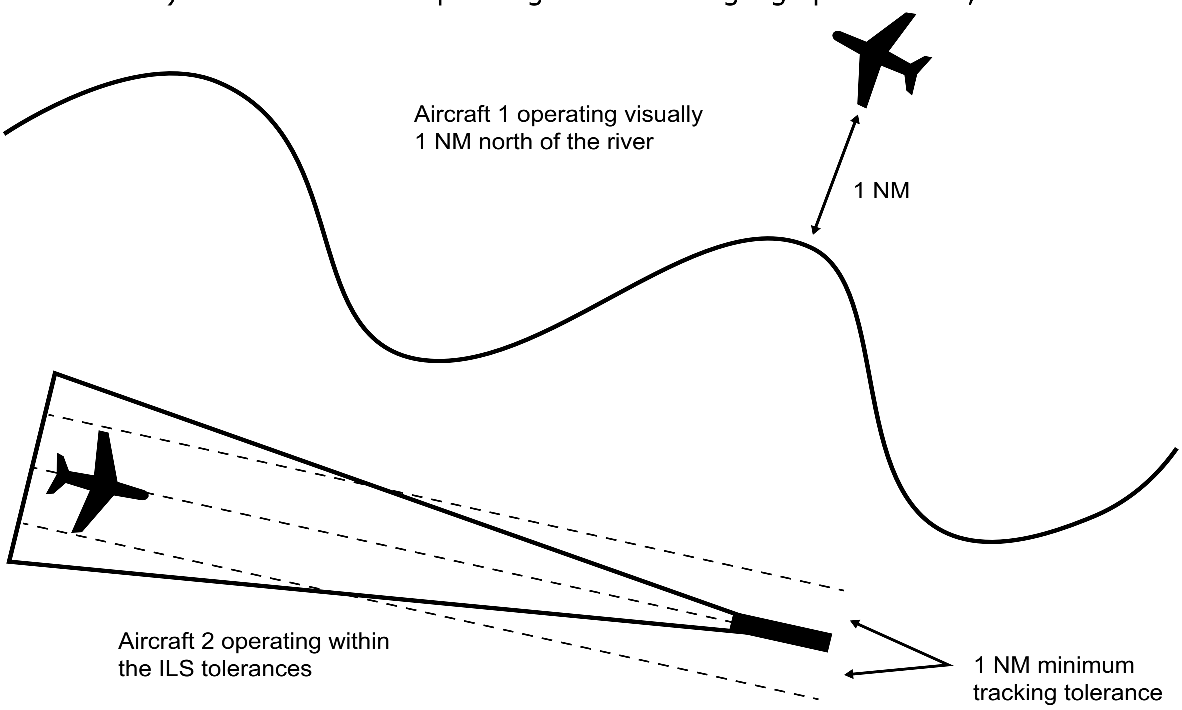
a) Example 1: both aircraft operating visually, one aircraft operating 1 NM from the geographic feature; or



NOT TO SCALE

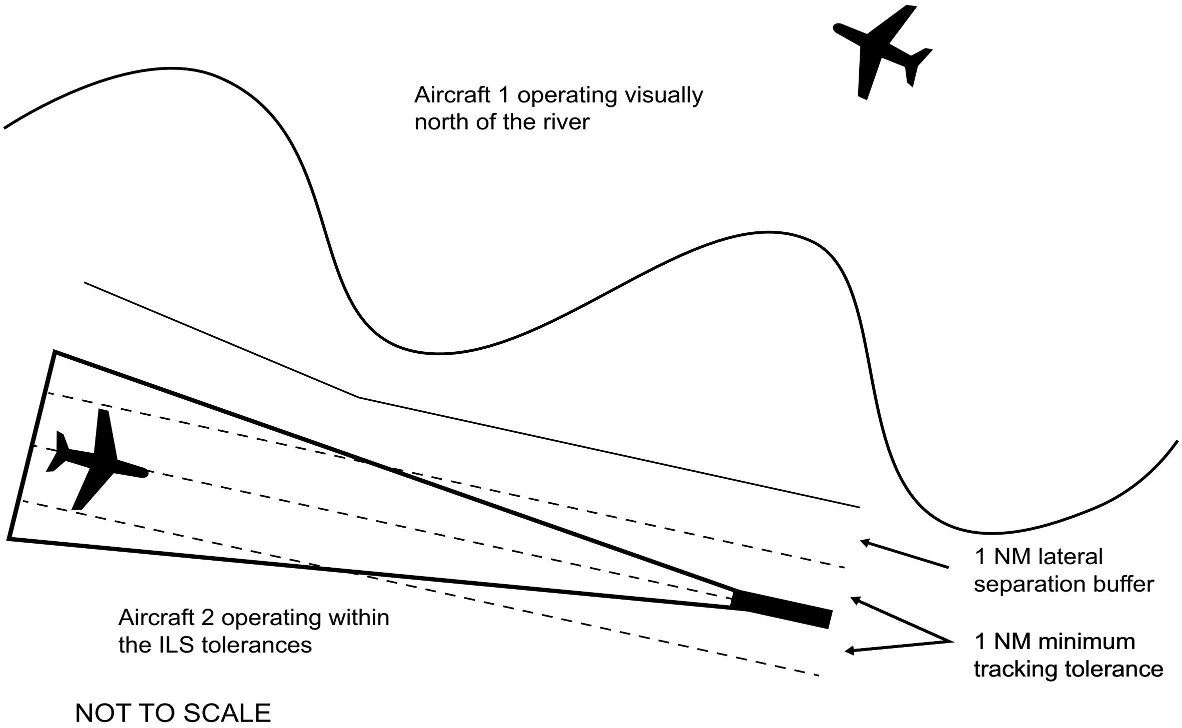
b) Example 2: two methods for one aircraft operating visually and one independent tolerance:

i) Visual aircraft operating 1 NM from a geographic feature; or



NOT TO SCALE

ii) Aircraft independent tolerances are 1 NM from geographic feature.



Note 1: *The 1 NM lateral separation standard is included in all examples.*

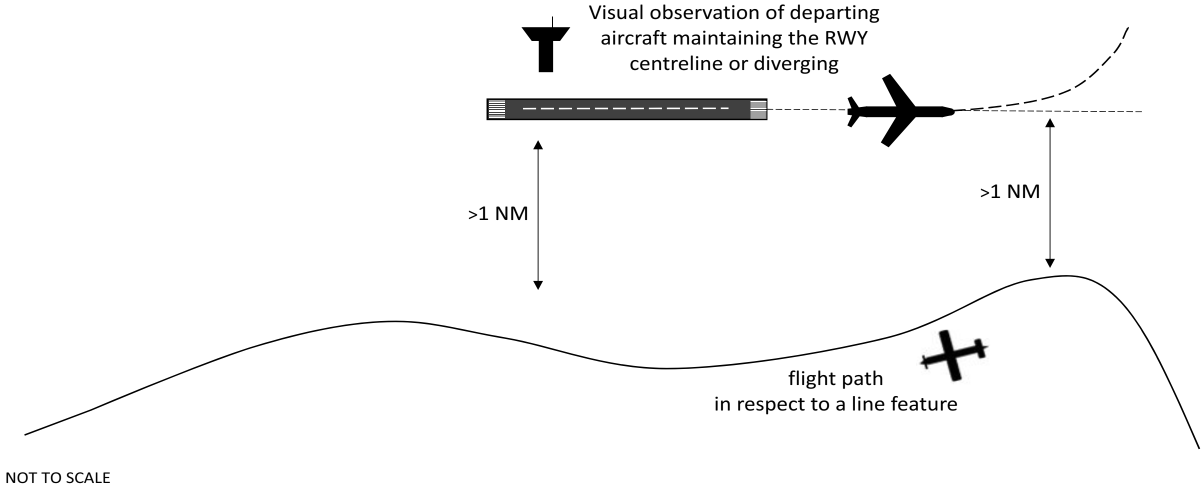
Note 2: *This application may be used with other ground based navaids.*

See MATS 10.4.2.1 Approved application of lateral separation

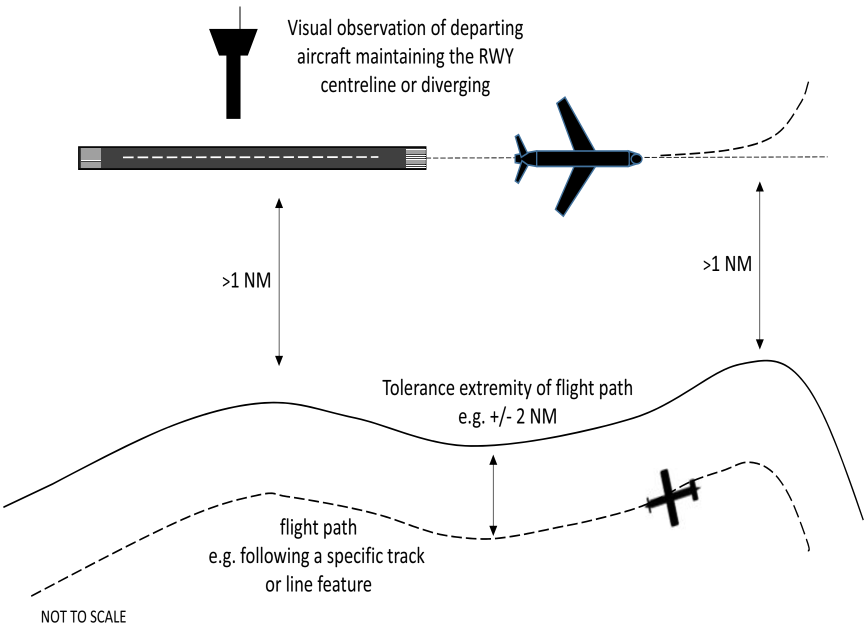
10.4.6.4 Visual lateral separation of departures - examples

The following examples illustrate application of a 1 NM buffer to extended RWY centreline.

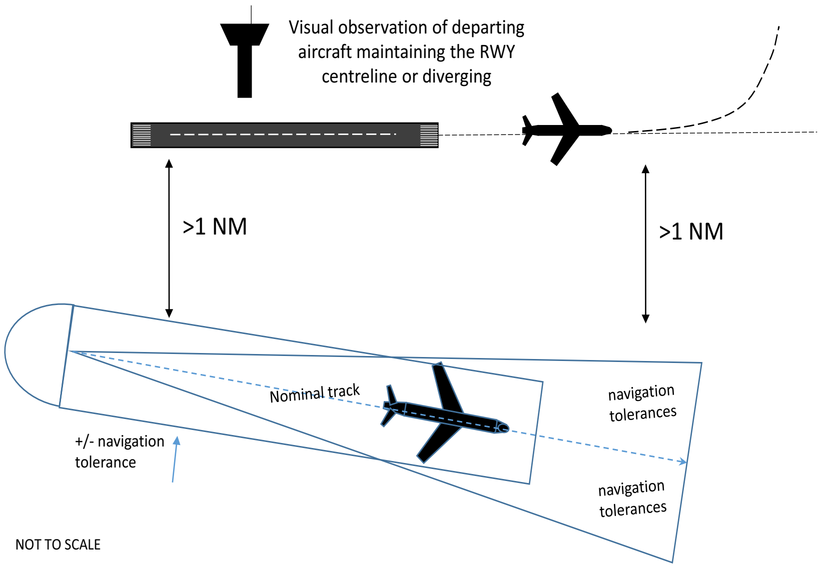
a) One aircraft tracking visually in reference to a geographic feature that is at least 1 NM from the extended RWY centreline and the departing aircraft as monitored by the tower controller to maintain the extended RWY centreline until an alternate form of separation is achieved or turn away from the area of conflict such that the 1 NM cannot be infringed;



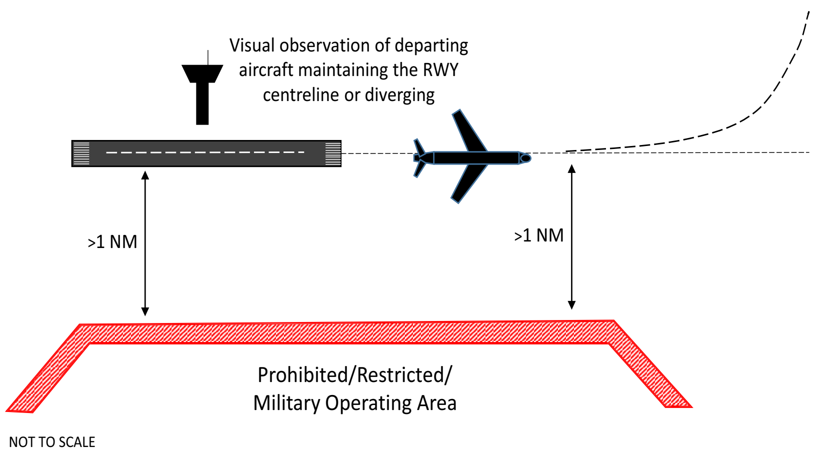
b) One aircraft tracking visually and the departing aircraft is monitored by the tower controller to maintain the extended RWY centreline until an alternate form of separation is achieved or turn away from the area of conflict such that the 1 NM between the RWY centreline and the tracking tolerances of the other aircraft will not be infringed;



c) One aircraft navigating visually, via conventional ground based navigation aids or area navigation methods and the departing aircraft is monitored by the tower controller to maintain the extended RWY centreline until an alternate form of separation is achieved or turn away from the area of conflict such that the 1 NM between the RWY centreline and the tracking tolerances of the other aircraft will not be infringed;



d) A departing aircraft is monitored by the tower controller to maintain the extended RWY centreline until an alternate form of separation is achieved or turn away from the area of conflict such that the 1 NM between the RWY centreline and the Prohibited/Restricted/Military Operating Area will not be infringed.



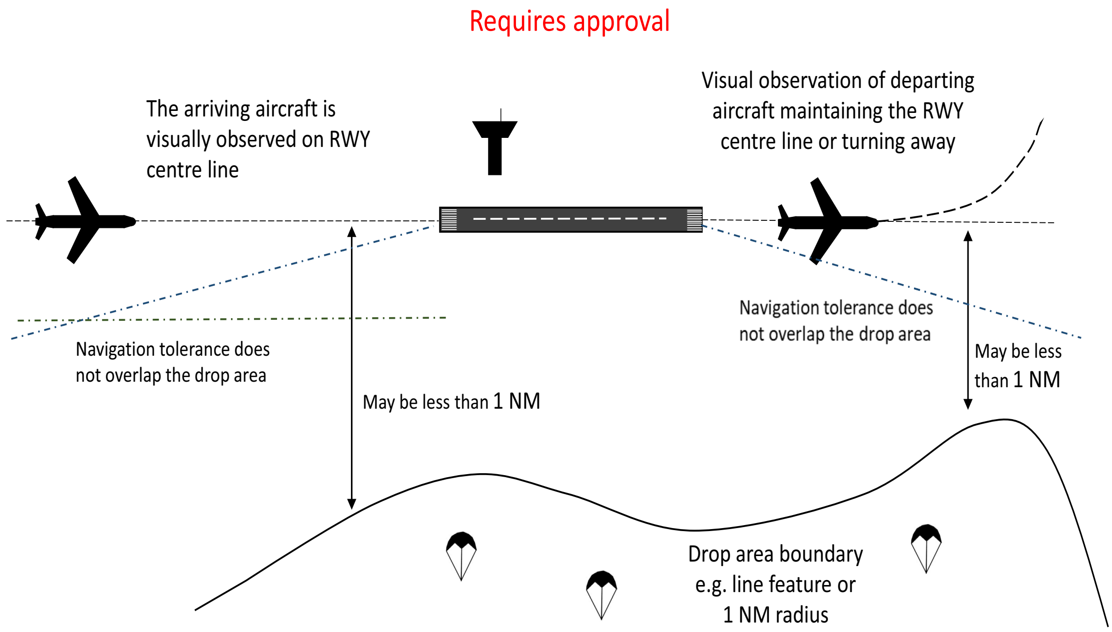
10.4.6.5 Visual lateral separation of PJE operations - example

The following example illustrates the application of lateral separation in relation to a PJE drop area:

a) A departing or arriving aircraft is visually monitored by the tower controller with reference to the extended runway centre line; and

b) The navigation tolerances of the aircraft do not overlap the drop area.

Note: *Application of this standard requires approval from the ATMSL or SO1 CM ANSP.*



See MATS [10.4.5.3 Lateral separation using visual observation - PJE operations]

10.4.7 Lateral separation tables

10.4.7.1 Entry/exit point table details

For tables in this section, the number in the 'Angular difference' column represents the angular difference in degrees between tracks. The number in the adjacent 'Distance' column represents the distance in NM of the entry or exit point from the track intersection.

10.4.7.1.1 Tolerances applied

Where required, the 1 NM lateral separation standard and a 1 degree charting tolerance are incorporated in the minima.

10.4.7.1.2 Navaid use in tables

Conditions for the use of entry/exit point tables where navaids are specified are:

a) Where DME is specified:
   i) the DME is to be co-sited with the azimuth tracking navaid;
   ii) distances are corrected for DME slant range and equipment error;
   iii) where DME is not used, a DME entry/exit point may be used as the distance of the BLSP from the azimuth navaid; and
   iv) GNSS distances may be used in lieu of co-sited DME distances as an entry or exit point;

b) Where ground based azimuth navaids are specified, aircraft must have reported receiving or be within the published range of the navaid; and

c) Use VOR columns for TACAN.

Note: *Additional conditions may be specified with individual tables.*

10.4.7.2 Generic navigation tolerances (independent)

Means of position fixing	Tolerance	Conditions
Dead Reckoning (DR)	± 12 degrees	
	± 9 degrees	Where provided with initial track guidance by NDB, VOR, TACAN and there is no subsequent change in track
Flight path monitoring	± 9 degrees	a) aircraft is observed on the ATS surveillance system to maintain track; b) tolerance applied from the edge of a circle of 5 NM radius centred on the last observed position; c) when using radar, the distance from the radar site is less than 200 NM; and d) Not applicable to low-quality ADS-B symbols.
Minimum tracking tolerance	± 1 NM	Except for CASR Part 173 applications, apply in cases where other tolerances are less than 1 NM
Maximum tracking tolerance - CTA	± 30 NM	Apply in all cases where other tolerances exceed 30 NM
Maximum tracking tolerance - OCA	± 50 NM	Apply in all cases where other tolerances exceed 50 NM

Note: *Tolerances that are expressed as '± (value)' are cross track tolerances.*

10.4.7.3 Short range navaid tolerances (independent)

Navaid	Tolerance for precise plotting	Tolerance for manual plotting	Conditions
ILS localiser Front Beam	± 2.4 degrees	± 2.5 degrees	Within 25 NM except: a) above 2000 FT AGL, within ± 5 degrees of course line – 25 NM; b) below 5000 FT – 30 NM; and c) 5000 FT and above – 50 NM
GNSS Localiser Equivalence - GNSS equipped	± 1 NM	± 1 NM	When an aircraft is established: a) on a GLS approach and: i) within 23 NM of the GBAS site; and ii) aligned with the runway centreline; or b) on an RNP APCH or RNP AR APCH and: i) within 25 NM of the runway threshold; ii) at or inside the IAF; and iii) aligned with the runway centreline.
VOR radials (or TACAN)	± 5.2 degrees	± 5.5 degrees	Range – based on height above navaid: a) below 5000 FT – 60 NM; b) 5000 - 9999 FT – 90 NM; c) 10 000 - 14 999 FT – 120 NM; d) 15 000 - 19 999 FT – 150 NM; and e) at or above 20 000 FT – 180 NM
			For published lateral separation diagrams that are displayed for reference, use a maximum of 150 NM
			You may apply tolerances outside the listed ranges when an inbound aircraft has reported established on the VOR/ TACAN
NDB	± 6.9 degrees	± 7 degrees	Range – as per ERSA
DME arc	± 2.5 NM	± 2.5 NM	Includes DME equipment error

Note: *Tolerances that are expressed as '± (value)' are cross track tolerances.*

10.4.7.4 DME entry/exit points for navaid - navaid (independent)

Angular Differ-ence	0 - FL150			- FL290			- FL420			- FL600		
	VOR-VOR	VOR-NDB	NDB-NDB	VOR-VOR	VOR-NDB	NDB-NDB	VOR-VOR	VOR-NDB	NDB-NDB	VOR-VOR	VOR-NDB	NDB-NDB
1-10°	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep
11°	102	No Lat Sep	No Lat Sep	102	No Lat Sep	No Lat Sep	102	No Lat Sep	No Lat Sep	102	No Lat Sep	No Lat Sep
12°	41	No Lat Sep	No Lat Sep	41	No Lat Sep	No Lat Sep	41	No Lat Sep	No Lat Sep	42	No Lat Sep	No Lat Sep
13°	27	70	No Lat Sep	27	70	No Lat Sep	28	70	No Lat Sep	29	70	No Lat Sep
14°	19	36	294	19	36	294	20	36	294	21	37	294
15°	16	24	54	16	24	54	18	25	54	19	26	55
16°	14	18	31	15	18	31	16	19	32	17	21	32
17°	14	15	21	15	16	21	16	17	22	17	18	24
18°	13	13	17	14	14	17	15	15	19	17	17	20
19°	13	13	15	14	14	16	15	15	17	17	17	18
20°	11	11	13	13	13	14	14	14	15	16	16	17
21°	11			13			14			16		
22-24°	10			11			14			15		
25-29°	9			10			13			15		
30-35°	8			9			11			14		
36-44°	7			9			11			14		
45-61°	6			8			10			13		
62-90°	6			7			10			13		

10.4.7.4.1 Warning

Aircraft may re-enter conflict outside the coverage of the navaid when the angular difference between tracks is:

a) less than 20 degrees for NDB; or

b) less than 14 degrees for VOR.

10.4.7.5 GNSS/DME entry/exit points for navaid - GNSS (independent)

Angular Differ-ence	0 - FL150			- FL290			- FL460		
	GNSS-GNSS	VOR-GNSS	NDB - GNSS	GNSS-GNSS	VOR-GNSS	NDB-GNSS	GNSS-GNSS	VOR-GNSS	NDB-GNSS
14°	60	61	-	60	61	-	60	61	-
15°	15	16	-	15	16	-	17	19	-
16°	11	12	-	11	13	-	15	17	-
17°	11	12	30	11	13	31	15	17	33
18°	11	12	14	11	13	14	14	17	18
19°	11	12	12	11	13	13	13	16	17
20°	11	12	12	11	13	13	13	16	17
21-28°	11	12	12	11	13	13	12	15	17
29-35°	10	11	11	10	12	12	10	13	14
36-44°	10	11	10	10	12	11	10	13	13
45-59°	8	9	9	8	10	10	9	12	12
60-135°	6	7	7	6	8	8	9	12	12

10.4.7.5.1 Navaid - GNSS table conditions for use

Apply the table:

a) in CTA;

b) when GNSS information is from an approved SCNS;

c) when turns in track at the common waypoint or navaid are not greater than five degrees;

d) when the GNSS aircraft is confirmed established on track:

  i) between two published or flight planned waypoints and/or navaids; and

  ii) to or from the common waypoint or navaid from which separation will be applied;

e) using DME, when the DME is co-sited with the azimuth navaid;

f) where DME is not available, using the DME lateral separation point as the distance of the BLSP from the azimuth navaid; and

g) using VOR columns for TACAN.

Note 1: *Aircraft may not be established on track outbound from a fly over waypoint.*

Note 2: *Distances are corrected for DME slant range and equipment error.*

See MATS 10.4.7.9 Entry/exit points for approved SCNS - 7 NM and 14 NM CEP (independent) for angular difference less than 14°.

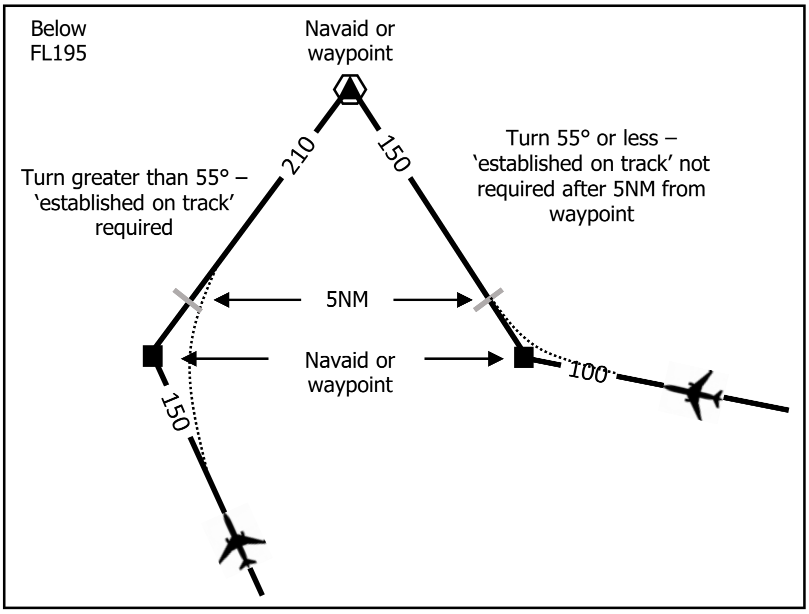
See MATS 10.3.5.1 DME includes TACAN

10.4.7.5.2 Confirm established on track - exception

There is no requirement to verbally confirm an aircraft is established on track when turns in track at a waypoint or navaid are 55 degrees or less and the aircraft is:

a) below FL195; and

b) 5 NM or more past the waypoint or navaid.



10.4.7.5.3 Requirement to be established on track - exception

When one aircraft has exited the area of conflict, there is no requirement for either aircraft to remain established on the GNSS track provided one or both aircraft turn away from the other.

See MATS 12.9.4.2 Outside area of conflict - TSAD

10.4.7.6 Visual tracking and position fixing tolerances (independent)

Conditions	Tolerance	
By day - powered aircraft	0-2000 FT AGL	± 1 NM
	2001-5000 FT AGL	± 2 NM
	5001-10 000 FT AGL	± 4 NM
By day - non-powered glider aircraft	0-10 000 FT AGL	± 5 NM
By night	0-2000 FT AGL	± 2 NM
	2001-5000 FT AGL	± 3 NM
	5001-10 000 FT AGL	± 5 NM
By day and night	10 001 FT AGL-FL200	± 8 NM
	FL201-FL300	± 12 NM
	FL301-FL400	± 16 NM

Note: *Tolerances that are expressed as '± (value)' are cross track tolerances.*

10.4.7.7 DME entry/exit points for navaid - visual (independent)

Day	**0 - 2000 AGL**		**- 5000 AGL**		**---**		**- 10 000 AGL**		**GFY:0 - 10 000 AGL**	
Night	**---**		**0 - 2000 AGL**		**- 5000 AGL**		**---**		**- 10 000 AGL**	
Angular Difference	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**
1 - 5 °	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep	No Lat Sep
6 °	>100	No Lat Sep	>100	No Lat Sep	>100	No Lat Sep	>100	No Lat Sep	>100	No Lat Sep
7 °	70	>100	>100	>100	>100	>100	>100	>100	>100	>100
8 °	47	>100	68	>100	88	>100	>100	>100	>100	>100
9 °	36	61	52	88	67	>100	82	>100	97	>100
10 °	28	42	41	62	54	80	66	99	78	>100
11 °	24	32	35	48	46	62	56	76	66	90
12 °	20	27	30	39	39	51	49	63	57	74
13 °	18	22	27	33	35	43	42	54	51	63
14 °	17	20	24	29	31	38	38	47	46	55
15 °	15	18	21	26	28	33	35	41	41	49
16 °	14	16	19	22	26	30	31	37	37	43
17 °	14	15	18	21	24	27	29	33	35	40
18 °	13	14	17	19	21	25	27	30	31	37
19 °	13		16	18	20	22	25	28	30	33
20 °	11		15	17	19	21	24	26	28	31
21 °	11		14	16	18	20	22	25	26	29
22 °	10		14	15	17	19	21	24	25	27
23 °	10		14	14	16	18	20	21	24	26
24 °	10		13	14	16	17	19	20	22	25
25 °	9		13	13	15	16	18	19	21	24
26 °	9		11	13	15	16	17	19	20	22
27 °	9		11		14	15	17	18	19	21
28 °	9		11		14	14	16	17	19	20
29 °	9		10		13	14	16	17	18	19
30 °	8		10		13	14	15	16	18	19
31 °	8		10		13		15	16	17	18
32 °	8		10		13		14	15	17	17
33 °	8		10		11		14	15	16	17
34 °	8		9		11		14	14	16	16
35 °	8		9		11		14	14	15	16
36 °	7		9		11		13	14	15	16

Day	0 - 2000 AGL		- 5000 AGL		---		- 10 000 AGL		GFY:0 - 10 000 AGL	
Night	**---**		**0 - 2000 AGL**		**- 5000 AGL**		**---**		**- 10 000 AGL**	
Angular Difference	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**	**VOR**	**NDB**
37 °	7		9		10		13		15	16
38-39 °	7		9		10		13		14	15
40-41 °	7		8		10		11		14	14
42 °	7		8		9		11		13	14
43-44 °	7		8		9		11		13	13
45-46 °	6		8		9		10		13	13
47 °	6		8		9		10		11	13
48-53 °	6		7		9		10		11	
54-59 °	6		7		8		9		10	
60 °	6		6		8		9		10	
61 °	6		6		7		9		10	
62 °	5		6		7		8		10	
63-75 °	5		6		7		8		9	
76 °	5		6		7		8		8	
77 °	5		6		7		7		8	
78 °	5		6		7		7		8	
79-83 °	5		6		6		7		8	
84-90 °	5		5		6		7		8	

10.4.7.8 Area navigation system tolerances in CTA (independent and dependent)

PBN approval	CTA tolerance/ separation standard	Conditions
RNP1 RNP APCH RNP AR APCH	5 NM between aircraft (dependent)	a) Both aircraft are RNP1, RNP APCH or RNP AR APCH approved; b) Both aircraft will remain established on a SID, STAR or RNP AR APCH/RNP APCH while the standard is applied; c) The distance between the aircraft is not less than 5 NM as determined by reference to waypoints on the SID, STAR or RNP AR APCH/RNP APCH and as published on an authorised lateral separation diagram; and d) If at least one aircraft has exited or will not enter the area of conflict, there is no requirement for either aircraft to remain established on the procedure provided any turn ensures the separation standard is maintained. See MATS 12.9.4.1 TSAD use See MATS 12.9.4.2 Outside area of conflict - TSAD
RNP2	7 NM CEP (independent)	
RNP4 RNAV5 RNP10	14 NM CEP (independent)	
RNP4 RNAV5 RNP10	± 15 NM (independent)	a) Aircraft flight notification must indicate INS/IRS; and b) INS/IRS update conditions are met.
RNP4 RNAV5 RNP10	Expanding formula (independent)	a) Aircraft flight notification must indicate INS/IRS; b) Use the following formula in preparation of an approved lateral separation diagram or condition specified in local instructions; c) The tolerance is a circle of radius: i) 3 NM on departure; or 4 NM at update; and ii) expanding at a rate of 3 NM per hour since departure or update to a maximum of 14 NM radius; and d) INS/IRS update conditions are met.
RNP4 RNP10	50 NM between aircraft (dependent)	

Note 1: *Tolerances that are expressed as '± (value)' are cross track tolerances.*

Note 2: *RNAV10 is equivalent to RNP10.*

10.4.7.8.1 INS/IRS update conditions

For INS/IRS tolerances, apply the following update conditions:

a) The update interval (i.e. the flight time since departure or a waypoint suitable for updating present position) does not exceed:
   i) 3 hrs for aircraft equipped with single INS/IRS; or
   ii) 5 hrs for aircraft with two or more INS/IRS; and

b) Assume an update has occurred when one of the following occurs:
   i) Aircraft passage within 180 NM of two DME stations for a DME/DME fix where the position lines cross at an angle between 30 degrees and 150 degrees;
   ii) Aircraft passage within 25 NM of a co-located VOR/DME beacon;
   iii) Aircraft passage over a VOR beacon at or below FL200; or
   iv) Aircraft is equipped with GNSS.

10.4.7.9 Entry/exit points for approved SCNS - 7 NM and 14 NM CEP (independent)

Angular Difference	7/7	7/14	14/14	Angular Difference	7/7	7/14	14/14	Angular Difference	7/7	7/14	14/14
7	144	211	278	35	27	40	52	63	17	25	33
8	124	181	238	36	27	39	51	64	17	25	33
9	108	159	209	37	26	38	50	65	17	25	33
10	96	141	186	38	25	37	49	66	17	25	32
11	87	127	168	39	25	36	48	67	17	25	32
12	79	116	152	40	24	35	47	68	17	24	32
13	73	106	140	41	24	35	46	69	17	24	32
14	67	98	129	42	23	34	45	70	17	24	32
15	63	91	120	43	23	33	44	71	16	24	31
16	58	86	113	44	22	33	43	72	16	24	31
17	55	80	106	45	22	32	42	73	16	24	31
18	52	76	100	46	22	32	42	74	16	24	31
19	49	72	94	47	21	31	41	75	16	23	31
20	47	68	90	48	21	31	40	76	16	23	31
21	44	65	85	49	21	30	40	77	16	23	30
22	42	62	81	50	20	30	39	78	16	23	30
23	41	59	78	51	20	29	38	79	16	23	30
24	39	57	75	52	20	29	38	80	16	23	30
25	37	55	72	53	20	28	37	81	16	23	30
26	36	53	69	54	19	28	37	82	16	23	30
27	35	51	67	55	19	28	36	83	16	23	30
28	34	49	64	56	19	27	36	84	16	23	30
29	32	47	62	57	19	27	35	85	16	23	30
30	31	46	60	58	18	27	35	86	16	23	30
31	30	44	58	59	18	26	35	87	16	23	30
32	30	43	57	60	18	26	34	88	16	23	30
33	29	42	55	61	18	26	34	89	16	23	30
34	28	41	54	62	18	26	34	90	16	23	30

10.4.7.10 GNSS/DME entry/exit points for NDB - 7 NM CEP (independent)

Angular difference	All levels GNSS only	0 - FL290 DME only
30 - 39	21	23
40 - 49	15	17
50 - 59	12	15
60 - 69	11	14
70 - 97	9	12
98 - 180	8	11

10.4.7.10.1 NDB - 7 NM CEP table conditions of use

Use this table when the following conditions exist:

a) One aircraft tracking directly to or from the NDB and established on the relevant bearing;

b) The other aircraft is RNP2 approved and tracking directly to or from a point co-sited with the NDB; and

c) Where DME is used, the aircraft must be operating at FL290 or below.

10.4.7.11 Area navigation system tolerances in RNP airspace (independent and dependent)

<table>
<tr><th>PBN approval</th><th>Tolerance</th><th>Conditions</th></tr>
<tr><td>RNP4
RNAV5
RNP10</td><td>± 15 NM
(independent)</td><td>a) Aircraft flight notification must indicate INS/IRS; and
b) INS/IRS update conditions are met.</td></tr>
<tr><td>RNP4
RNAV5
RNP10</td><td>± 30 NM
(independent)</td><td>a) Aircraft flight notification must indicate INS/IRS; and
b) INS/IRS update conditions do not apply.</td></tr>
<tr><td>RNP4
(PBCS)</td><td>23 NM (dependent)</td><td>Both aircraft meet the following performance-based capabilities:<table><tr><th>RNP</th><th>RCP</th><th>RSP</th></tr><tr><td>4</td><td>240</td><td>180</td></tr></table>See MATS 10.3.8 Performance-based communication and surveillance (PBCS) conditions</td></tr>
<tr><td>RNP4</td><td>30 NM (dependent)</td><td>a) RNP airspace designated OCA;
b) Only useable for separation with another aircraft indicating RNP4;
c) Both aircraft must be reporting position via ADS-C and maintain DCPC; and
d) If an ADS-C report is not received within:
i) 3 min of the time it should have been sent, take action to obtain the report; and
ii) 6 min of the time the original report should have been sent, resolve the conflict within a further 7.5 min using available communication means.</td></tr>
<tr><td>RNP4
RNP10</td><td>50 NM
between aircraft
(dependent)</td><td></td></tr>
</table>

Note 1: *Tolerances that are expressed as '± (value)' are cross track tolerances.*

Note 2: *RNAV10 is equivalent to RNP10.*

10.4.7.11.1 INS/IRS update conditions

For INS/IRS tolerances, apply the following update conditions where indicated:

a) The update interval (i.e. the flight time since departure or a waypoint suitable for updating present position) does not exceed:
   i) 3 hrs for aircraft equipped with single INS/IRS; or
   ii) 5 hrs for aircraft with two or more INS/IRS; and

b) Assume an update has occurred when one of the following occurs:
   i) Aircraft passage within 180 NM of two DME stations for a DME/DME fix where the position lines cross at an angle between 30 degrees and 150 degrees;
   ii) Aircraft passage within 25 NM of a co-located VOR/DME beacon;
   iii) Aircraft passage over a VOR beacon at or below FL200; or
   iv) Aircraft is equipped with GNSS.

10.4.7.12 Entry/exit points for approved SCNS - 30 NM and 50 NM between aircraft (dependent)

Angular difference	30 NM	50 NM	Angular difference	30 NM	50 NM	Angular difference	30 NM	50 NM
15	116	194	41	46	77	66	33	55
16	109	182	42	45	75	67	33	55
17	103	172	43	44	74	68	33	54
18	98	162	44	44	72	69	33	54
19	93	154	45	43	71	70	32	54
20	88	147	46	42	70	71	32	53
21	84	140	47	42	69	72	32	53
22	81	134	48	41	68	73	32	53
23	77	128	49	40	67	74	32	53
24	74	123	50	40	66	75	32	52
25	71	119	51	39	65	76	31	52
26	69	115	52	39	64	77	31	52
27	67	111	53	38	63	78	31	52
28	64	107	54	38	62	79	31	51
29	62	104	55	37	62	80	31	51
30	60	100	56	37	61	81	31	51
31	59	98	57	36	60	82	31	51
32	57	95	58	36	59	83	31	51
33	56	92	59	35	59	84	31	51
34	54	90	60	35	58	85	31	51
35	53	88	61	35	58	86	31	51
36	52	86	62	34	57	87	31	51
37	50	84	63	34	57	88	31	51
38	49	82	64	34	56	89	31	50
39	48	80	65	34	56	90	30	50
40	47	78						

10.4.8 Lateral separation diagrams

10.4.8.1 Separation diagrams

Only prepare lateral separation diagrams in accordance with ATS-provider approved methods and indicate:

a) where lateral separation points rely on the serviceability of one or more navaid(s); and

b) other lateral separation points using alternative navaids, if appropriate.

10.4.8.1.1 Develop diagrams

Develop diagrams using:

a) data produced by lateral separation software approved by the ATMSL and used by suitably trained officers;

b) instrument flight procedure and holding pattern data produced by either a certified CASR Part 173 designer or a military designer approved by AIS-AF; or

c) information contained in this chapter.

10.4.8.1.2 Diagram approval

All published lateral separation diagrams are to be authorised within:

a) Airservices - by the ATMSL or delegate; or

b) Defence - by SO2 STD ANSP.

Note 1: *This includes specific approval to use an offset navaid or a navaid beyond the range listed in Clause 10.4.7.3.*

Note 2: *Service providers may develop and apply ready reference lateral separation tables between respective tracks to assess and resolve lateral separation conflicts.*

See MATS 10.4.7.3 Short range navaid tolerances (independent)

10.4.8.1.3 Routine review

Periodically review lateral separation diagrams to ensure the diagrams remain accurate, relevant and fit-for-purpose.

10.4.8.1.4 Error handling

Advise your Supervisor if you discover an error on a published lateral separation diagram.

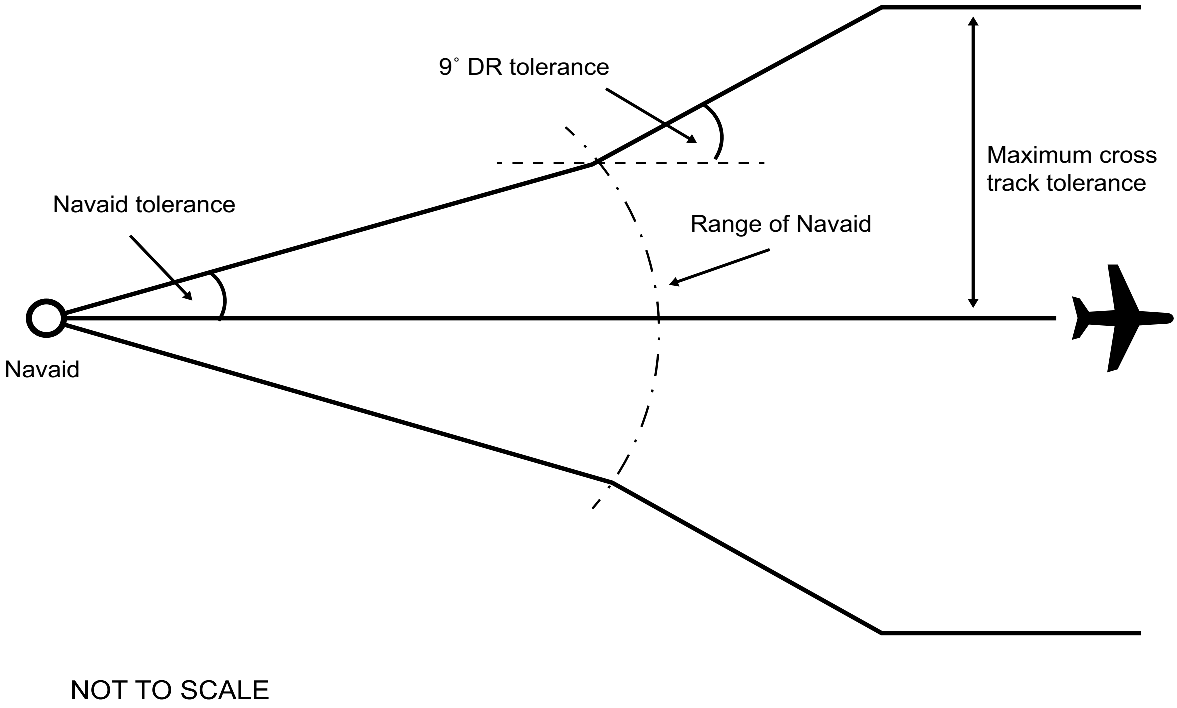
10.4.8.1.5 Application of holding point diagrams

Excluding entry procedures, you may apply lateral separation using holding pattern tolerances when aircraft are established in the holding pattern and operating at or below the upper limit for the holding pattern tolerance diagram.

10.4.9 Manual plotting examples - tolerances

10.4.9.1 Outbound from a single navaid

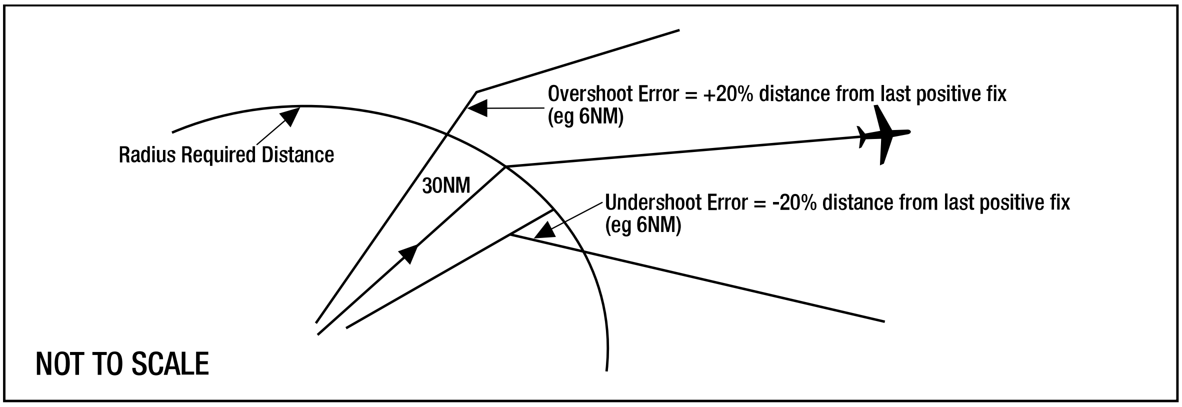
The following diagram details how to plot tolerances for an aircraft tracking outbound from a single navaid:



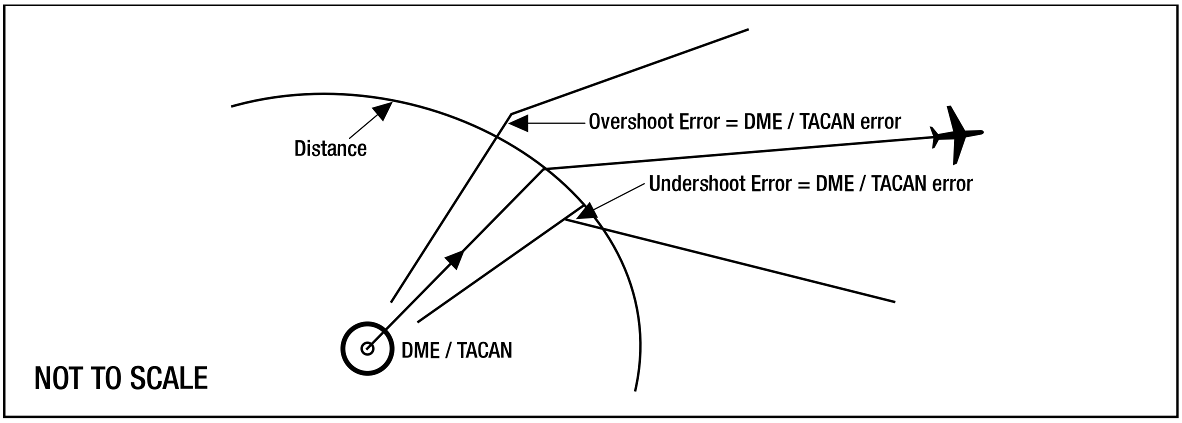
10.4.9.2 Overshoot/undershoot

The following diagrams detail plotting overshoot/undershoot error at a turning point not provided with a radio navaid:

a) No DME guidance:

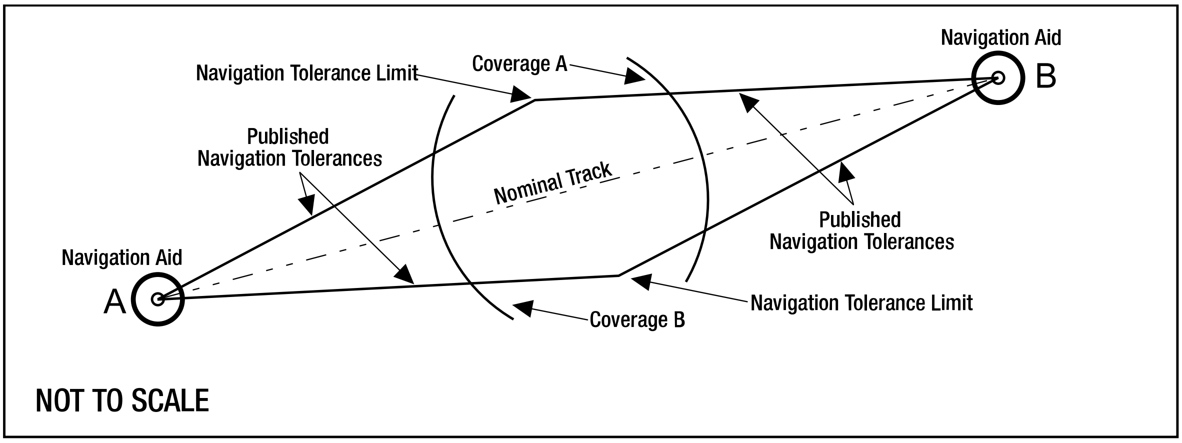


b) DME guidance:



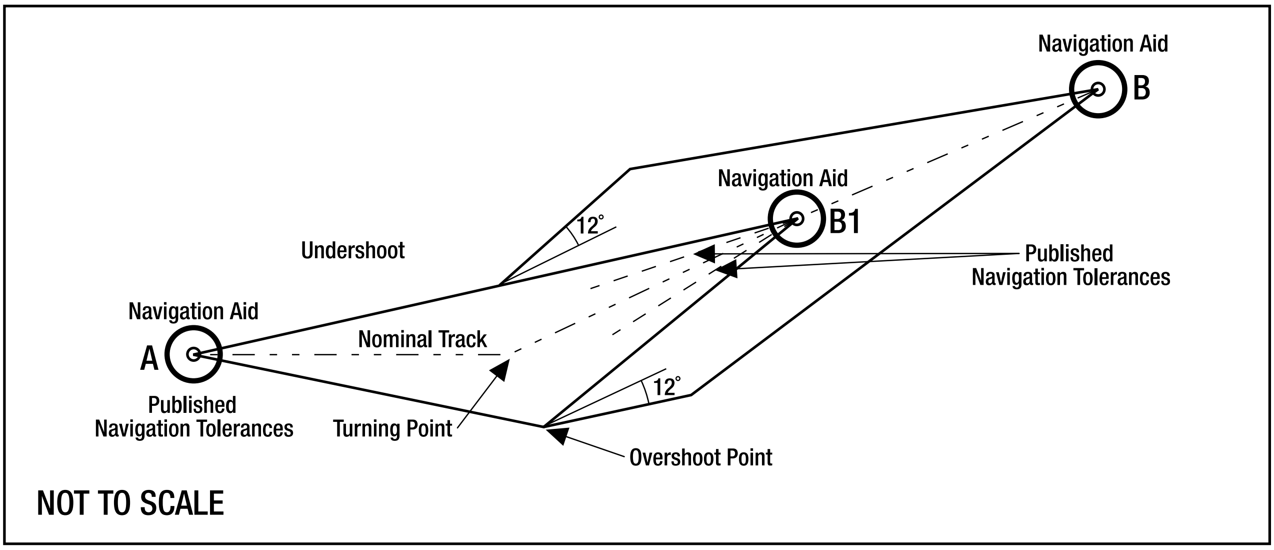
10.4.9.3 Aircraft with continuous navaid coverage

The following diagram details navigation tolerances for aircraft with continuous navaid coverage:



10.4.9.3.1 Turning point in continuous navaid coverage

The following diagram details navigation tolerances from a single navaid to single navaid with a turning point:

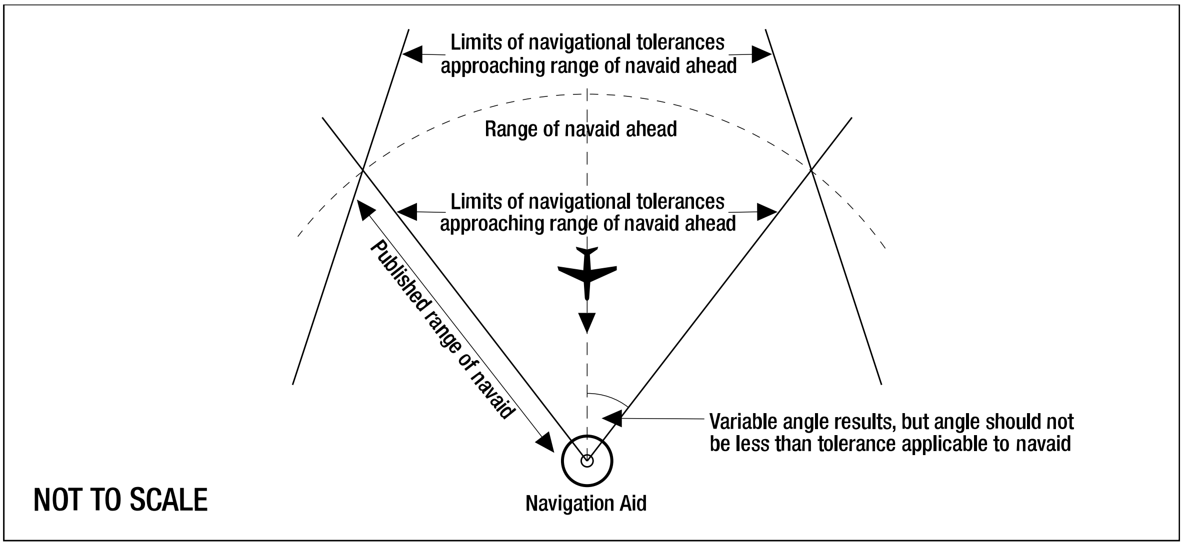


Note 1: *Positions B and B1 indicate two different cases. In both cases, the limit of navigation tolerances on the top side is the unbroken line from A through the undershoot point B or B1. On the lower side, the limit of the navigational tolerances is the unbroken line from A to the overshoot point, and then to B or B1.*

Note 2: *The tolerance angle at B1 may be greater than that published for that navaid, even though continuous navaid cover is available.*

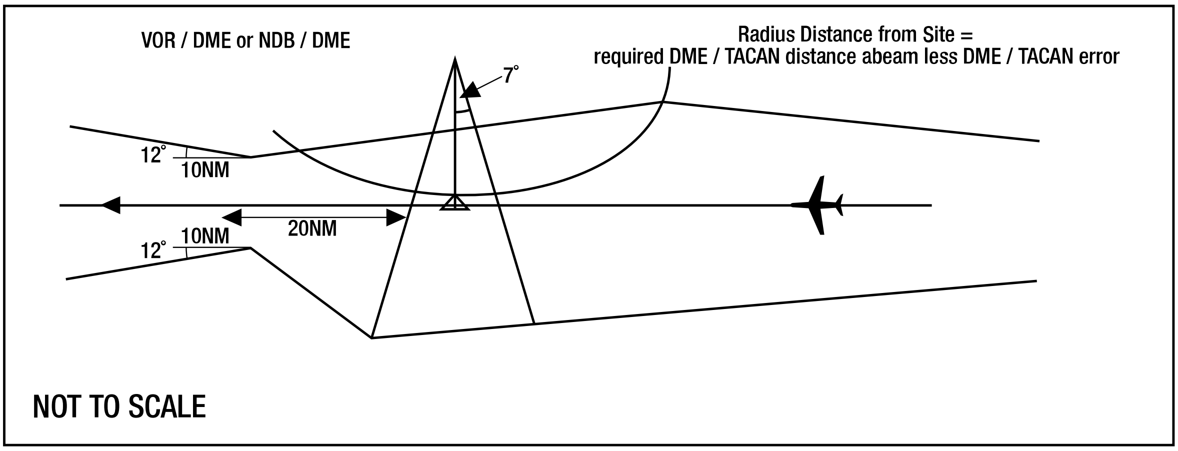
10.4.9.4 Navaid behind, navaid ahead

The following diagram details navigational tolerances - beyond the range of the navaid behind, but entering the range of the navaid ahead:



10.4.9.5 Offset navigation

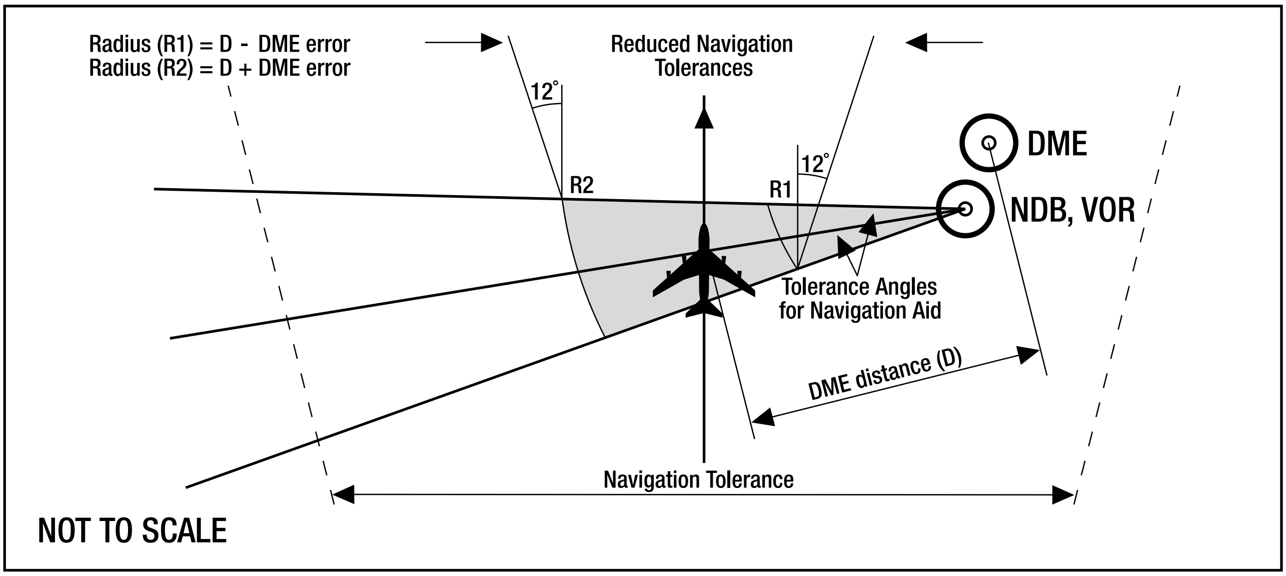
The following diagram details offset navigation using VOR/DME or NDB/DME:



Note: *Prior approval is required for use of this standard.*

10.4.9.6 Area of occupancy - VOR/ADF and DME

The following diagram details area of occupancy using VOR or ADF and DME distance reports:



10.4.9.6.1 ADF bearing and DME distance/crossing VOR radial

When a pilot reports an ADF bearing and a DME distance, or crossing a VOR radial and a DME distance, regard the aircraft as occupying an area contained within:

a) the radii of the reported distance from the DME site plus or minus DME error; and

b) the appropriate tolerance of the reported navaid.

10.4.9.6.2 Subsequent flight

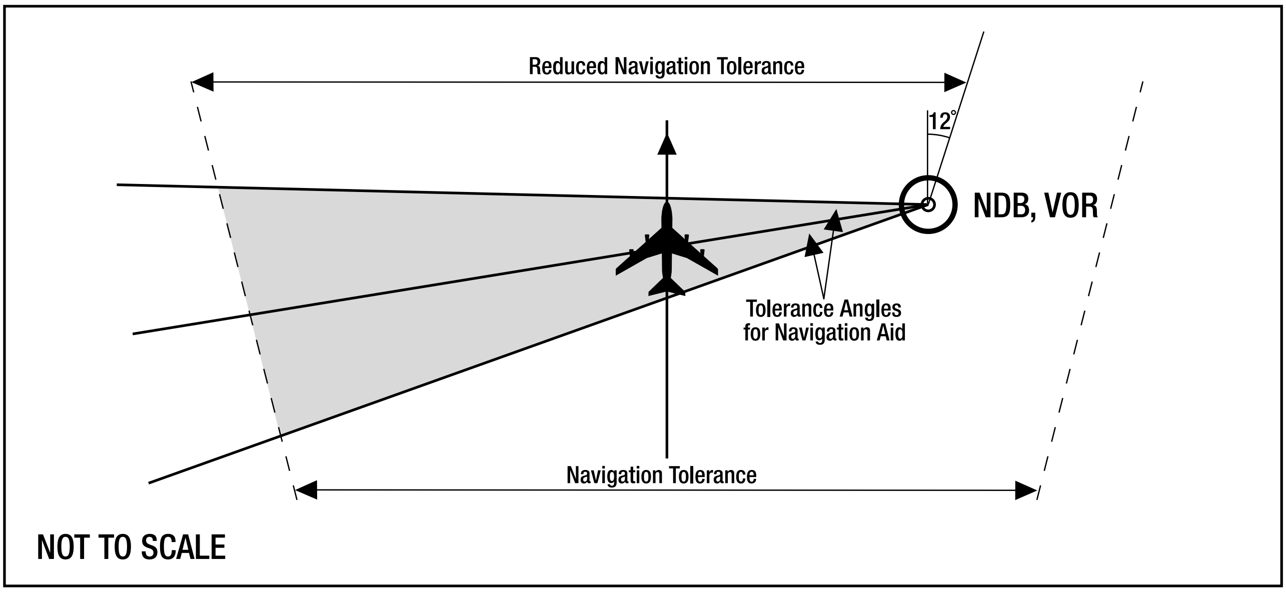
Calculate the subsequent navigation tolerance by applying a divergence of ± 12 degrees to the aircraft's nominal track, plotted from two points within the aircraft's area of occupancy that provide the greater possibility of track error.

10.4.9.6.3 Standard dependent on DME reading

Only apply this standard when the DME reading indicates that the aircraft is within the approved range of the NDB or VOR.

10.4.9.7 Area of occupancy VOR or ADF

The following diagram details an area of occupancy using VOR or ADF reports:



10.4.9.7.1 ADF bearing or crossing a VOR radial

When a pilot of a non-DME equipped aircraft, whose normal navigation tolerance would overlap either side of an off-track navaid, reports an ADF bearing or crossing a VOR radial, regard the aircraft as being located on one side of the navaid within the appropriate tolerance for the bearing.

10.4.9.7.2 Aircraft position

Take the aircraft's position along this tolerance as being any point between the navaid and a maximum distance determined by the normal navigation tolerance for the aircraft's track.

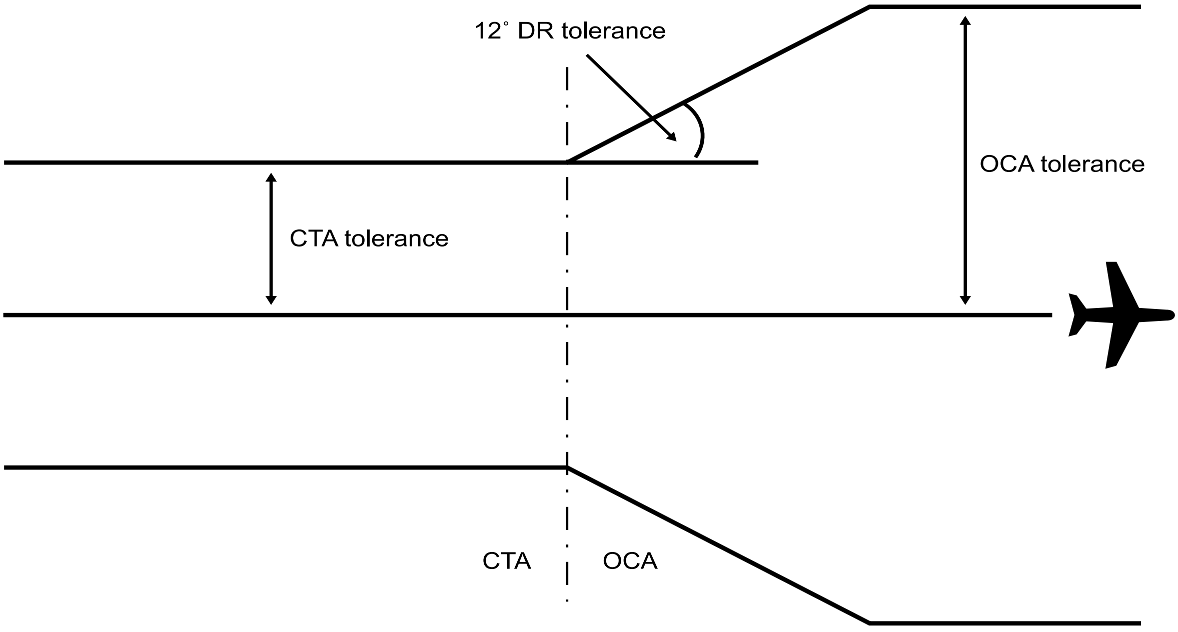
10.4.9.7.3 Subsequent flight

Calculate the subsequent navigation tolerance by using the normal navigation tolerance on the side farthest from the navaid and plotting 12 degrees divergence to nominal track from the navaid site.

10.4.9.8 Crossing airspace boundaries

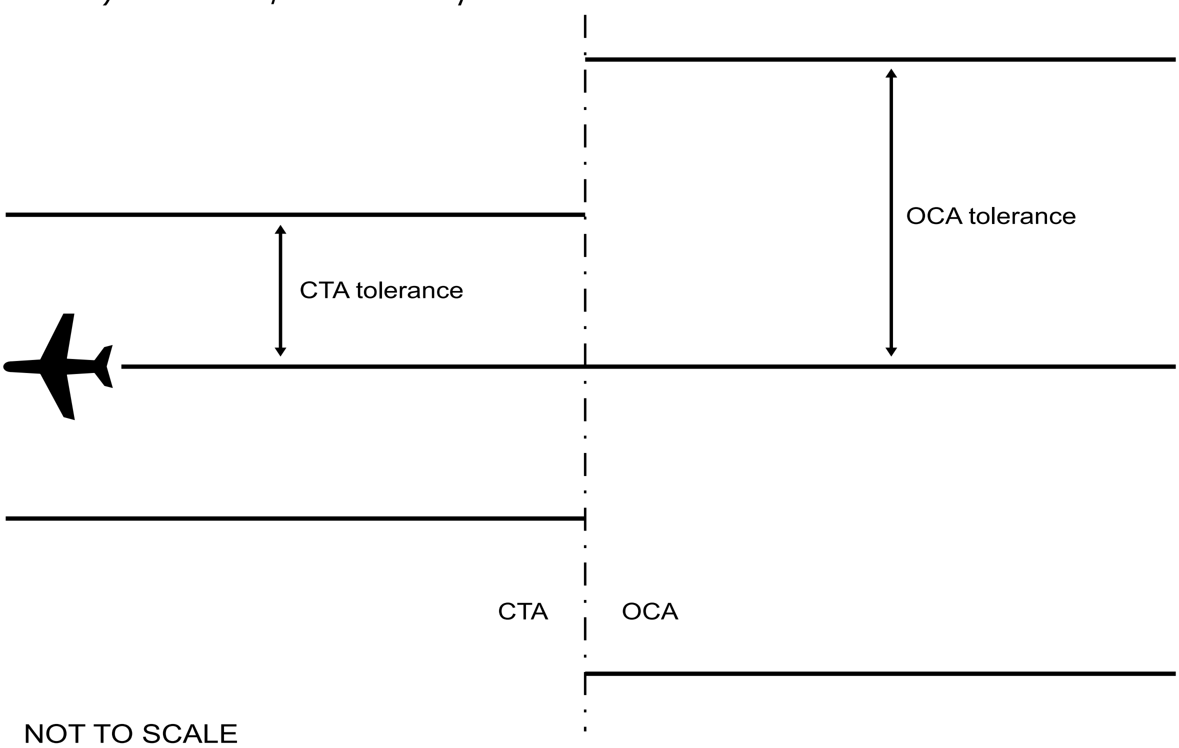
The following diagrams detail how to plot tolerances for an aircraft crossing an airspace boundary:

a) The CTA/OCA boundary - outbound:



NOT TO SCALE

b) The CTA/OCA boundary - inbound:



NOT TO SCALE

10.4.9.8.1 Crossing an FIR boundary

Where common tolerances are not used across an FIR boundary, the tolerance diagram at b) may be used, with relevant tolerances, for flight in either direction.

10.4.10 Manual plotting examples - diagrams

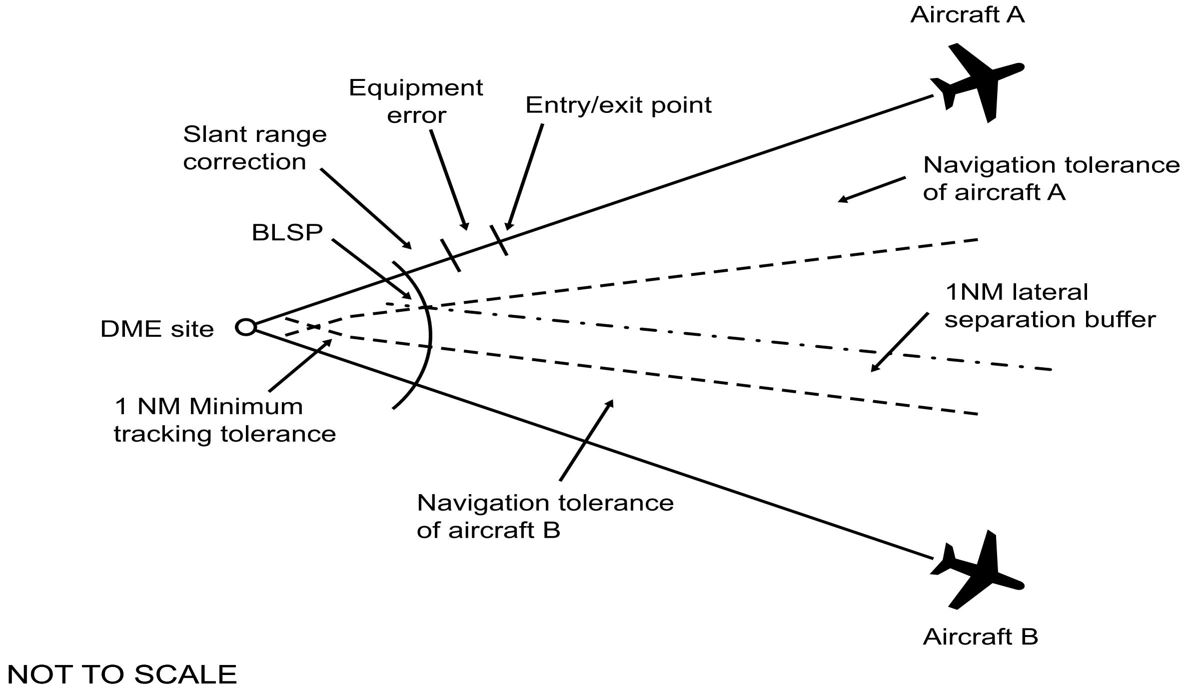
10.4.10.1 Rounding calculations

When manually calculating or plotting lateral separation, round:

a) BLSP calculations up or down on the 'safe side' to the nearest NM; and
b) radio navaid tolerances up to the next higher half degree.

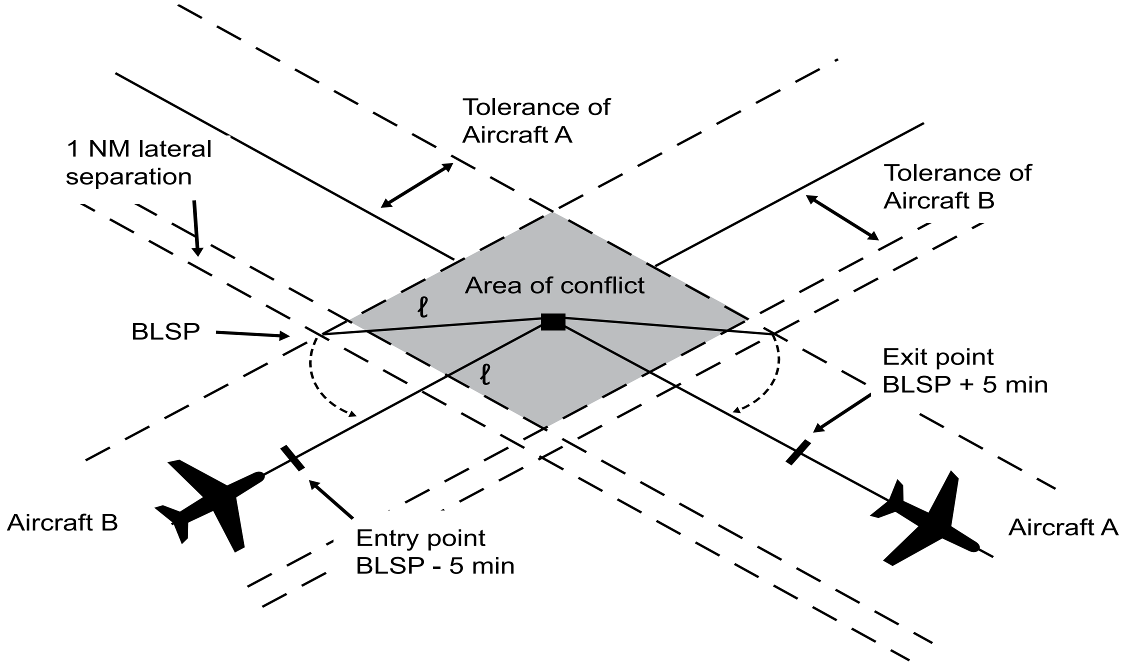
10.4.10.2 Entry and exit points - example 1

The following diagram details entry and exit points for aircraft outbound from a departure point or navaid with independent tolerances expressed in degrees plus 1 NM for lateral separation. In this example the exit/entry point is determined using the DME:



10.4.10.3 Entry and exit points - example 2

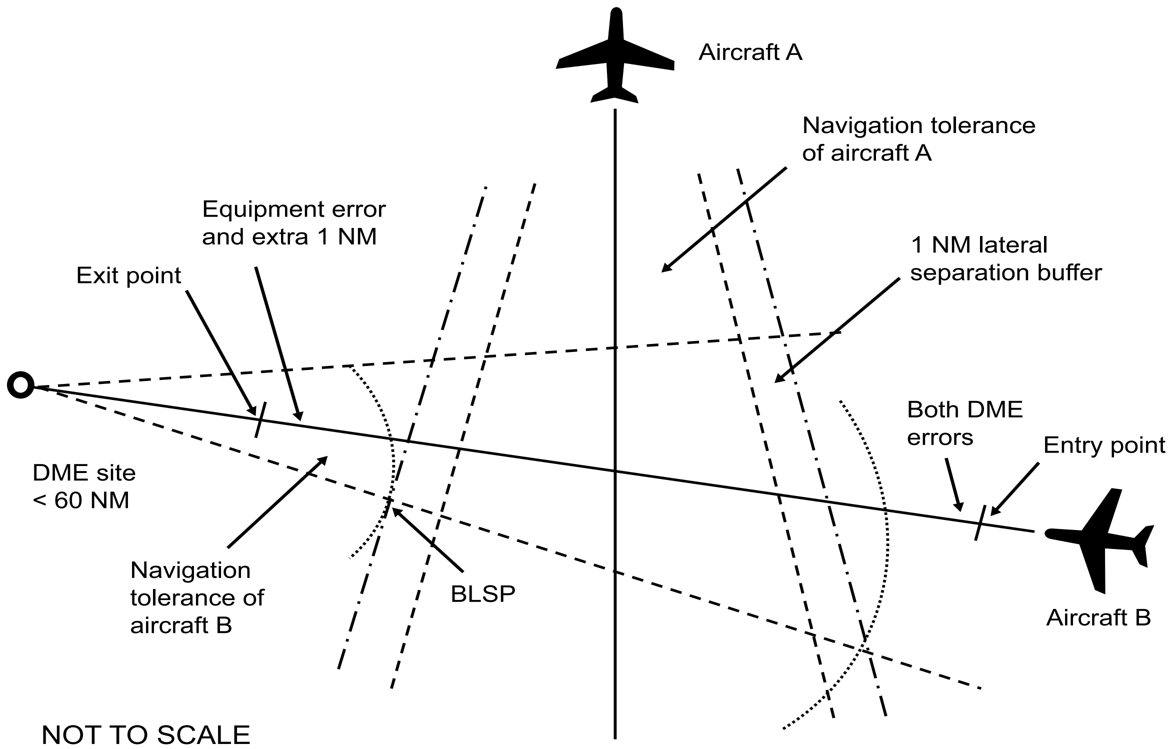
The following diagram details entry and exit lateral separation points for aircraft using two independent cross track tolerances plus 1 NM for lateral separation. The exit/entry point is determined using time:



NOT TO SCALE

10.4.10.4 Entry and exit points - example 3

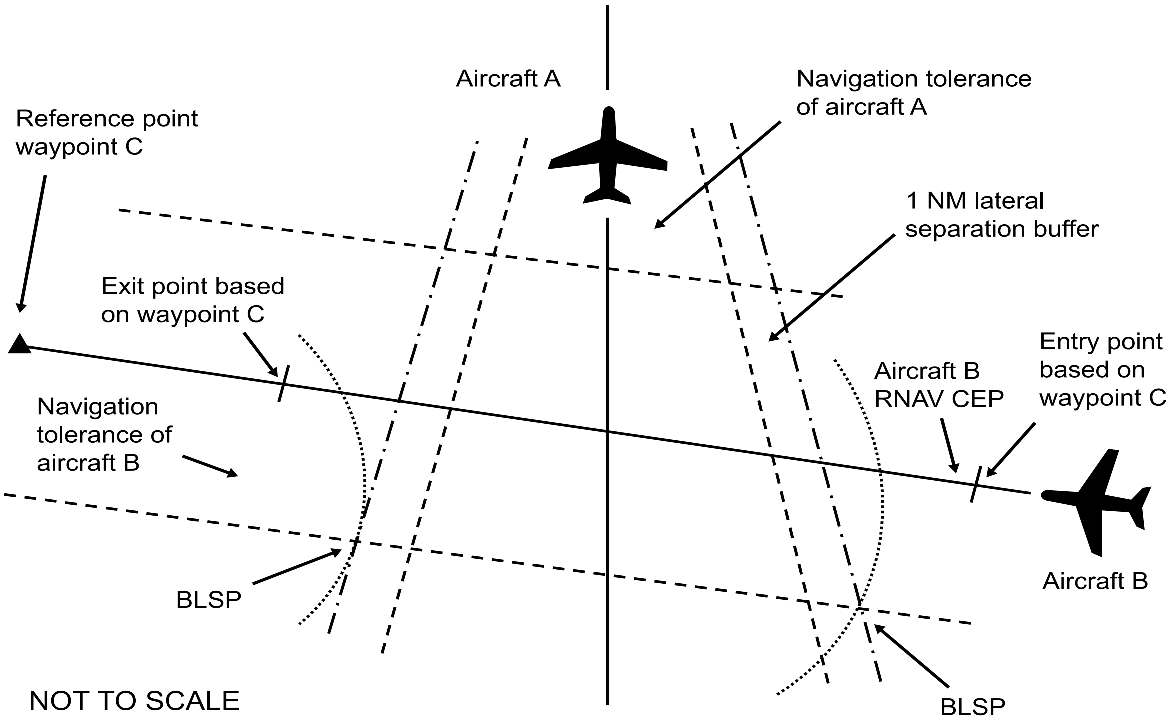
The following diagram details entry and exit lateral separation points for aircraft B using two independent tolerances expressed in degrees, plus 1 NM for lateral separation. The exit/entry point is determined using DME:



NOT TO SCALE

10.4.10.5 Entry and exit points - example 4

The following diagram details entry and exit lateral separation points for aircraft using one cross track tolerance and one CEP tolerance plus 1 NM for lateral separation. The exit/entry point is determined using area navigation:



10.4.10.6 Entry and exit points - example 5

The following methods detail calculation of entry and exit lateral separation points when applying either two independent CEP tolerances plus 1 NM for lateral separation, or a dependent tolerance.

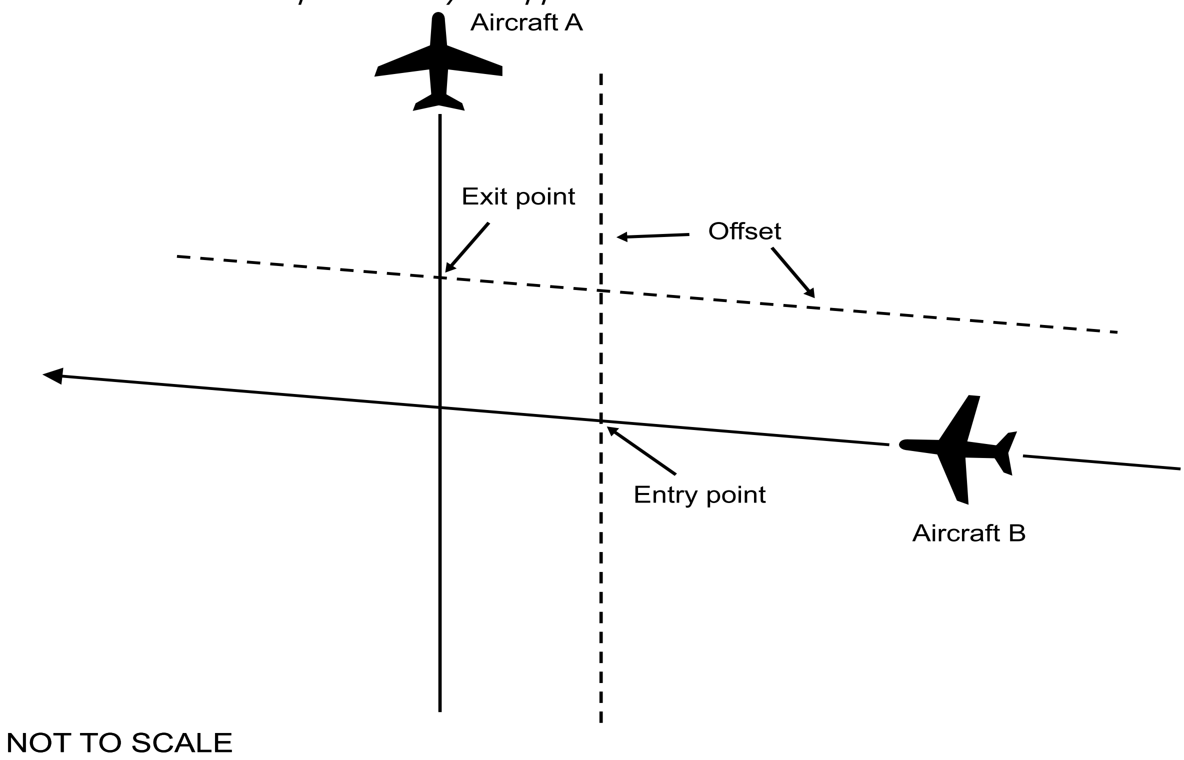
Note: *The BLSP are the points at which lateral distance between the tracks is less than the required minimum. As all tolerances are included, the BLSP are also the entry/exit points. In this case, the area bound by the lateral separation points is termed the area of conflict.*

10.4.10.6.1 Calculating the BLSP - method 1

You may calculate the BLSP by:

1) calculating an offset equal to:
   i) the dependent tolerance; or
   ii) the sum of both aircraft CEP tolerances plus 1 NM;
2) drawing the offset from nominal track 1. Where the offset intersects with nominal track 2 is the BLSP; and
3) measuring the distance from a significant point to the BLSP.

Note: *The process may be applied on both sides of either nominal track.*

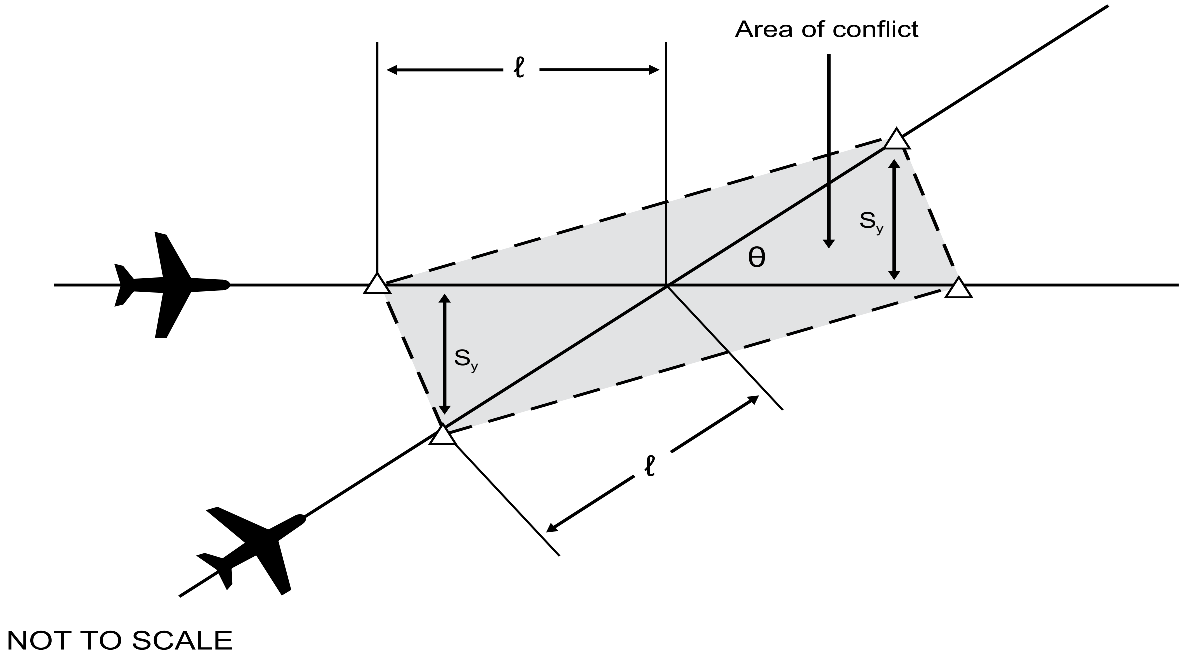


10.4.10.6.2 Calculating the BLSP - method 2

When developing tables or approved diagrams, you may calculate the BLSP using the formula: $\ell = S_y/\sin\theta$, where
ℓ = the distance of the BLSP from the intersection rounded to the next whole NM,
S_y = the dependent tolerance, or sum of both aircraft CEP tolerances plus 1 NM, and
θ = the angle between tracks.

Note 1: *The BLSP may be referenced to any significant point.*

Note 2: *Prior approval is required for use of this method.*



10.4.11 Calculation of holding pattern diagrams

10.4.11.1 Holding pattern plotting

Holding pattern separation may only be calculated for published diagrams. Do not manually plot a holding pattern diagram.

10.4.11.2 Template approval

Holding pattern tolerance templates must be approved by a Part 173 Chief Designer or AIS-AF.

10.4.11.3 Holding pattern diagrams

When creating holding pattern lateral separations diagrams, consider:

a) the speed of the holding aircraft;
b) the holding altitude;
c) the type of navigation tolerances; and
d) whether the sector entry is included or not.

10.4.11.3.1 Holding at a VOR or co-sited NDB

You may apply holding pattern tolerance diagrams for holding at a VOR to aircraft holding at a co-sited NDB.

Note: *VOR holding tolerances are greater than NDB holding tolerances.*

10.4.11.3.2 Determining holding pattern separation

Determine lateral separation between tracks and standard holding patterns published in AIP DAP as follows:

1) Plot tracks and the appropriate navigation aid tolerances on a VTC or 1:250 000 plotting chart;
2) Overlay the appropriate holding pattern tolerance template;
3) Determine the BLSP; and
4) Determine the entry and exit points.

See MATS 10.4.11.2 Template approval

See MATS 10.4.4.2 Determining the BLSP

See MATS 10.4.5 Entry and exit points

10.4.11.3.3 Calculation documentation

Retain records of any holding pattern calculations used to develop diagrams.

10.5 Vertical

10.5.1 Vertical separation - conditions

10.5.1.1 Geometric height data

Do not use geometric height data for separation.

10.5.1.2 UFB - at or above FL130

Only use verified UFB pressure altitude-derived information at or above FL130 to apply vertical separation.

10.5.1.3 Use ADS-C level

Use ADS-C level information for the application of vertical separation if:

a) the reported ADS-C level is FL130 or above; and
b) the displayed ADS-C level information is within the specified tolerances of the expected or cleared flight level.

See MATS 9.8.5.1 ADS-C level occupancy

10.5.2 Vertical separation during climb and descent

10.5.2.1 Transitioning RVSM

Regard RVSM approved aircraft transitioning into or out of the RVSM band to be vertically separated with aircraft already inside the RVSM band, provided:

a) vertical separation of 1000 FT exists at all times; and
b) at the completion of the level change, the appropriate vertical separation standard exists.

10.5.2.2 Describe rate

Describe the rate of climb or descent in each level clearance when a specified rate is required to maintain vertical separation.

10.5.2.2.1 International aircraft

When it is necessary to specify a rate of climb or descent to an international aircraft, specify the rate in feet per minute. Do not issue standard rate.

10.5.2.2.2 Do not specify rate

Do not specify a rate of climb or descent if it is believed that an aircraft is:

a) operating in close vertical proximity to the control area upper or lower limit; or

b) climbing or descending VISUAL or VFR to an assigned level and maintaining clearance from terrain or cloud.

10.5.2.2.3 Approaches and arrivals

Do not specify a rate of descent to an aircraft instructed to make VISUAL APPROACH or DME ARRIVAL, or to an aircraft on that part of an instrument approach below the lowest holding altitude.

10.5.2.3 Assigning vacated levels

A level vacated by one aircraft may be assigned immediately to another aircraft provided that:

a) the required vertical separation has not been increased due to the possibility of turbulence;

b) the first aircraft has been assigned a level requiring a level change of at least the minimum being applied; and

c) both aircraft have been instructed to change level at a specified rate which ensures that the applicable vertical separation is not infringed.

10.5.2.4 Step climb

To simultaneously climb aircraft to vertically separated levels, you may apply the step climb procedure by:

a) advising pilots when they are subject to a step climb;

b) progressively assigning the lower aircraft levels which provide vertical separation with the level vacated by the higher climbing aircraft; and

c) advising pilots when the step climb is no longer required.

Note: *The pilot of the higher aircraft, on hearing the lower aircraft report approaching each assigned level, will report the last vacated level.*

See MATS 10.5.2.6 Rate in step climb/descent

10.5.2.5 Step descent

To simultaneously descend aircraft to vertically separated levels, you may apply the step descent procedure by:

a) advising pilots when they are subject to a step descent;

b) progressively assigning the higher aircraft levels which provide vertical separation with the level vacated by the lower descending aircraft; and

c) advising pilots when the step descent is no longer required.

Note: *The pilot of the lower aircraft, on hearing the higher aircraft report approaching each assigned level, will report the last vacated level.*

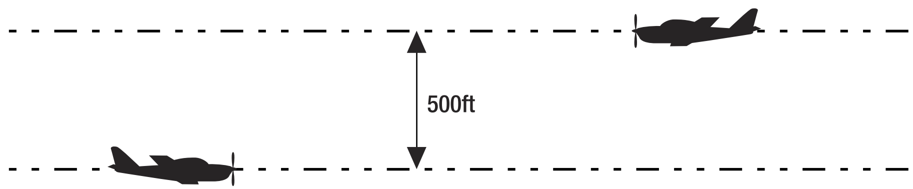
See MATS 10.5.2.6 Rate in step climb/descent

10.5.2.6 Rate in step climb/descent

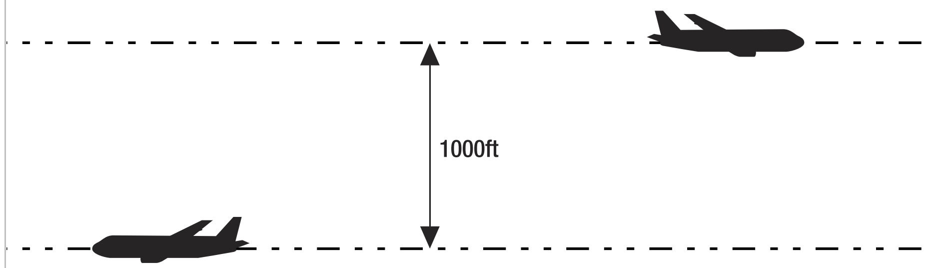
Only specify a rate of climb or descent when the rate will apply to all levels of the climb or descent. Specify the rate in the initial clearance using 'STEP CLIMB (*or* STEP DESCENT) STANDARD RATE (*or* AT (*number*) FEET PER MINUTE)'.

10.5.3 Vertical separation minima

10.5.3.1 V1 - 500 FT minimum

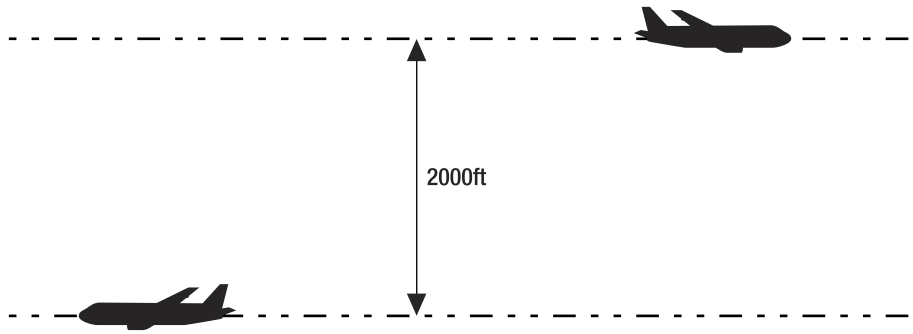
<table>
<tr><th>Conditions</th><th>Diagram</th></tr>
<tr><td>Apply 500 FT between IFR and VFR aircraft (including SVFR), or between SVFR aircraft where SVFR clearance is due to visibility, under the following conditions:
a) both aircraft are 7000 kg MTOW or less;
b) both aircraft are at or below 10 000 FT; and
c) traffic information is provided to the IFR aircraft, unless it is impracticable.</td><td>
</td></tr>
</table>

10.5.3.2 V2 - 1000 FT minimum

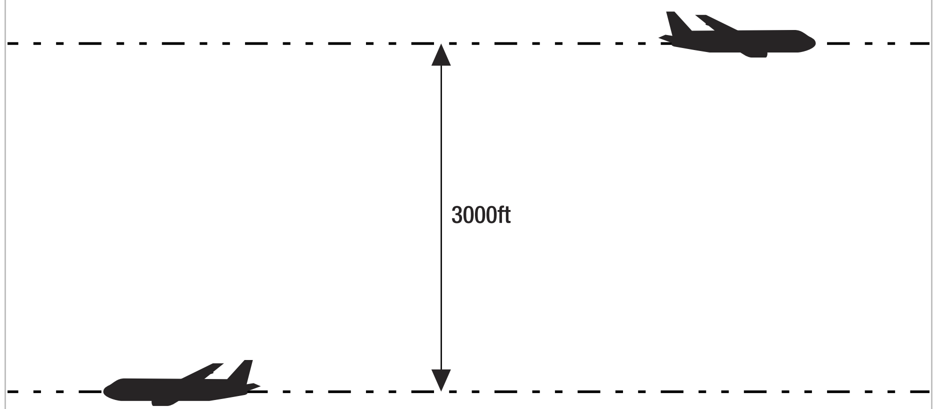
<table>
<tr><th>Conditions</th><th>Diagram</th></tr>
<tr><td>Apply 1000 FT to:
a) all aircraft, up to and including FL290; and
b) aircraft with RVSM approval except military formation aircraft, from FL290 to FL410 inclusive.
Note: A pilot report OPERATING ON ONE PRIMARY ALTIMETER ONLY when within the RVSM band does not constitute an equipment failure for the application of RVSM separation.</td><td>
</td></tr>
</table>

10.5.3.3 V3 - 2000 FT minimum

Conditions	Diagram

Apply 2000 FT:
a) in known standing wave conditions or severe turbulence at all levels;
b) from FL290 to FL410 inclusive:
    i) when at least one aircraft is not RVSM approved;
    ii) following pilot report of an inability to comply with RVSM due to equipment failure;
    iii) following an encounter with turbulence that affects the capability to maintain flight level; or
    iv) to military formation aircraft, regardless of the individual RVSM approval state of each aircraft within the formation; and
c) above FL410 to all aircraft.
Note: *A pilot report OPERATING ON ONE PRIMARY ALTIMETER ONLY when within the RVSM band does not constitute an equipment failure for the application of RVSM separation.*
	

10.5.3.4 V4 - 3000 FT minimum

Conditions	Diagram
Apply 3000 FT at all levels when one or more aircraft is operating at supersonic speeds.	

10.6 Wake turbulence separation

10.6.1 Wake turbulence separation - conditions

10.6.1.1 Wake turbulence category

Wake turbulence separation is determined by grouping aircraft types according to the maximum take-off weight and wake turbulence characteristics as follows:

WT category	Aircraft types
Super (H) or (J)	A380, AN225
Heavy (H)	All other aircraft types of 136 000 kg or more
Medium (M)	Aircraft types less than 136 000 kg but more than 7000 kg
Light (L)	Aircraft types of 7000 kg or less

10.6.1.1.1 B757, H47 and H53

Due to the wake turbulence characteristics of the B757, H47 and H53, classify these aircraft as Heavy aircraft if leading and as Medium aircraft if following.

10.6.1.2 Ensure wake turbulence separation

Except when specified in Clause 10.6.1.4, issue clearances that ensure a following aircraft will not enter a preceding aircraft's wake turbulence envelope.

See MATS 10.6.1.4 When not required

10.6.1.2.1 Application of wake turbulence separation

Apply wake turbulence separation minima when:

a) an aircraft is directly behind and within 760 m laterally of another aircraft; or

b) both aircraft are using the same runway, or parallel runways separated by less than 760 m.

Note: *Directly behind includes that portion of flight where one aircraft crosses the track of another aircraft.*

10.6.1.3 VFR wake turbulence separation

Apply wake turbulence separation when a VFR aircraft is:

a) in flight and would operate within the wake turbulence envelope of a Super category aircraft;

b) becoming airborne from a runway or HLS; or

c) arriving as per Clause 10.6.4.1 c).

See MATS 10.6.4.1 Full length and crossing runway operations

10.6.1.4 When not required

Wake turbulence separation is not required:

a) when a Light aircraft will enter the wake turbulence envelope of a Medium fixed wing aircraft of less than 25 000 kg MTOW;
b) between an aircraft landing behind an aircraft taking-off on the same runway;
c) for VFR flights except when required in accordance with Clause 10.6.1.3;
d) if a pilot has initiated a waiver of the relevant departure wake turbulence separation standard;
e) when the pilot of an IFR aircraft in flight has reported the preceding aircraft in sight and has accepted responsibility for visual separation with that aircraft. If it is determined by the flight crew that additional spacing is required, the flight crew may state their requirements to ATC; or
f) to or from an air taxiing helicopter.

See MATS 10.6.1.3 VFR wake turbulence separation

10.6.1.5 Wake turbulence waiver

Only apply a waiver of the relevant departure wake turbulence standard:

a) when initiated by the pilot; and
b) in VMC by day.

10.6.1.5.1 Do not apply a waiver

Do not apply a waiver when a Light or Medium aircraft will commence take-off on the same runway behind, or in the reciprocal direction to, a Heavy or Super aircraft that has rotated or made a low or missed approach.

10.6.1.6 Wake turbulence caution

Issue a wake turbulence caution in any of the following circumstances:

a) Less than the applicable wake turbulence separation minima may exist;
b) The applied wake turbulence separation minima may be infringed;
c) The pilot initiates a waiver;
d) When wake turbulence separation is not provided in circumstances described in Clause 10.6.1.4 c), e), and f), and wake turbulence may have an adverse effect on the aircraft; or
e) When opposite direction aircraft have passed using separation standards T7a, T7b, T7c, T7d or D8b, and a lighter category aircraft will enter the wake turbulence envelope of a heavier category aircraft, except when the heavier category aircraft is a Medium fixed wing aircraft of less than 25 000 kg MTOW.

See MATS 10.6.1.4 When not required

10.6.2 Wake turbulence standards - departures

10.6.2.1 Full length or crossing runway operations

Conditions

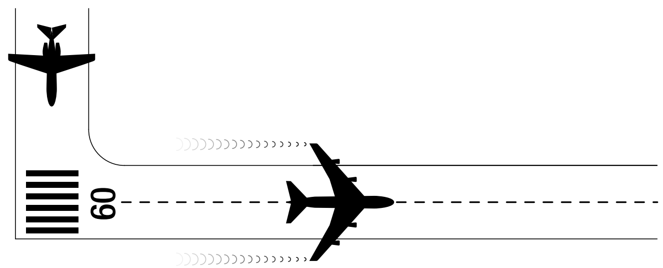
a) Apply wake turbulence separation to departing aircraft when:
   i) both aircraft are using the same runway for take-off;
   ii) an aircraft is taking off and a preceding departing or arriving aircraft on a crossing runway has rotated at or before the runway intersection or touched down at or beyond the intersection; or
   iii) using parallel runways or HLS for departures when the runways or HLS are separated by less than 760 m, unless the HLS location and projected flight path of the helicopter are located outside the wake turbulence envelope of the other aircraft; and

b) When applying wake turbulence separation:
   i) ensure that between departures, a following aircraft does not become airborne until either the specified time interval has elapsed since a leading aircraft became airborne or the specified distance minimum is achieved behind a leading aircraft;
   ii) between an aircraft executing a missed approach and the following aircraft taking off on the same runway do not issue the take-off clearance until the specified time or distance interval has elapsed since the preceding aircraft crossed the threshold or initiated the missed approach - whichever occurs later;
   iii) when crossing runways are in use, apply the full length standard and ensure that the required separation exists at the intersection; and
   iv) when an aircraft taking off behind a landing heavier wake turbulence category aircraft is expected to become airborne before the touchdown point of the landing aircraft, ensure that the departing aircraft does not become airborne until the appropriate displaced threshold wake turbulence separation time interval specified in Clause 10.6.2.3 has elapsed since the preceding aircraft touched down.

See MATS 10.6.1.2 Ensure wake turbulence separation

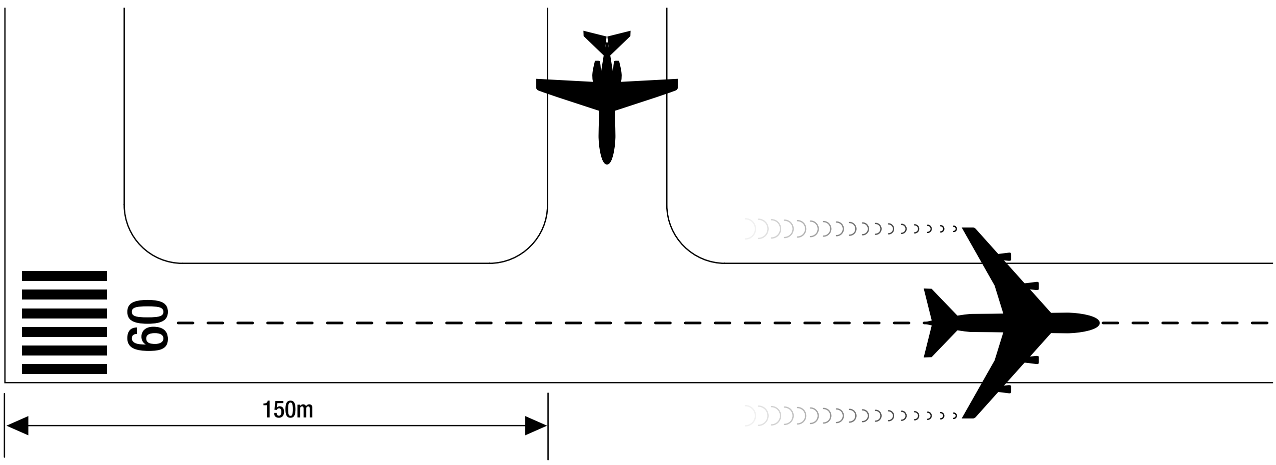
Diagram

Full length or crossing runway operations or crossing flight paths			
Aircraft categories		**Separation minima**	
Leading aircraft	**Following aircraft**	**Time - min**	**Distance - NM**
Super	Heavy Medium Light	2 3 3	6 7 8
Heavy	Heavy Medium Light	Distance only 2 2	4 5 6
Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters	Light	2	5



10.6.2.2 Intermediate departures

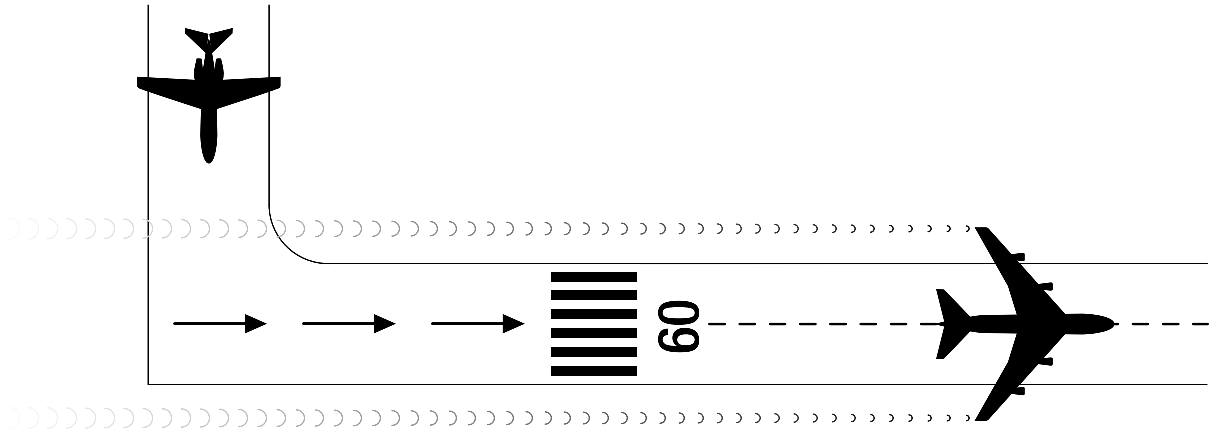
Intermediate departures			
Aircraft categories		**Separation minima**	
Leading aircraft	**Following aircraft**	**min**	**Application**
Super	Heavy Medium Light	4 4 4	Apply intermediate standards when the following aircraft will depart or will conduct a touch and go landing from the same runway or a parallel runway/HLS separated by less than 760 m from a point more than 150 m after the take-off commencement point of the preceding aircraft. ***Note:*** *Not applicable to a HLS when the HLS location and projected flight path of the helicopter are located outside the wake turbulence envelope of the other aircraft.*
Heavy	Medium Light	3 3	
Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters	Light	3	



See MATS 10.6.5.1 Using a surveillance standard or aircraft report

10.6.2.3 Displaced landing threshold

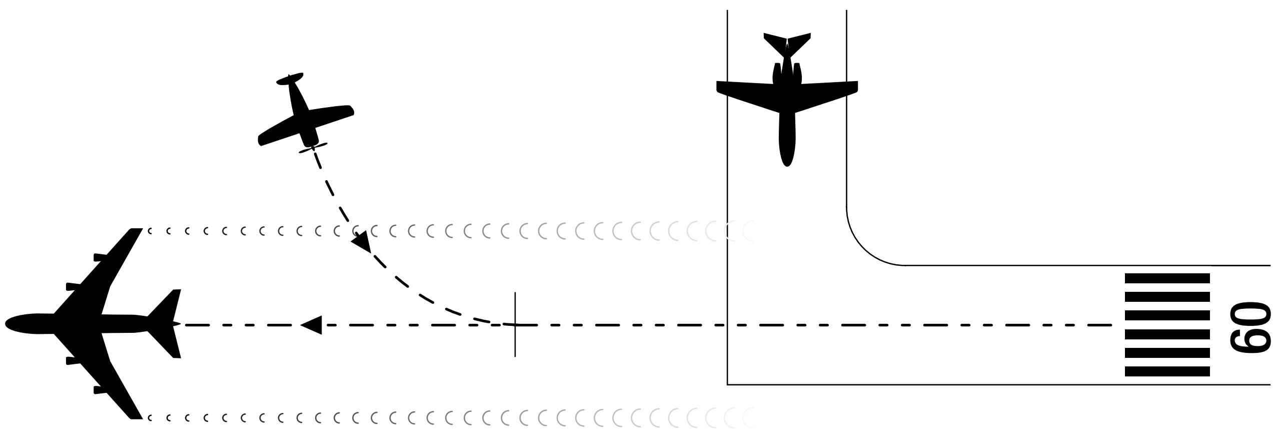
Displaced landing threshold			
Aircraft categories		**Separation minima**	
Arriving aircraft	**Departing aircraft**	**min**	**Application**
Super	Heavy Medium Light	3 3 3	An aircraft taking-off behind a landing heavier wake turbulence category aircraft is expected to become airborne before the touchdown point of the landing aircraft.
Heavy	Medium Light	2 2	
Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters	Light	2	



10.6.3 Wake turbulence standards - opposite direction

10.6.3.1 Opposite direction

Opposite direction			
Aircraft categories		**Separation minima**	
Leading aircraft	**Affected aircraft**	**min**	**Application**
Super	Heavy Medium Light	3 3 3	Apply opposite direction standards when the affected aircraft is using the opposite direction runway for take-off or landing to a heavier category aircraft that has taken off or executed a missed approach.
Heavy	Medium Light	2 2	
Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters	Light	2	



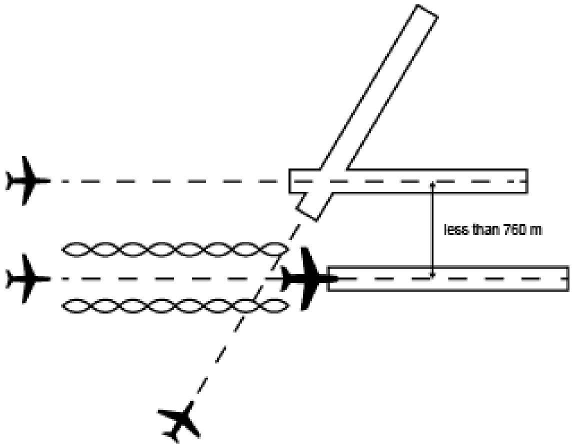
10.6.4 Wake turbulence standards - arrivals

10.6.4.1 Full length and crossing runway operations

Conditions	Diagram
Apply wake turbulence separation to arriving aircraft when: a) both aircraft are using the same runway for landing; b) an aircraft is landing and could still be airborne at the intersection of a crossing runway and a preceding departing or arriving aircraft on that crossing runway has rotated at or before the runway intersection or touched down at or beyond the intersection; c) a Light aircraft during its landing run will cross the flight path of, or intersection of a crossing runway, behind a departing Heavy or Super aircraft that has rotated at or before the intersection; or d) using parallel runways or an HLS when the runways or HLS are separated by less than 760 m unless the HLS location and projected flight path of the helicopter are located outside the wake turbulence envelope of the other aircraft. See MATS 10.6.1.3 VFR wake turbulence separation	See table and diagram below

Full length or crossing runway operations or crossing flight paths

Aircraft categories		Separation minima	
Leading aircraft	**Following aircraft**	**Time - min**	**Distance - NM**
Super	Heavy Medium Light	3 3 4	6 7 8
Heavy	Heavy Medium Light	Distance only 2 3	4 5 6
Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters	Light	3	5



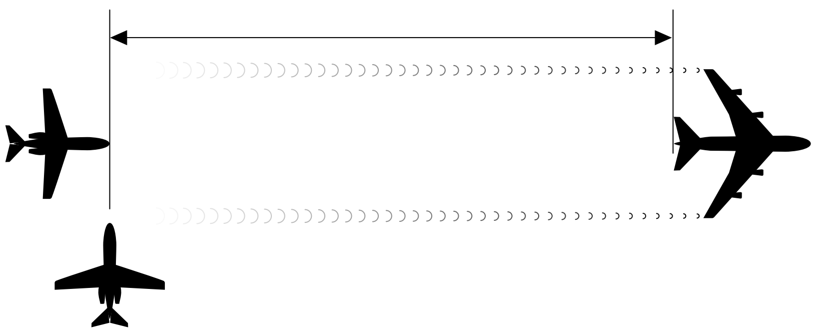
10.6.5 Wake turbulence standards - distance-based

10.6.5.1 Using a surveillance standard or aircraft report

Where you can determine the required separation by distance using an aircraft report or ATS surveillance system, you do not need to apply the time standard, unless the aircraft is departing from an intermediate point as described in Clause 10.6.2.2.

See MATS 10.6.2.2 Intermediate departures

10.6.5.2 Distance-based minima

<table>
<tr><th colspan="4">Distance-based wake turbulence minima</th></tr>
<tr><th rowspan="2">Application</th><th colspan="2">Aircraft categories</th><th>Separation minima</th></tr>
<tr><th>Leading aircraft</th><th>Following aircraft</th><th>NM</th></tr>
<tr><td rowspan="4">Apply distance based wake turbulence separation minima when:
a) an aircraft is directly behind and within 760 m laterally of another aircraft; or
b) both aircraft are using the same runway, or parallel runways separated by less than 760 m.
Note: Directly behind includes that portion of flight where one aircraft crosses the track of another aircraft</td><td>Super</td><td>Heavy
Medium
Light</td><td>6
7
8</td></tr>
<tr><td>Heavy</td><td>Heavy
Medium
Light</td><td>4
5
6</td></tr>
<tr><td>Medium fixed wing aircraft with MTOW of 25 000 kg or more and all Medium helicopters</td><td>Light</td><td>5</td></tr>
<tr><td colspan="3"></td></tr>
</table>

10.7 Visual - ATC

10.7.1 Identification of aircraft

10.7.1.1 Establish positive identification

Establish positive identification before providing visual separation as follows:

a) by the use of an ATS surveillance system as described in Clause 9.7.2.7 or by use of a TSAD as described in Clause 12.9.4.7 (d);

b) by day:
   i) identification by type;
   ii) identification by distinguishing markings if aircraft are of the same type; or
   iii) identification by observing a change of heading or altitude of one of the relevant aircraft; and

c) by night:
   i) momentarily extinguishing navigation lights;
   ii) select flashing navigation lights to steady;
   iii) extinguish hazard beacon;
   iv) momentarily switch on landing lights; or
   v) change heading.

See MATS 9.7.2.7 Identification by visual observation
See MATS 12.9.4.7 Aircraft identification

10.7.2 Separation using visual observation

10.7.2.1 Reduction in separation

You may reduce the specified separation minima in the vicinity of aerodromes when adequate separation can be provided using visual observation and each aircraft is continuously visible to the aerodrome controller.

10.7.2.1.1 Exceptions

Provided the aircraft can be visually reacquired, it is acceptable to:

a) intermittently look away from the aircraft; and

b) allow an aircraft to be temporarily obscured from view, for example, due to cloud or terrain.

10.7.2.2 Projected flight paths

Only provide visual separation when the projected flight paths of the aircraft do not conflict.

10.7.2.2.1 Tracking tolerances

Allow for the applicable tracking tolerances on the projected flight path.

10.7.2.3 Considerations

When applying visual separation, consider:

a) aircraft performance characteristics, particularly in relation to faster following aircraft and closure rates;
b) position of the aircraft relative to each other;
c) projected flight paths of the aircraft;
d) possibility of an ACAS RA due to closer proximity of operation;
e) known weather conditions; and
f) the possibility of visual errors.

See MATS 10.7.2.8 Use of relative distance or height

10.7.2.4 Tower separates for approach

Where applicable, the Tower may provide visual separation as coordinated with Approach provided that:

a) the Tower is in agreement and accepts responsibility for the provision of such visual control;
b) where required, the aircraft concerned are on the aerodrome control frequency; and
c) where required, approach releases specific airspace to the Tower for the purpose of providing such control.

10.7.2.5 Traffic information

Provide traffic information where, in your judgement, one aircraft may observe the other aircraft either visually or by ACAS and could be uncertain of the intention of that aircraft.

10.7.2.6 Binoculars

You may use binoculars to supplement normal vision.

10.7.2.7 Use of azimuth

In providing visual separation, primarily use azimuth.

10.7.2.8 Use of relative distance or height

Only conduct visual separation by judgement of relative distance or height when there are wide margins, and there is no possibility of the aircraft being in close proximity.

Note: *Visual determination of the relative distance of aircraft in close proximity can be in error or affected by optical illusion.*

10.7.2.9 Beyond Tower view

Consider two approaching aircraft to be separated while the second approaching aircraft is on final approach beyond view of the tower controller if, before commencing such final approach, the first approaching aircraft:

a) has been sighted by the tower controller, there is reasonable assurance that a landing can be accomplished and it is clear that no conflict will occur; or

b) has reported commencing a missed approach and is proceeding from a point and on a clearance which will permit separation to be maintained should the second aircraft miss its approach.

10.7.2.9.1 DME or GNSS arrival

When the second of the two aircraft will follow a DME or GNSS arrival procedure, consider final approach to commence when the aircraft passes a point 10 NM from the aerodrome.

10.7.2.9.2 Clearance before 10 NM

Unless you can clear the following aircraft for the DME or GNSS arrival before passing 10 NM from the aerodrome, provide another form of separation.

10.8 Visual - pilot

10.8.1 Applying visual separation

10.8.1.1 Visual separation by pilot

You may only assign responsibility for visual separation to a pilot when:

a) aircraft are operating at or below 10 000 FT; and
b) the pilot of one aircraft:
   i) reports sighting the other aircraft; and
   ii) accepts responsibility to maintain own separation with or follow that aircraft.

Note: *The pilot will maintain separation while complying with ATC instructions.*

10.8.1.1.1 Considerations before assigning responsibility

Before assigning responsibility for visual separation to a pilot, consider the following:

a) aircraft performance characteristics, particularly in relation to faster following aircraft and closure rates;
b) position of the aircraft relative to each other;
c) projected flight paths of the aircraft;
d) possibility of an ACAS RA due to closer proximity of operation; and
e) known weather conditions.

10.8.1.1.2 Limitations to visibility

Consider the following limitations to a pilot's ability to maintain visual separation responsibility:

a) the field of vision from the cockpit;
b) the contrast of aircraft with the background against which it will appear;
c) glare of the sun; and
d) restrictions on atmospheric visibility which may not be currently apparent to the pilot e.g. loss of forward visibility following descent into a haze layer.

10.8.1.2 Maintain separation

When the pilot of one aircraft has been assigned the responsibility for visual separation from a second aircraft, do not alter the clearance of the second aircraft unless you are certain that visual separation can be maintained.

10.8.1.3 Alternative instruction

Issue an alternative instruction to provide separation if there is any doubt as to the pilot’s ability to keep the other aircraft in sight or maintain separation.

10.8.1.4 Pass traffic information

When assigning visual separation responsibility to the pilot, pass traffic information in sufficient time and detail to enable the pilot to identify and maintain separation from other aircraft.

See MATS 9.1.6 Traffic information assessment and content

10.8.1.4.1 IFR aircraft

When an aircraft is instructed to maintain own separation from an IFR aircraft, also issue traffic information to the IFR aircraft, including advice of assignment of responsibility for separation to other aircraft.

10.8.1.4.2 Sequence number

Advise pilots of their number in the landing sequence to assist in identification of traffic.

10.8.1.4.3 Pilot corroboration

When necessary, obtain corroborative evidence from the pilot of one aircraft on the relative position of the second aircraft.

10.9 Aerodrome

10.9.1 Applying aerodrome separation

10.9.1.1 Separation standards

Apply the wake turbulence standards in conjunction with the runway standards when providing runway separation.

10.9.1.1.1 Military aircraft

You may apply different standards between military aircraft as required by the relevant military authority.

10.9.1.1.2 Equal application

Apply runway separation standards equally to runway operations or to a strip having a single landing and take-off path.

10.9.1.2 Pilot confirmation of position

When take-off or landing separation is based on the position of a preceding landing or taxiing aircraft and visual determination is limited, particularly at night or in reduced visibility, by poor azimuth resolution or other factors, instruct the pilot of that aircraft to report when the aircraft has:

a) crossed and is clear of a runway intersection;
b) stopped short of a runway strip; or
c) vacated the runway.

See MATS 12.9.3.1 Augment visual observation

10.9.1.3 Adjacent Class C and Class D

At Class D aerodromes, treat IFR aircraft or aircraft operating on a special VFR clearance due cloud, established on tower frequency and operating in the aerodrome traffic circuit as VFR for the purpose of separation with aircraft in adjacent Class C airspace.

10.9.2 Separation between arriving and departing aircraft

10.9.2.1 Lateral separation exists

Lateral separation exists between an arriving aircraft and a departing aircraft cleared on a segregated flight path provided the departing aircraft commences take-off before the arriving aircraft commences final approach.

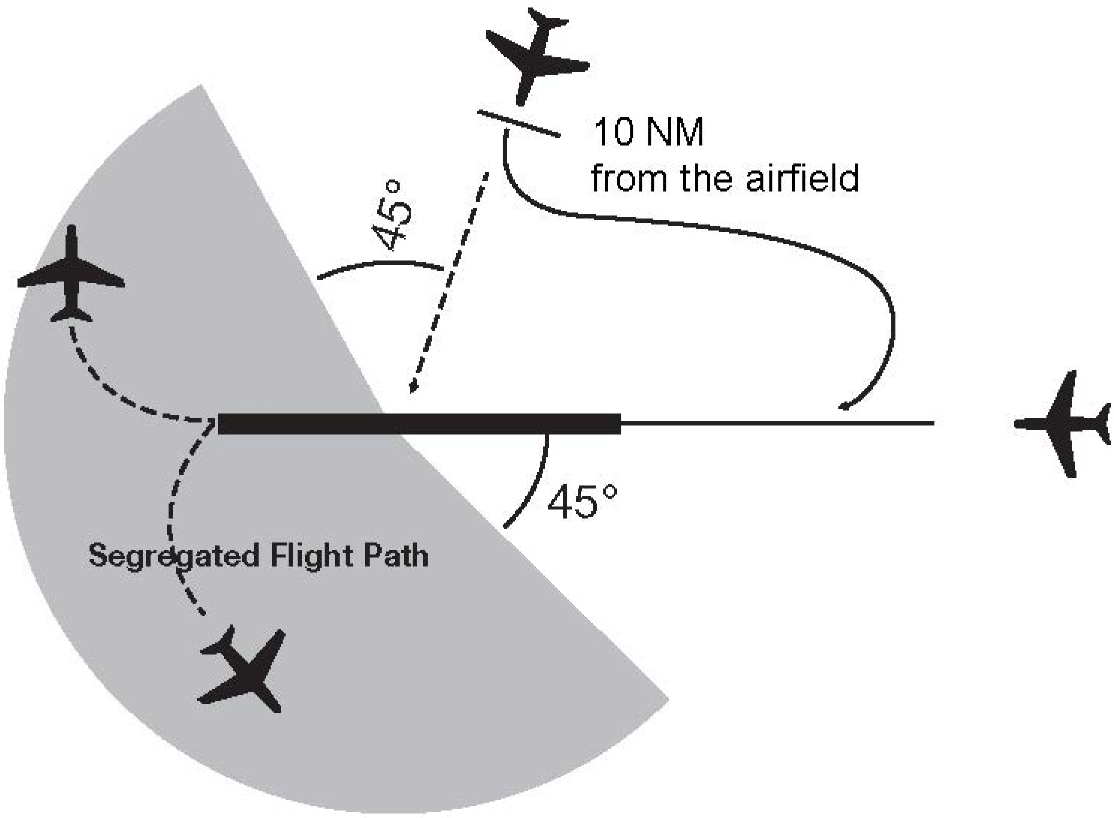
Note 1: *A segregated flight path exists when the departing aircraft will not be manoeuvring within 45 degrees either side of the final approach path of the arriving aircraft.*

Note 2: *For aircraft carrying out a DME or GNSS arrival, final approach commences when the aircraft passes a point 10 NM from the aerodrome. For the application of a segregated flight path:*

a) When an aircraft is cleared a Sector DME or GNSS arrival, apply 45 degrees either side of the sector boundary unless the aircraft is cleared on a specific track; and

b) An IFR aircraft cleared for a Visual Approach complies with the requirements of a DME/GNSS arrival.

10.9.2.1.1 Diagram for DME or GNSS arrivals



10.9.2.1.2 Use GNSS distance

When an aircraft is carrying out a GNSS arrival, GNSS distances may be used to determine when final is commenced.

10.9.2.2 Take-off after commencing final

Except as specified in Clauses 10.9.2.2.1 to 10.9.2.3, do not permit take-offs after an arriving aircraft has commenced final approach until:

a) the arriving aircraft is sighted by the tower controller and is reasonably assured of landing; or

b) separation can be assured if the arriving aircraft conducts a missed approach.

See MATS 10.9.2.2.1 Final for straight-in instrument approach

See MATS 10.9.2.3 Increase distances

10.9.2.2.1 Final for straight-in instrument approach

When an aircraft has commenced final of a straight-in instrument approach, an aircraft may commence take-off provided that:

a) the departing aircraft is cleared on a segregated flight path;

b) the arriving aircraft has not passed a point 5 NM from the landing threshold as determined either by:

   i) ATS surveillance system; or

   ii) DME or GNSS report adjusted for the distance between the landing threshold in use and the DME site;

c) separation will exist at the time the take-off is commenced;

d) the ATS surveillance system position symbol or DME or GNSS report is used to confirm that separation is not infringed; and

e) when an ATS surveillance system described in Clause 10.2.2.2 is used to determine the position of the arriving aircraft, ensure it is not closer than 3 NM from the landing threshold at the time a departing aircraft:

   i) commences take-off on the runway to be used by the landing aircraft; or

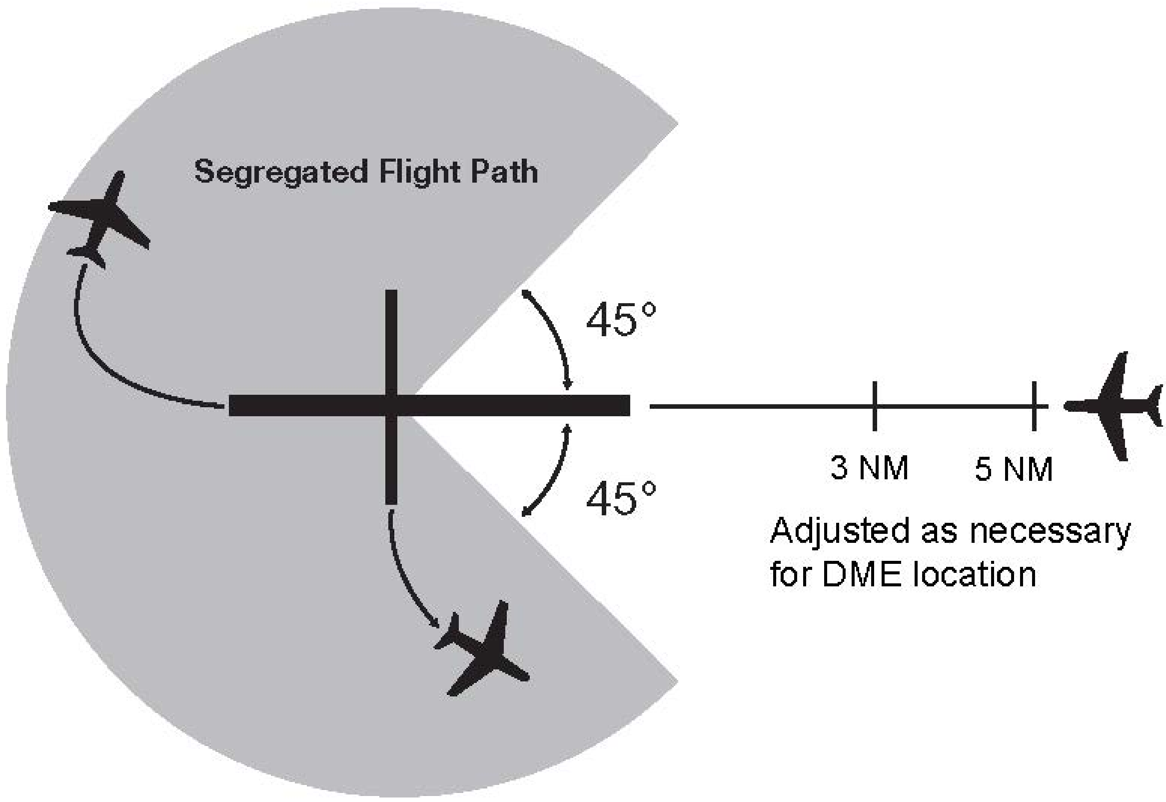
   ii) crosses the intersection of the runway to be used by the landing aircraft.

Note 1: *The specified distances of 3 NM and 5 NM include an allowance for equipment errors.*

Note 2: *A segregated flight path exists when the departing aircraft will not be manoeuvring within 45 degrees either side of the final approach path of the arriving aircraft.*

See MATS 10.2.2.2 S1 - 3 NM

10.9.2.2.2 Diagram for straight-in instrument approach



10.9.2.3 Increase distances

Increase distances contained in MATS Clauses 10.9.2.1 and 10.9.2.2.1 as appropriate to ensure that separation will be maintained:

a) when missed approaches are likely;

b) if a tailwind component exists on final approach; or

c) a faster type aircraft is approaching in respect of a slower type aircraft taking off.

See MATS 10.9.2.1 Lateral separation exists

See MATS 10.9.2.2.1 Final for straight-in instrument approach

10.9.3 Runway separation standards - take-off

10.9.3.1 Behind a preceding departing aircraft

Apply the 'take-off behind a preceding departing aircraft' standard to fixed wing aircraft provided that you do not permit a departing aircraft to commence take-off unless the preceding departing aircraft:

a) has crossed the up-wind end of the runway-in-use;

b) has commenced a turn;

c) is airborne and has reached a point at least 1800 m (6000 FT) ahead of the following aircraft provided the runway is longer than 1800 m (6000 FT) and the distance can be readily determined;

d) is airborne and has reached a point at least 600 m (2000 FT) ahead of the following aircraft provided the:

   i) preceding aircraft has an MTOW of 7000 kg or less;

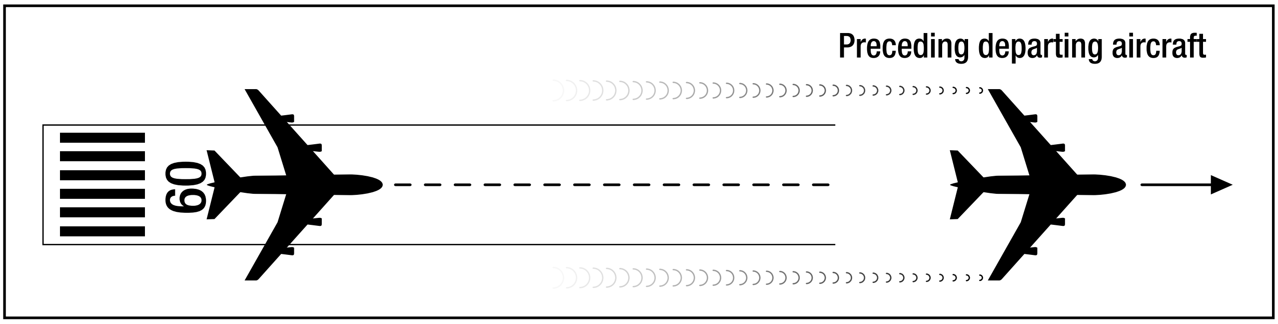
   ii) following aircraft has an MTOW of less than 2000 kg; and

   iii) following aircraft is slower than the preceding aircraft;

   or

e) is airborne and has reached a point at least 600 m (2000 FT) ahead of the following aircraft provided both aircraft have an MTOW of less than 2000 kg.

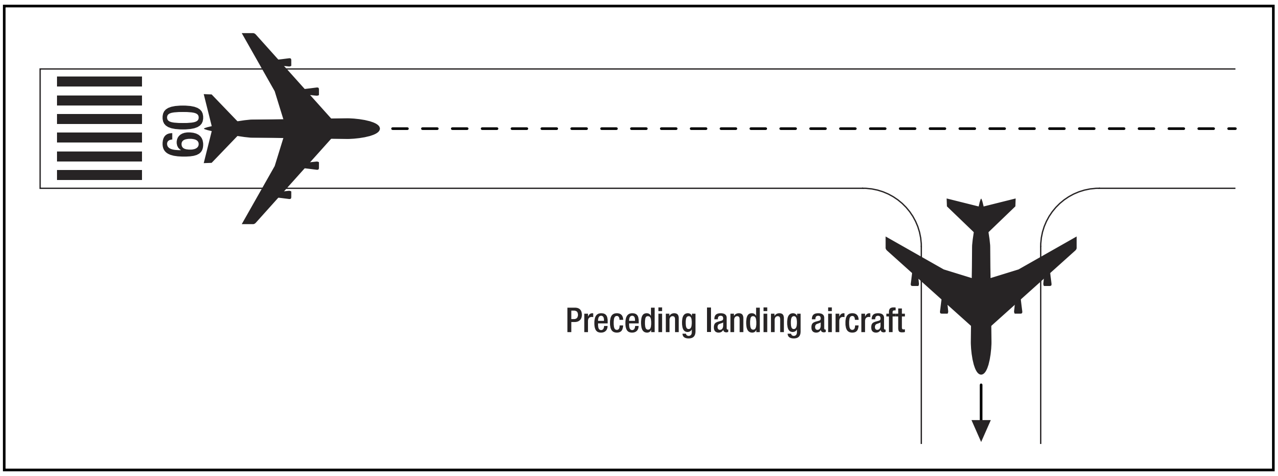
10.9.3.1.1 Take-off behind a preceding departing aircraft



10.9.3.2 Behind a preceding landing aircraft

Apply the 'take-off behind a preceding landing aircraft' standard to fixed wing aircraft provided you do not permit the departing aircraft to commence take-off until the preceding aircraft has vacated and is taxiing away from the runway.

10.9.3.2.1 Take-off behind a preceding landing aircraft



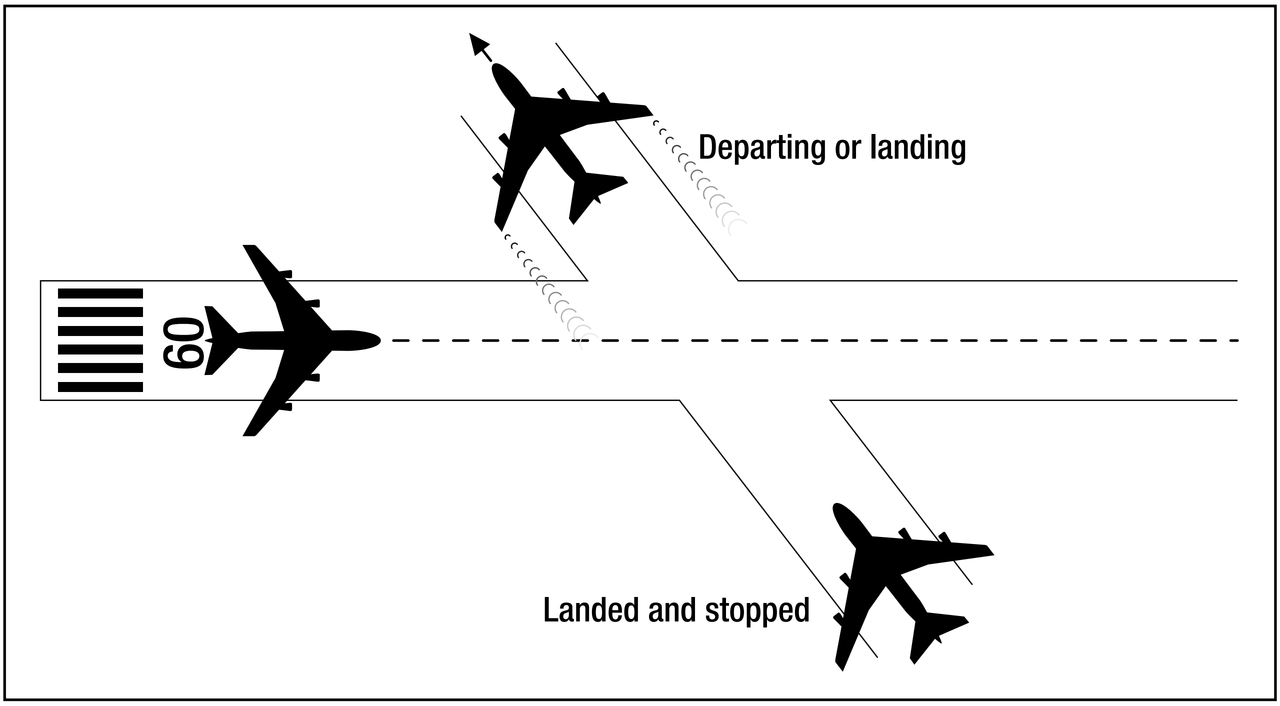
10.9.3.3 Behind landing or departing aircraft on intersecting runways

Apply the 'take-off behind landing or departing aircraft on intersecting runways' standard to fixed wing aircraft, provided that you do not permit a departing aircraft to commence take-off until:

a) a preceding departing aircraft on an intersecting runway has crossed the intersection; or

b) an aircraft landing on the crossing runway has either crossed the intersection or stopped short.

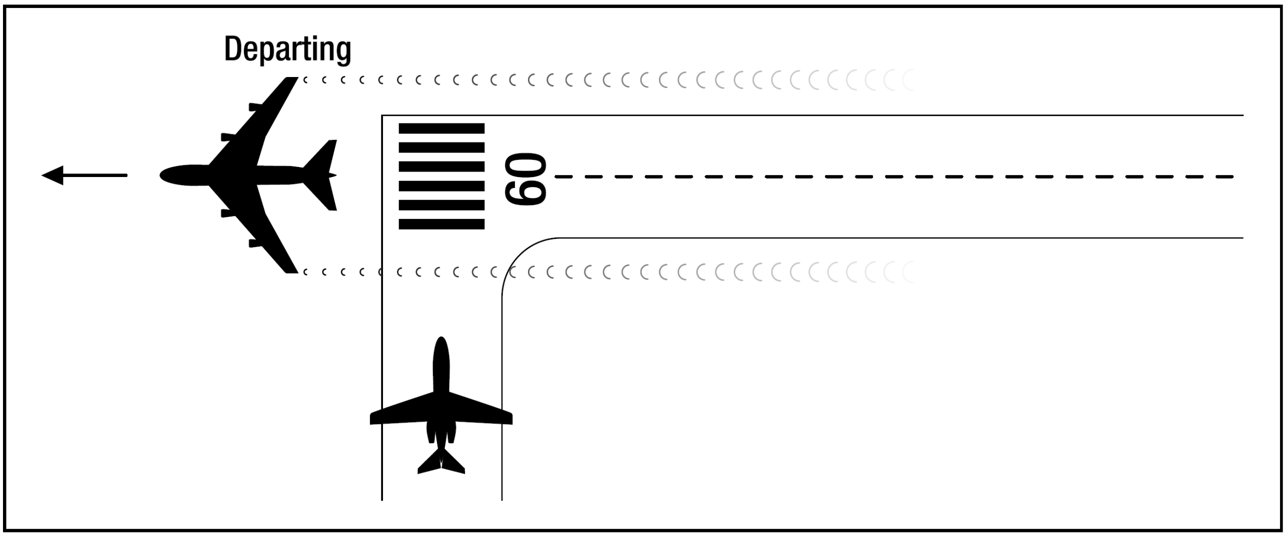
10.9.3.3.1 Take-off behind landing or departing aircraft on intersecting runways



10.9.3.4 After an aircraft has departed in the opposite direction

Apply the 'take-off after an aircraft has departed in the opposite direction' standard to fixed wing aircraft, provided you do not permit a departing aircraft to commence take-off until the preceding aircraft has crossed the point at which the following aircraft will commence take-off.

10.9.3.4.1 Take-off after an aircraft has departed in the opposite direction



10.9.3.5 Application of runway departure separation standards - helicopters

Where a helicopter requires a take-off roll and uses a runway prior to becoming airborne, you may clear the helicopter for take-off when the preceding departing aircraft is airborne and visual separation is applied.

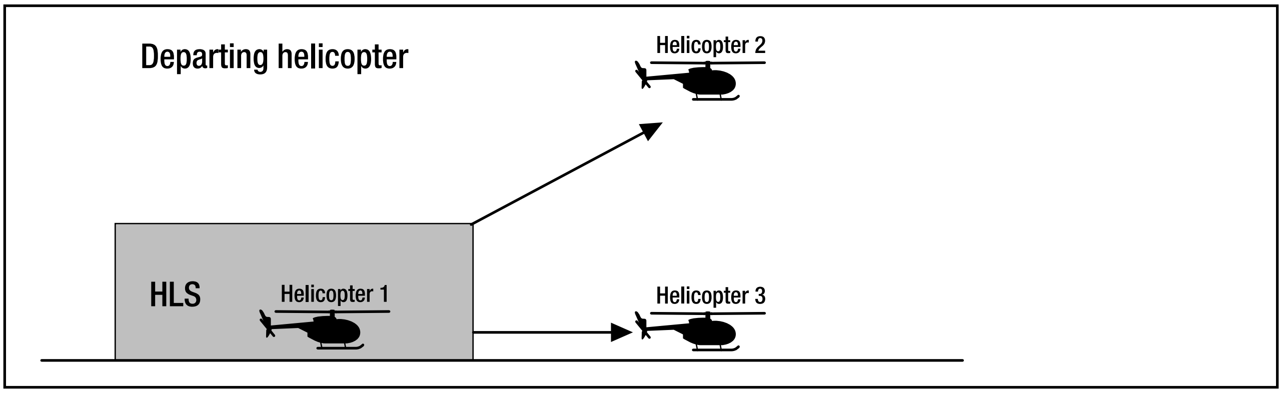
10.9.3.6 Helicopter departing from a HLS

Apply the 'take-off helicopter' standard to departing helicopters. You may clear helicopter 1 for take-off when:

a) a preceding departing helicopter 2 has departed the HLS; or

b) a preceding arriving helicopter 3 has moved clear of the HLS.

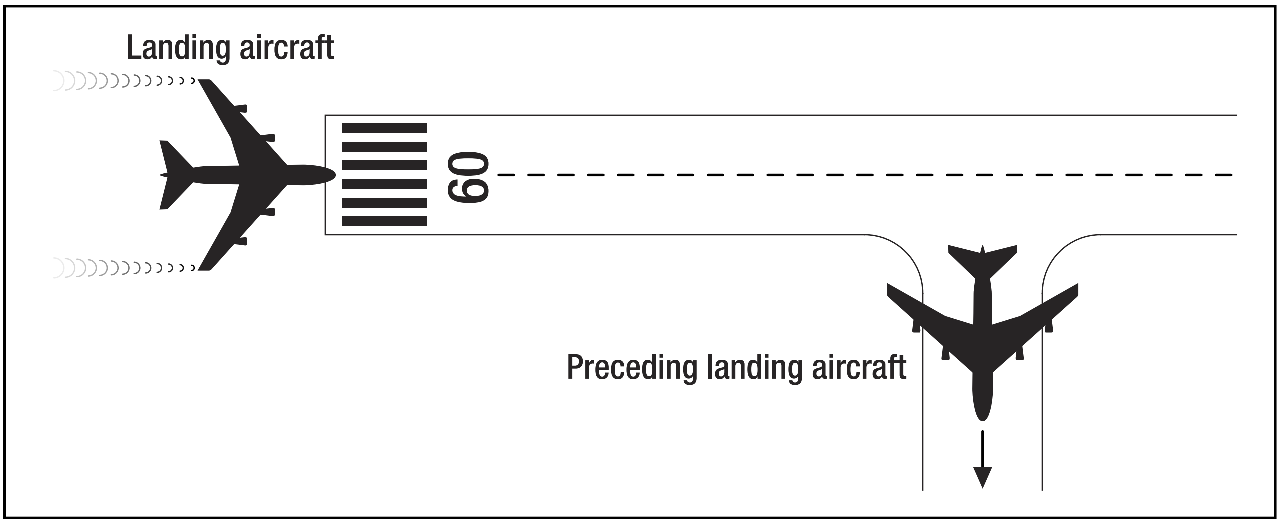
10.9.3.6.1 Take-off helicopter



10.9.4 Runway separation standards - landing

10.9.4.1 Behind a preceding landing aircraft

Apply the 'landing behind a preceding landing aircraft' standard to fixed wing aircraft, provided you do not permit a landing aircraft to cross the runway threshold until the preceding aircraft has vacated and is taxiing away from the runway.

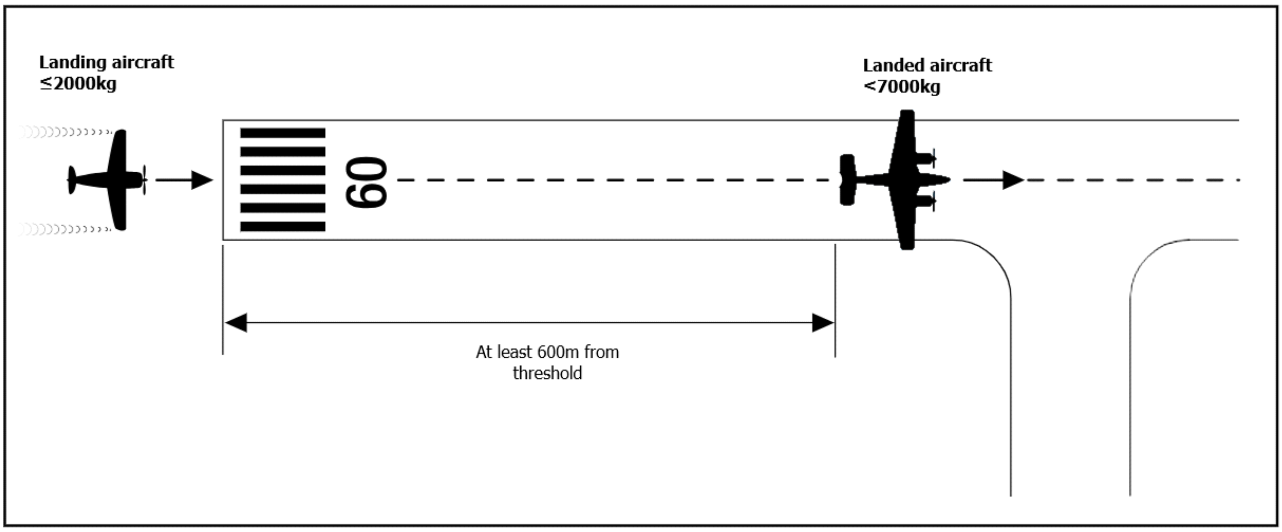


10.9.4.1.1 MTOW exception - less than 7000 kg

Apply the 'landing behind a preceding landing aircraft' standard to fixed-wing aircraft, provided that you do not permit a landing aircraft to cross the runway threshold until the preceding aircraft has landed and has passed a point at least 600 m from the threshold of the runway, is in motion and will vacate the runway without backtracking and:

a) the preceding aircraft has an MTOW of less than 7000 kg; and

b) the following aircraft has an MTOW of 2000 kg or less.



10.9.4.1.2 MTOW exception - 7000 kg or more

Apply the 'landing behind a preceding landing aircraft' standard provided you do not permit a landing aircraft to cross the runway threshold until the preceding aircraft has landed and has passed a point at least 2400 m from the threshold of the runway, is in motion and will vacate the runway without backtracking and:

a) the preceding aircraft has an MTOW of 7000 kg or more;

b) application is during the hours of daylight, from 60 minutes after first light to 60 minutes before last light;

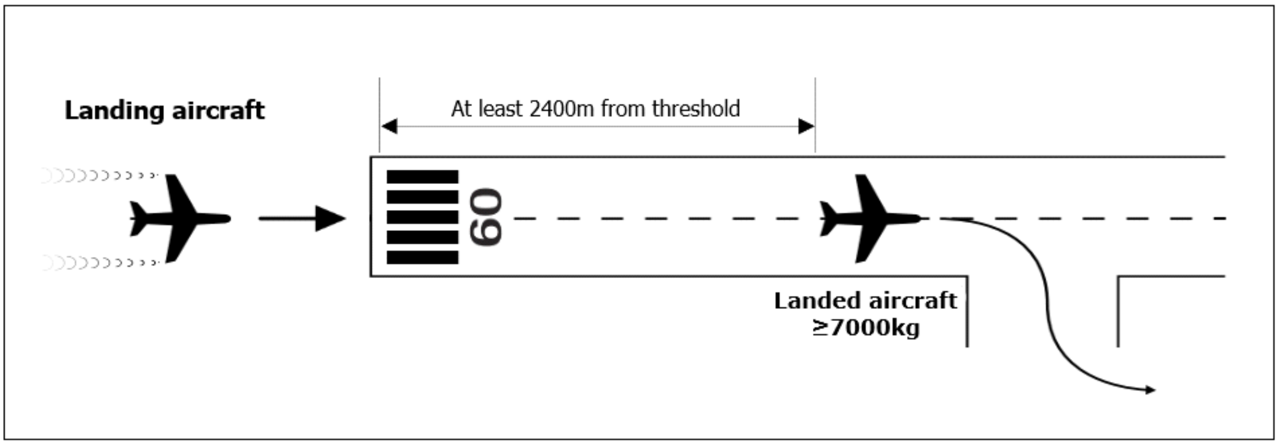
c) visibility is at least 5 km and cloud ceiling is 1000 FT or more;

d) tailwind component does not exceed 5 kt;

e) traffic information is provided to the following aircraft;

f) the runway is dry or the braking action is assessed as 'good'; and

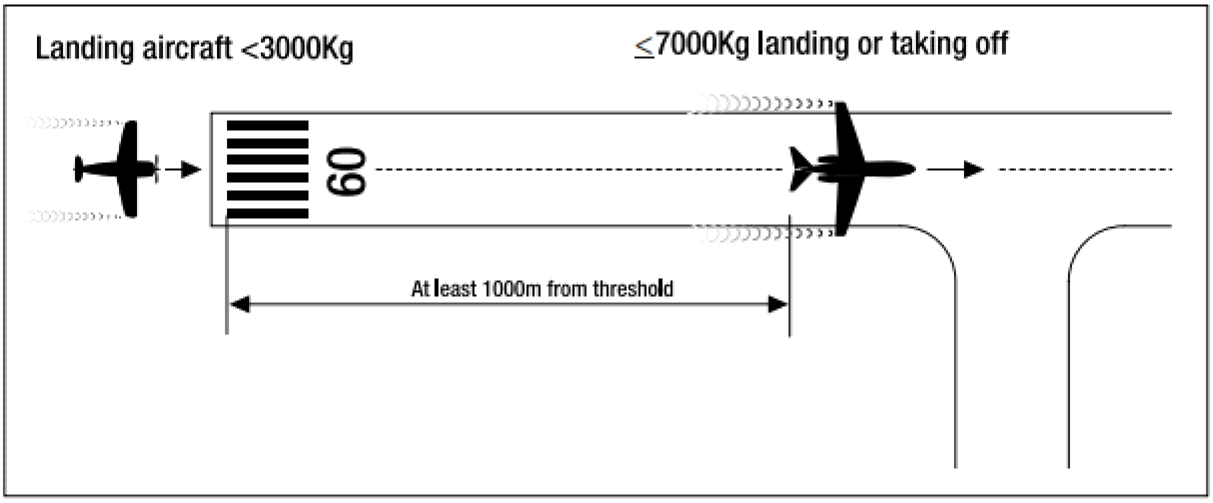
g) the runway has been approved for reduced runway separation by the ATMSL or the appropriate Defence authority.



10.9.4.2 Behind preceding departing or landing

Apply the 'landing behind preceding departing or landing' standard to fixed-wing aircraft, provided you do not permit a landing aircraft to cross the runway threshold unless:

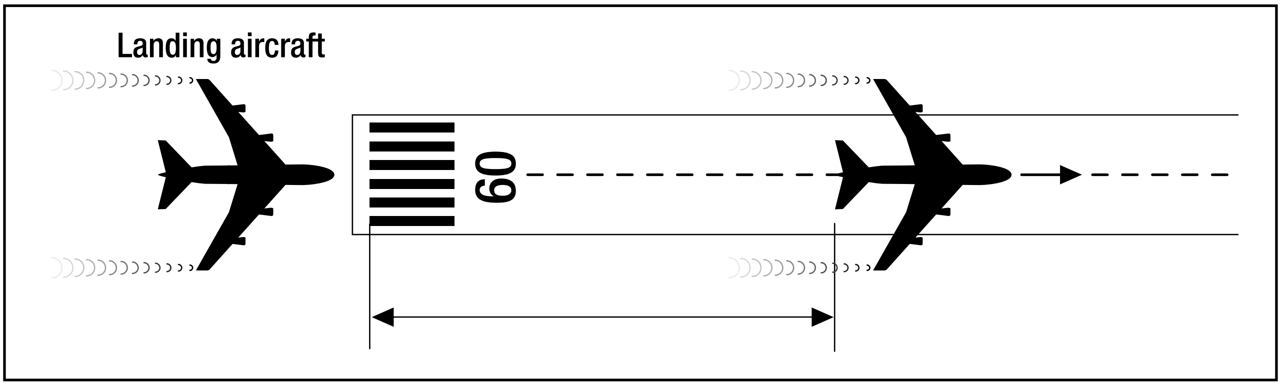
a) the landing aircraft has an MTOW below 3000 kg and is a Performance Category A aircraft; and
b) the preceding aircraft has an MTOW of 7000 kg or less, is at least 1000 m from the threshold of the runway and:
   i) if landing, will vacate the runway without backtracking; or
   ii) if departing, has commenced its take-off run.



10.9.4.3 Behind a preceding departing aircraft

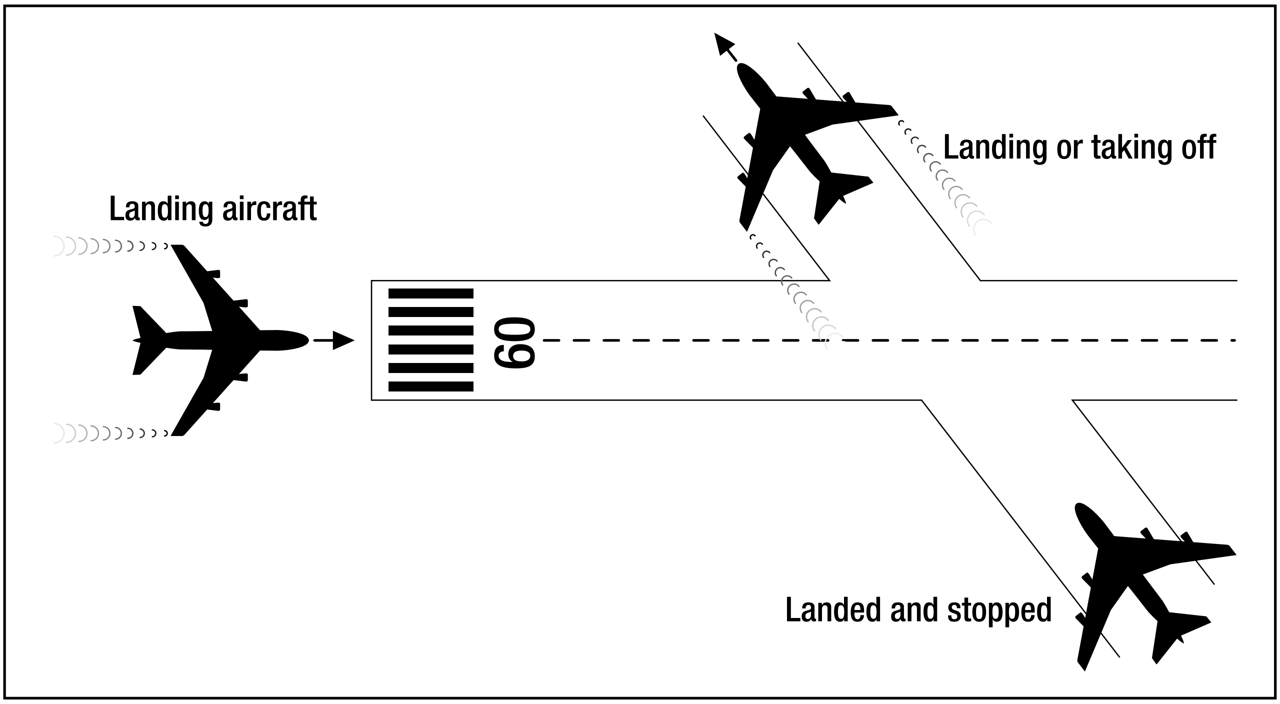
Apply the 'landing behind a preceding departing aircraft' standard to fixed wing aircraft, provided that you do not permit the landing aircraft to cross the runway threshold until the preceding aircraft is airborne and:

a) has either commenced a turn; or
b) 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 enable the landing aircraft to manoeuvre safely in the event of a missed approach.



10.9.4.4 After intersecting runway traffic

Apply the 'landing after intersecting runway traffic' standard to fixed wing aircraft, provided that you do not permit the landing aircraft to cross the runway threshold until a preceding departing or landing aircraft on an intersecting runway has either crossed the intersection or stopped short.

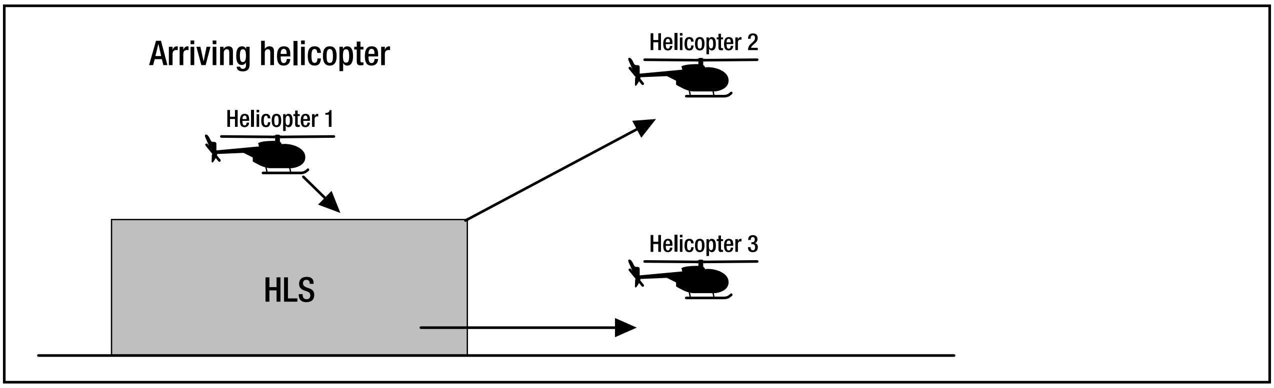


10.9.4.5 Helicopter landing - HLS

You may clear helicopter 1 to land when:

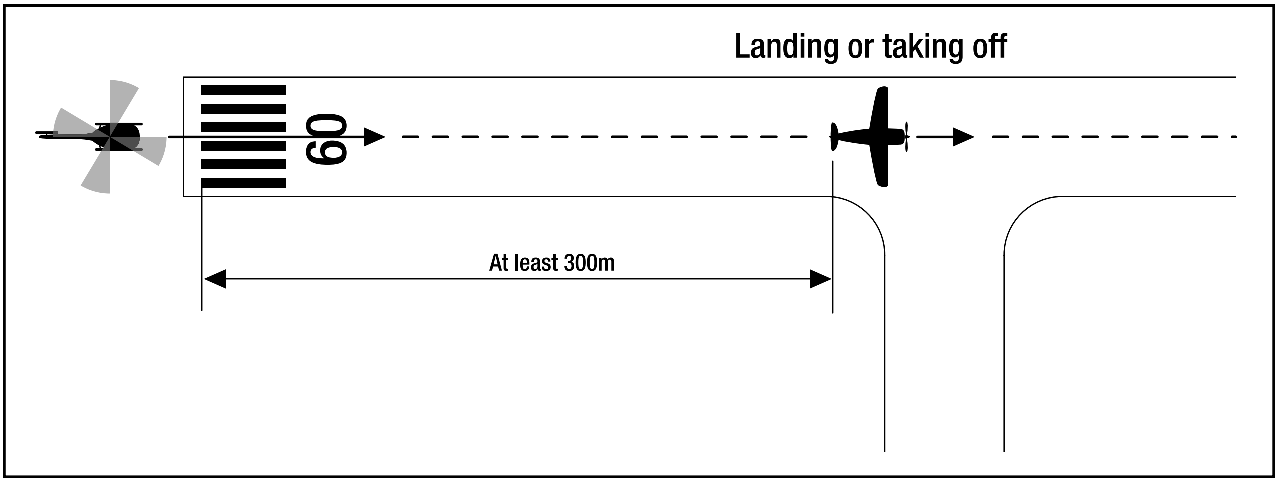
a) departing helicopter 2 has left the HLS; or

b) the preceding arriving helicopter 3 has moved clear of the HLS.



10.9.4.6 Helicopter landing - runway

You may permit the landing helicopter to land when the preceding landing or departing aircraft is at least 300 m down the runway from the landing threshold.



10.9.5 Land and Hold Short Operations

10.9.5.1 When LAHSO is applied

Notwithstanding aerodrome separation standards, you may permit operations by an aircraft landing on one runway and another aircraft either taking off or landing simultaneously on a crossing runway, subject to the provisions of LAHSO.

10.9.5.2 Aircraft classification

Consider LAHSO to be a dependent procedure with participating aircraft classified as either:

a) active - when an aircraft is issued a hold short requirement and is alerted about traffic on a crossing runway; or

b) passive - when an aircraft has unrestricted use of the full runway length and is alerted about traffic on a crossing runway.

10.9.5.3 Active participation

Active participation in LAHSO is available to pilots of:

a) Australian registered aircraft of Performance Categories A, B or C (or other categories specifically approved by CASA Airline Operations Branch) engaged in operations conducted under a training and checking organisation authorised under CAR 217, subject to the operator providing Operations Manual information and certifying participating pilots for LAHSO;

b) Australian registered aircraft of performance categories A, B or C where the pilot's log book is endorsed for LAHSO by a chief pilot, chief flying instructor, or a person approved in writing by CASA to conduct LAHSO training;

c) Australian military aircraft in Performance Categories A, B, C;

d) foreign military aircraft in Performance Categories A, B, C subject to a Letter of Agreement between the relevant military authority and the ATS provider; and

e) Operators and aircraft contained in an exemption issued by CASA under CASRs.

10.9.5.4 Passive participation

Passive participation in LAHSO is available to pilots of:

a) Australian civil and military aircraft categories A, B and C at pilot discretion;

b) other civil aircraft, including foreign operators, as approved by CASA;

c) RAAF HAWK, FA18 and other Australian military aircraft as approved by the relevant Operational Airworthiness Authority;

d) foreign military aircraft approved by Defence, operating at Defence aerodromes, subject to a Letter of Agreement;

e) foreign military aircraft subject to a Letter of Agreement between the relevant military authority and the civil ATS provider (the Letter of Agreement will exclude foreign military aircraft of performance category D operating at civil aerodromes); and

f) Operators and aircraft contained in an exemption issued by CASA under CASRs.

10.9.5.5 LAHSO exemptions

CASA has issued exemptions to the following operators/aircraft types to actively and passively participate in LAHSO:

a) Airbus A320, A20N and A21N aircraft operated by Air New Zealand Limited;

b) Airbus A321, A21N and Boeing B788 series aircraft operated by Jetstar Airways Pty Limited;

c) Boeing B789 series aircraft operated by Qantas Airways Limited; and

d) Airbus A321 and Boeing B763 series aircraft operated by Express Freighters Australia Pty Limited.

10.9.5.6 LAHSO participation

The following operators have notified ability to participate in LAHSO at the following locations:

Location	Active and passive	Passive only
Darwin	Alliance, Bonza, Cobham Regional Services, Jetstar, Qantas, QantasLink, REX and Virgin	
Melbourne	Alliance, Bonza, Cobham Regional Services, Jetstar, Qantas, QantasLink, REX and Virgin	

10.9.5.7 Pilot requirements

Pilots who expect and elect to participate actively in LAHSO are required to:

a) obtain the ATIS/CATIS/DATIS broadcast as early as possible;

b) if within 200 NM of destination, and if LAHSO is in progress, immediately confirm ability to participate by advising 'LAHSO APPROVED' to the ATS unit currently providing services; and

c) advise ATS as soon as possible if situational awareness is compromised and they are not able to hold short.

10.9.5.7.1 Exceptions

Pilots of civil aircraft operating under a FNC and pilots of Australian military aircraft may omit the words 'LAHSO APPROVED' as required above.

10.9.5.7.2 Sequencing

You may sequence these aircraft for LAHSO unless the pilot expressly states an intention not to participate.

10.9.5.8 Ineligible for LAHSO

Do not permit pilots of foreign registered civil aircraft and of Australian registered aircraft operating under foreign air carrier FNC to participate actively or passively in LAHSO unless specifically approved.

Note 1: *Operators of aircraft in any category may elect not to allow their pilots to participate in LAHSO. They are required to advise ATS in writing, specifying the company's withdrawal from active, passive or both modes of participation.*

Note 2: *Qantas A388 aircraft are excluded from active participation in LAHSO.*

See MATS 10.9.5.3 Active participation

See MATS 10.9.5.4 Passive participation

10.9.5.9 Conditions

LAHSO are subject to the following conditions:

a) Do not permit LAHSO when either runway is contaminated;

b) Runways are equipped with standard LAHSO signs, lights and runway markings as specified in AIP Aerodromes (AD);

c) Cloud ceiling is not less than the highest sector MVA, as specified in local instructions, within 8 KM (5 NM) of the aerodrome and visibility not less than 8 KM;

d) Active and passive participation is restricted to nominated runways as per Clause 12.2.1;

e) For active participants, ground based visual or electronic glide slope guidance is available; and

f) No wind shear is reported.

See MATS 12.2.1 Selection of runway in use

Note: *A runway not broadcast on the ATIS/CATIS/DATIS but offered to an aircraft is considered to be runway nomination.*

10.9.5.9.1 Transitioning from LAHSO to non-LAHSO mode

During the period where conditions change from LAHSO mode to a non-LAHSO mode:

a) you may allow aircraft established on final within the IAF to continue to land on the arrival runway provided:

   i) you advise the pilot of the revised landing conditions;

   ii) the pilot accepts the changed conditions and elects to continue the approach; and

   iii) you restate any hold short instruction; and

b) aircraft beyond the IAF, and any departures are processed for the new runway as per runway change processes detailed in local instructions.

10.9.5.9.2 Exception - aircraft landing without external glide slope guidance

You may issue an aircraft landing Runway 36 at Darwin a hold short requirement when:

a) it is by day; and

b) the aircraft is a non-jet of less than 5700 kg MTOW of performance CAT A or B.

10.9.5.9.3 LAHSO termination

Terminate LAHSO for any situation or weather condition which, in the judgement of the tower controller/supervisor, would adversely affect LAHSO.

10.9.5.9.4 Reduction in weather values

The weather criteria in Clause 10.9.5.9 c) may be reduced to ceiling not less than the MVA for the sector and visibility not less than 5000 m when sector observation(s) indicate that:

a) tower controllers are assured of visually acquiring the aircraft before the loss of a surveillance standard; and

b) cloud ceiling allows for visual separation to be applied to missed approach(es), until another form of separation is established.

See MATS 10.9.5.9 Conditions

10.9.5.9.5 Allowance for missed approaches

Where conditions exist that increase the likelihood of missed approaches, tower controllers must advise the TCU. TCU will advise a heading or range of headings that may be used by tower, without further coordination.

In the event of a missed approach, or dual missed approaches, the tower is responsible for maintaining visual separation until such time as another separation standard may be applied.

10.9.5.9.6 Simultaneous landings

You may permit simultaneous landings by day and night.

10.9.5.9.7 Simultaneous take-off and landing

Only permit simultaneous take-off and landing by day.

10.9.5.9.8 Low level wind shear

Do not give a 'HOLD SHORT' requirement when low level wind shear is reported.

10.9.5.9.9 Runway not dry

When the runway is not dry, only issue a 'HOLD SHORT' requirement if the braking action is assessed as GOOD by a pilot of an aircraft in the same performance category.

Until the runway becomes dry, obtain pilot reports of runway braking action hourly or with the next arrival whichever is the later.

10.9.5.10 Responsibilities

When applying LAHSO:

a) ensure that the occulting runway hold short lights are illuminated at all times that LAHSO are in progress;

b) ensure that the published distance from the landing threshold to the hold short point of the crossing runway is adequate for the performance category of the aircraft;

c) nominate LAHSO and both the active and passive runways:

   i) on the ATIS/CATIS/DATIS; or

   ii) where ATIS/CATIS/DATIS is not serviceable, by directed advice prior to transfer to tower;

d) issue directed traffic information to both aircraft participating in the procedure;

e) ensure readback of a 'HOLD SHORT' requirement; and

f) withhold issuing a take-off clearance to a departing aircraft while another aircraft is landing on a crossing runway having been issued with a duly acknowledged 'HOLD SHORT' requirement, until such time that there is reasonable assurance that both aircraft will not occupy the intersection at the same time, should the landing aircraft subsequently fail to hold short.

Note: *To point c) the words 'active' and 'passive' are not required to be included.*

10.9.5.11 Requiring a pilot report

When circumstances warrant, you may require a pilot issued with a HOLD SHORT requirement to report '(*callsign*) HOLDING SHORT'.

Note: *Situations which may warrant such a requirement include wet weather conditions, or to assist in the application of Clause 10.9.5.10 f) above. The pilot report may be made when the aircraft is decelerating and the pilot is satisfied that the HOLD SHORT requirement can be complied with.*

See MATS 10.9.5.10 Responsibilities

10.9.5.12 Hold short no longer applicable

Advise pilots when a 'HOLD SHORT' instruction no longer applies.

10.9.5.13 Crossing of runway and non-operational end

By day when a landing aircraft has been issued with requirements to hold short of a crossing runway strip, you may permit aircraft and vehicles to cross the upwind end of the runway, beyond the hold short point, provided the crossing is authorised by the Aerodrome Controller and traffic information is provided to both.

10.9.6 Landing distance for LAHSO

10.9.6.1 LDA for LAHSO

You may sequence participating aircraft for LAHSO regardless of category if you are aware that the aircraft may be able to land within the LDA. In all circumstances, the pilot is required to determine whether the LDA is sufficient in the prevailing conditions.

10.9.6.1.1 Non-jet Category B

You may sequence non-jet Category B aircraft below 5700 kg MTOW for LAHSO where the LDA, published in ERSA RDS, is determined by the pilot as suitable.

10.9.6.1.2 Airline LDR

Use the following minimum LDR for active participation in LAHSO:

Airline	Minimum LDR
Bonza	2400 m
Cobham Regional Services	1674 m
Jetstar	2200 m
Qantas	2000 m
Virgin	2200 m

10.9.6.1.3 Reduced LDRs

You may apply reduced LDRs, as determined by CASA, provided that a Letter of Agreement between the ATS Provider/Defence and an aircraft operator has been approved by the local CASA District Office.

10.9.7 Letters of agreement for LAHSO

10.9.7.1 Foreign military

Letters of agreement are raised between relevant ATS providers and any foreign military authority following an initial request from the relevant military authority.

10.9.7.1.1 Inclusions

Letters of agreement include:

a) the specific aerodrome at which the agreement is valid;
b) the ATC service provider bound by the agreement;
c) the foreign military authority bound by the agreement;
d) a validity period;
e) the LAHSO procedures that are the subject of the agreement; and
f) a statement authorising active and/or passive participation by pilots of specified aircraft types and categories.

10.9.8 Simultaneous parallel operations

10.9.8.1 Dependent runways

You may permit fixed wing aircraft to use more than one landing/take-off path in the same direction on the one aerodrome if the proposed paths are treated as one runway for separation purposes.

Note: *The suitability of a landing area for simultaneous parallel landings or take-offs by fixed wing aircraft and the associated control procedures is established in consultation with the relevant military authority or CASA. For military CTRs, the procedures are published in Local Orders.*

10.9.8.2 Independent runways

At Class D aerodromes, you may authorise simultaneous, independent, same direction operations on parallel runways, on parallel landing areas, or on a runway and a parallel landing area if:

a) VMC exists or visual separation between the relevant aircraft is applied;

b) two-way radio communication is maintained with the aircraft involved;

c) pertinent traffic information is issued; and

d) the distance between the runways or landing areas is in accordance with the spacing specified in the table below:

Aircraft (Note 1)	**Runway centrelines**	**Edges of adjacent landing areas or runway and landing areas (Note 2)**
Single engine propeller driven aircraft or helicopter	90 m	60 m
Twin engine propeller driven aircraft or helicopter	150 m	120 m
All others	210 m	180 m
Note 1: *The greater minimum applies where a mix of aircraft is operating.*		
Note 2: *A landing area includes a glider runway strip or HLS.*		
Note 3: *CASA may give approval for variations from the distances prescribed in the table.*		

10.9.9 Taxiway separation

10.9.9.1 Responsibilities

The separation of aircraft taxiing on the manoeuvring area is a joint pilot and controller responsibility.

See MATS 12.3.1.5 Taxi instructions

10.10 Miscellaneous

10.10.1 Unmanned free balloons

10.10.1.1 Visual separation

Visual separation between an aircraft and a Medium or Heavy unmanned free balloon may be applied provided that the:

a) confirmed drift of the balloon is away from the aircraft;
b) balloon is ascending; and
c) operations are during daylight.

10.10.1.2 Avoid transit below

Due to the possibility of cutdown without warning, unless visual separation is applied, do not permit aircraft in CTR/CTA to transit vertically below a 15 NM radius of a Medium or Heavy unmanned free balloon's position while the balloon is ascending until the balloon has passed FL600.

10.10.1.3 Lateral navigation tolerances

Apply a navigation tolerance of +/- 15 NM to a Medium or Heavy unmanned free balloon. Apply a 1 NM buffer between the navigation tolerances of an aircraft and a Medium or Heavy unmanned free balloon.

10.10.1.4 Plotting track

When plotting the predicted track of a Medium or Heavy unmanned free balloon, apply a tolerance of +/- 15 NM radius drawn at the:

a) departure point;
b) FL200 predicted position; and
c) FL600 predicted position.

10.10.1.4.1 Redraw at FL200

Redraw the predicted track using FL200 actual position, and incorporate and update track information.

10.10.1.5 LoA

A LoA is to be signed between the relevant ATS Unit and the operator of a Medium or Heavy unmanned free balloon prior to commencement of operations, detailing:

a) notification procedures;
b) communication requirements;
c) launch and cutdown procedures; and
d) restrictions on particular time blocks for launches due to increased RPT traffic on adjacent upper air routes.

10.10.2 Manned balloons

10.10.2.1 Manned balloon operations

Separate balloons from other airspace users, and issue relevant information at all altitudes according to the classification of airspace in which the balloon is flown.

Note: *Separation requirements applying to aircraft weighing less than 5700 kg also apply to balloons.*

10.10.2.2 Traffic information

There is no requirement to pass traffic information on other balloons within an authorised formation.

10.10.3 Unspecified operations

10.10.3.1 Unspecified separation requirements

Separation requirements from operations for which standards have not been specified are:

a) determined by ATM Standards (civil) or STD ANSP (Defence) after liaison with affected ATS units; and
b) published in local instructions.

10.10.3.2 Buffers

Add the following buffers to the parameters of the operations:

a) 1 NM buffer to the notified geographical coordinates of the activity;
b) 15 minutes before and after the notified time of the activity; and
c) at least 500 FT to the maximum notified altitude of the activity.

10.10.4 Formation flights

10.10.4.1 Separation between aircraft

Separation between aircraft within a formation flight is the responsibility of the flight leader and pilots of other aircraft within the formation. This also includes take-off, landing and periods of transition, when aircraft are manoeuvring to attain separation within the formation or during join up and break away.

10.10.4.2 Vertical separation with formations

Before applying vertical separation with a formation, check the levels of all formation aircraft as necessary to establish the full vertical extent of the formation.

10.10.4.3 Formation separation

Determine the basis for separating formation aircraft from other airspace users as follows:

Formation type	Description	Separation with other airspace users based on
Close	Aircraft within the formation are considered to be one aircraft	The lead aircraft
Standard	Aircraft may manoeuvre up to 1 NM either side of, co-altitude with, and up to 1 NM behind the lead aircraft	The outer limits of the formation
In-trail	Elements within the trail maintain a nominated spacing from the element ahead	The first and last element in the trail
Block	A non-standard formation type that operates within a prearranged airspace block	The outer edges of the airspace block

Note 1: *When describing an in-trail formation, the distance as advised by flight notification or the formation leader refers to the distance between each element of the formation, and not the total length of the trail. Spacing may vary during climb, descent or on request from the formation leader. During level flight all aircraft in the formation are co-altitude.*

Note 2: *A clearance is required prior to transitioning to a different formation type e.g. close formation to block formation. The formation leader will inform when the transition is complete.*

Note 3: *Where practicable, elements within a formation will squawk normal if the distance between elements is 2 NM or greater.*

Note 4: *In-trail and block formations may be established between any combination of elements comprising individual aircraft or smaller formations.*

See MATS 9.9.1 Providing services to formation flights

10.10.4.3.1 Specification

Formation leaders specify the formation type on first contact with approach/ departures when outbound, or the first ATC unit contacted when inbound. Seek confirmation if the formation leader does not specify the formation type or there is doubt as to the type or composition of the formation.

10.10.4.4 Formation changes

When military formation flights are planned for operations in controlled airspace, and weather conditions indicate the possibility of a formation break being required, the military authority will make suitable arrangements with ATC pre-flight to ensure that the desired formation break procedure does not compromise the safety of other controlled traffic. These arrangements may involve airspace reservation or assignment of a band of levels to the military formation.

10.10.4.4.1 Withhold approval

Withhold approval for formation changes if the change may compromise separation with other aircraft.

10.10.4.5 Separation of civil aircraft in formation flights

Consider a group of civil aircraft conducting the same flight (e.g. air safari) to be separate aircraft when operating at separation distances greater than those specified for formation flights.

10.10.5 In-company flights

10.10.5.1 Separation between airborne aircraft

Separate in-company flights from other airspace users based on the outer limits of the airspace block specified in the clearance.

Note: *Separation between airborne aircraft within an in-company flight is the responsibility of the individual pilots. This also includes periods of transition, when aircraft are manoeuvring to attain separation within the in-company flight, and during join up and break away.*

10.10.5.2 Provide runway separation

For each aircraft element of in-company flights:

a) issue separate landing/take-off clearances to each aircraft; and

b) provide runway separation.

Note: *Runway separation includes separation between helicopters operating to or from a HLS subject to ATC.*

10.10.5.3 Flight rules requests other than VFR

Prior to approving an in-company flight request for an IFR or special VFR clearance, confirm that separation with other in-company aircraft remains the responsibility of the participating pilots e.g. 'CONFIRM OPERATING IN COMPANY WITH ABC AND XYZ'.

11 Approach control

11.1 Arriving aircraft

11.1.1 Arrival and approach procedures

11.1.1.1 Establishing aircraft sequence

Establish a sequence of arriving aircraft before reaching the point of transfer to approach control.

11.1.1.1.1 Adjusting the sequence

Once transferred, the approach controller adjusts the sequence to achieve the correct priority for all approaching aircraft.

11.1.1.2 Allow for radio failure

To provide for the possibility of radio failure, unless another form of separation is being applied, do not assign the same level to aircraft under procedural control, cleared to the same holding fix or holding fixes that are not laterally separated, while they are flying within 10 minutes of the holding fix.

11.1.1.2.1 Exception - flight paths at least 90 degrees apart

Arriving aircraft on flight paths which are at least 90 degrees apart may be cleared to make simultaneous visual approaches, instructed to descend visually to the same level, or instructed to descend visually to different levels when a visual approach cannot be authorised, provided:

a) there is no significant cloud at or below the levels assigned to the aircraft;
b) visibility is 30 KM or more; and
c) both aircraft have been instructed to report at a distance outside the point at which lateral separation would be infringed and at which distance it is known that visual separation can be applied.

11.1.1.3 Clearances for instrument approach

When an aircraft requires an instrument approach, issue a clearance for the approach at least three minutes before expected commencement, or as soon as conditions allow.

11.1.1.4 Two or more arriving aircraft

In a sequence of two or more arriving aircraft, the following aircraft may be authorised to make either:

a) an instrument approach for which a holding pattern is available preceding the instrument approach; or
b) a DME or GPS arrival.

11.1.1.5 Circuit entry - VSA not assigned

Restate the previously assigned altitude when you issue the clearance to a circuit position and:

a) a visual approach clearance is not issued; or

b) there is conflicting traffic or other restrictions that preclude immediate further descent clearance.

11.1.1.6 Final approach - surveillance

Maintain ATS surveillance system separation between aircraft on the same final approach until the preceding aircraft passes the threshold.

11.1.1.7 Continue surveillance separation

Where ATS surveillance system separation has been applied by a TCU and one aircraft will subsequently transfer to an associated control tower, the TCU may continue to provide ATS surveillance system separation subject to any conditions specified in local instructions.

11.1.1.8 Directing aircraft to holding fix

When subsequent aircraft in an approach sequence are directed to the holding fix associated with the selected instrument approach and, on arrival at the holding fix, cannot be cleared for final approach, hold the aircraft until an appropriate clearance can be issued.

See MATS 9.6.1.3 Onward clearance times

and MATS 9.6.1.3.1 Changes to delay advice

11.1.2 Vectoring

11.1.2.1 Vectoring aircraft for approaches - ground based navaids

When vectoring an aircraft for final approach:

a) provide an intercept angle with the final approach track of 45 degrees or less;
b) enable the aircraft to be established on the final approach track prior to intercepting the glide path of the approach procedure from below;
c) advise the range from the aerodrome or position with reference to the final approach point;
d) inform that the vector is to intercept the approach;
e) provide a clearance for the approach, when clearance has been authorised;
f) instruct the pilot to report when established on final approach track;
g) ensure that the aircraft is established on final approach track at least 2 NM before commencement of final approach; and
h) if an aircraft will intercept the glide path at a level other than a level flight segment depicted on the instrument approach chart, instruct the pilot to maintain the particular level until established on the glide path.

11.1.2.1.1 Abbreviated procedure - final approach

When vectoring an aircraft that will not follow the full instrument approach procedure, consider the commencement of final approach to be that point at which the aircraft intercepts the prescribed descent profile.

11.1.2.2 When established on final

When a pilot reports established on final approach track:

a) advise the pilot of the aircraft’s distance to touchdown; and
b) instruct the pilot to transfer to the tower frequency.

Note: *Vectoring services are then automatically terminated.*

11.1.2.3 Aircraft not reporting established

Issue instructions to ensure safe air traffic management, if an aircraft does not report established on the final approach track on reaching the final approach point.

11.1.2.4 Vectoring through final

Advise the pilot the reason for the vector, if assigning a vector that will take the aircraft through the final approach track.

11.1.3 Clearance direct to waypoint

11.1.3.1 Clearance to the FAF

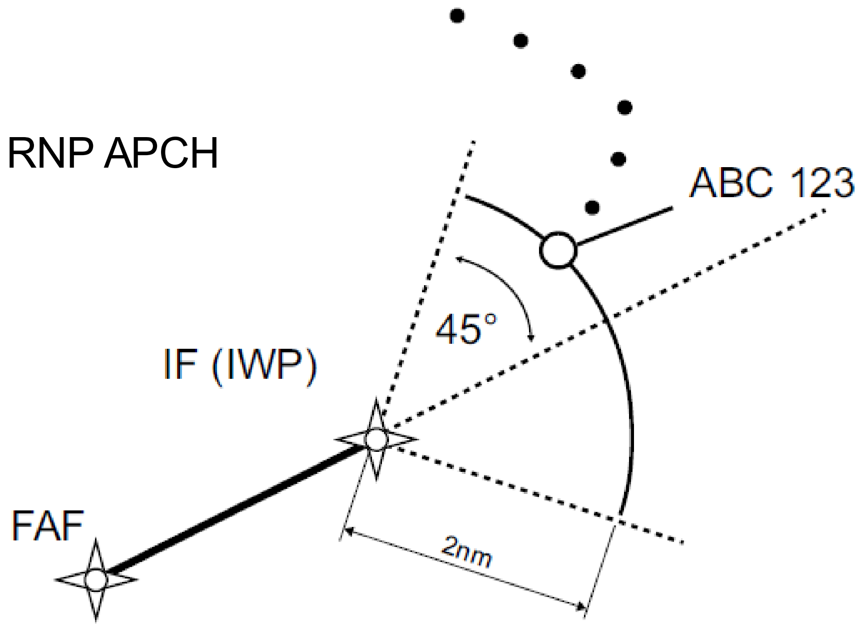
Do not clear aircraft direct to the FAF.

11.1.3.2 RNP APCH - clearance to the IF

Ensure an aircraft that has been vectored or subjected to random tracking prior to commencing an RNP APCH at the IF:

a) is established on a direct track to the IF at least 2 NM prior to the IF; and

b) does not have a resulting track change greater than 45 degrees at the IF.



11.1.3.3 Clearance to intercept an RNP AR APCH

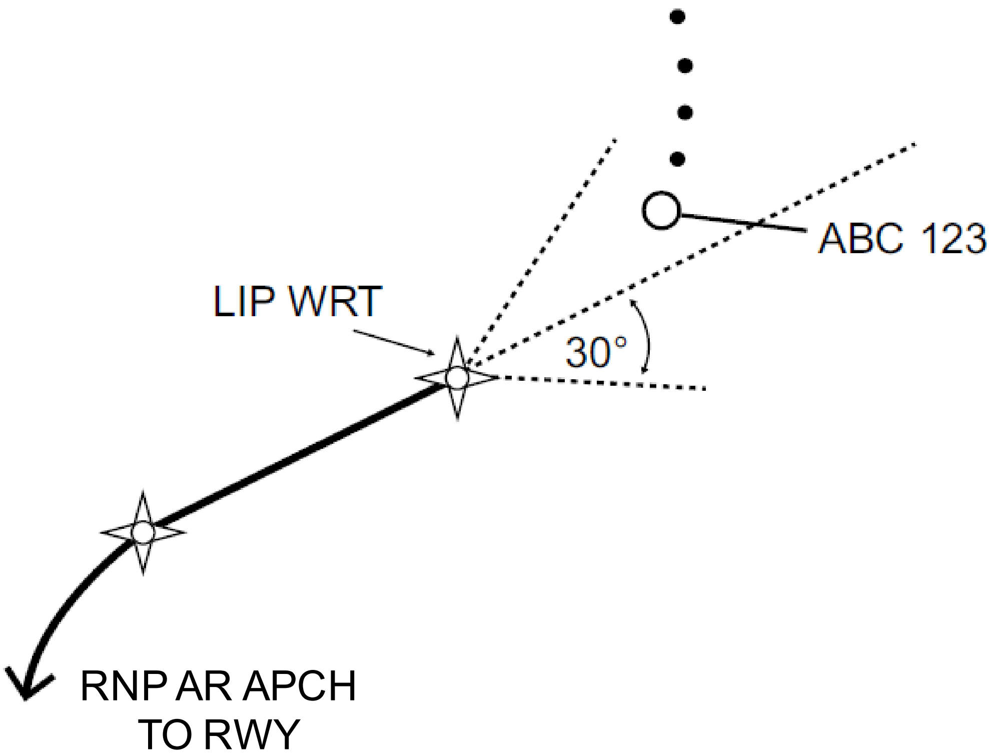
Only track aircraft direct to a waypoint on an RNP AR APCH when the:

a) waypoint is the IAF or the LIP; and

b) IAF or the LIP is not located at the commencement of an RF leg.

11.1.3.3.1 RNP AR APCH - clearance to the LIP

Ensure an aircraft that has been vectored or subject to random tracking prior to intercepting an RNP AR APCH at a published Latest Intercept Point (LIP) is established on a track to the LIP that does not result in a track change at the LIP of greater than 30 degrees.



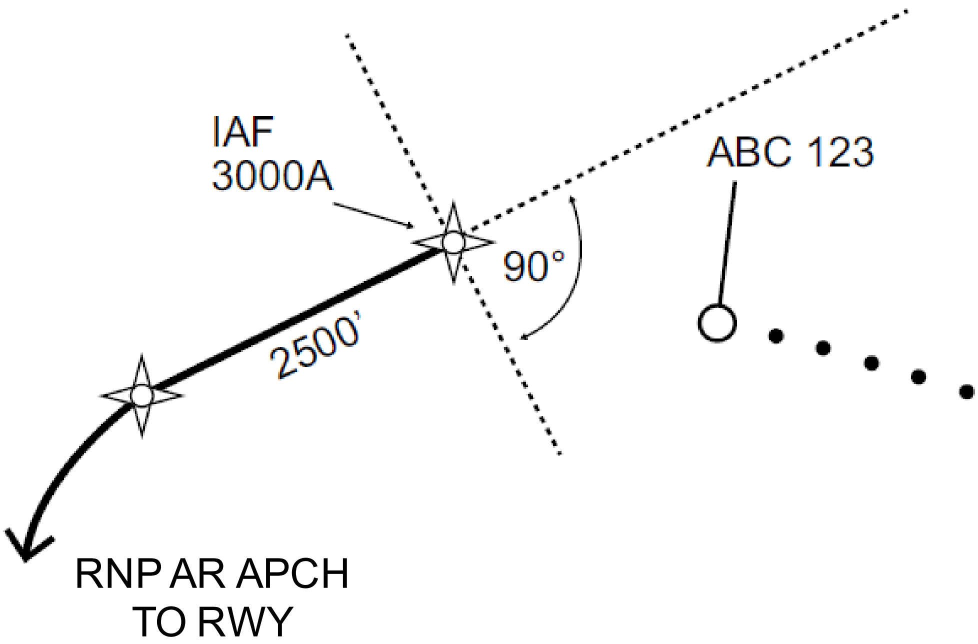
See MATS 11.1.10.2.1 RNP AR APCH phraseology

11.1.3.3.2 RNP AR APCH - clearance to the IAF

Ensure an aircraft that has been vectored or subject to random tracking prior to intercepting an RNP AR APCH at a published Initial Approach Fix (IAF) is established on a track to the IAF that does not result in a track change at the IAF of greater than 90 degrees.

Note 1: *Direct tracking may prevent aircraft from meeting published speed restrictions.*

Note 2: *In the diagram below **3000A** depicts that the pilot must cross the waypoint at 3000 FT or above.*



See MATS 11.1.10.2.1 RNP AR APCH phraseology

11.1.4 ATS surveillance system cloud break procedure

11.1.4.1 Defence applications with military aircraft

The ATS surveillance system cloud break procedure may only be used by military aircraft and only applied by a Defence Air Traffic Controller or a civil Air Traffic Controller who is providing ATS under contract to Defence where specified in MATS Supplementary Procedures.

11.1.4.2 Cloud break procedure - conditions

Assign military aircraft within 10 NM of the aerodrome an altitude not more than 500 FT below the MVA (e.g. 1500 FT can be assigned in a 2000 FT sector) provided that:

a) in any case, the minimum altitude assigned is not below the highest prescribed circling minimum for the aerodrome;

b) the reported cloud base in the applicable sector is at least 300 FT above the assigned altitude e.g. in a 2000 FT sector where descent to 1500 FT is permissible, the reported cloud base is to be at or above 1800 FT;

c) visual flight is certain at or above the altitude assigned; and

d) the aircraft is on a heading which causes it to pass within 3 NM of the aerodrome.

11.1.4.2.1 Restrictions

Do not use ATS surveillance system cloud break procedures:

a) on tracks for which a DME arrival procedure is prescribed; and

b) to runways served by an instrument approach navaid providing a straight-in approach procedure.

11.1.4.3 Cloud break procedure - application

When	Provided that
Visual flight is certain at or above altitude assigned within 10 NM of the aerodrome:	a) The reported cloud base in the applicable sector is at least 300 FT above the assignable altitude e.g. in a 2000 FT minimum altitude sector where descent to 1500 FT is permissible, the cloud base is to be at or above 1800 FT; and b) The aircraft is on a heading which causes it to pass within 3 NM of the centre of the aerodrome as shown on the situation display.
Visual flight is probable at or above altitude assigned within 10 NM of the aerodrome, but is certain after further descent clearance to the prescribed minimum altitude at 4 NM range from the aerodrome:	a) The reported cloud base in the applicable sector is at the assigned altitude or between the assigned altitude and 300 FT above e.g. in a 2000 FT minimum altitude sector where descent to 1500 FT is permissible, the cloud base is to be at least 1500 FT or between 1500 FT and 1800 FT; b) The procedure is applied to DME-equipped aircraft only; c) The aircraft is on a heading which will cause it to pass within 3 NM of the centre of the aerodrome as shown on the situation display but after passing 4 NM the aircraft is to be on a heading to track directly towards the centre of the aerodrome; and d) A procedure for 'loss of communication' is issued with the initial descent instructions at 10 NM.
Visual flight is not possible at altitude assigned within 10 NM of the aerodrome, and is not possible until at or above prescribed minimum altitude after a further descent clearance issued at 4 NM from the aerodrome:	a) The reported cloud base in the applicable sector is at the prescribed minimum altitude, or between the prescribed minimum altitude and the assigned altitude; b) The procedure is applied to DME-equipped aircraft only; c) The aircraft is on a heading which will cause it to pass within 3 NM of the centre of the aerodrome as shown on the situation display, but after passing 4 NM the aircraft is to be on a heading to track directly towards the centre of the aerodrome; or is established on the extended runway centre line before reaching 4 NM; d) The aircraft is instructed to report at 4 DME when initial descent instruction is issued at 10 NM; and e) A 'loss of communication' procedure is issued with the initial descent instructions at 10 NM.

11.1.5 Independent parallel approaches

11.1.5.1 Conditions - independent approaches

Conduct independent approaches to parallel runways at Brisbane and Sydney provided:

a) approaches are any combination of:
   i) a precision approach procedure; and
   ii) an RNP AR APCH;

   Note: *The ATS surveillance system must meet the criteria detailed in PANS-ATM and contingency requirements detailed in local instructions.*

b) as early as practicable after first contact with the approach unit, aircraft are advised of:
   i) the expected approach;
   ii) the assigned runway (if not already assigned);
   iii) independent parallel approaches in progress;
   iv) information considered necessary to confirm correct runway selection; and
   v) any additional information considered necessary (e.g. finals monitoring in progress);

   Note: *Advice that independent instrument approaches are in operation may be via the ATIS.*

c) the final approach course or track is intercepted by use of:
   i) vectoring; or
   ii) a published arrival and approach procedure that intercepts with the IAF or IF;

See MATS 11.1.5.1.1 Vectoring to intercept the final approach course or track

d) separation is maintained until aircraft are:
   i) within the normal operating zone and established inbound on the final approach course or track; or
   ii) established on an RNP AR APCH that will not infringe the NTZ;

   Note: *Consider an aircraft established on an RNP AR APCH when it has passed both the IAF and a waypoint on the approach more than 3 NM from the adjacent approach procedure, both as depicted on the situation display.*

e) an NTZ of at least 610m (2000 FT) is established equidistant between extended runway centre lines and must be displayed on the ATS surveillance system display used by the monitoring controller(s);

f) approaches are monitored using an ATS surveillance system by either:
   i) a separate controller for each runway; or
   ii) a single controller for no more than two runways if determined by a safety assessment approved by the ATMSL and detailed in local instructions;

g) the monitoring controller has frequency override capability for aerodrome control;

h) the nominal tracks of the missed approach procedures diverge by at least 30 degrees; and

i) when visual separation cannot be applied, ensure the nominal tracks of the departure procedure and the missed approach procedure diverge by at least 30 degrees as soon as practicable.

11.1.5.1.1 Vectoring to intercept the final approach course or track

When vectoring to intercept the final approach course or track:

a) issue the final vector to:
   i) enable the aircraft to intercept at an angle not greater than 30 degrees;
   ii) provide at least 1 NM straight and level flight prior to the final approach course or track intercept; and
   iii) enable the aircraft to be established on the final approach course or track, in level flight for at least 2 NM prior to intercepting the glide path or vertical path for the selected instrument approach procedure; and

b) advise the aircraft of:
   i) its position relative to a fix on the final approach course or track;
   ii) the altitude to be maintained until established on the final approach course or track, to the glide path or vertical path intercept point; and
   iii) if required, clearance for the appropriate approach.

11.1.5.1.2 Monitoring

Monitor to ensure:

a) aircraft do not penetrate the NTZ; and

b) the applicable longitudinal and wake turbulence separation between aircraft on the same final approach course or track is maintained.

See MATS 11.1.5.2 Deviation towards the NTZ

See MATS 11.1.5.3 Penetrating the NTZ - break-out procedure

11.1.5.1.3 Terminating monitoring

Do not terminate monitoring until:

a) visual separation is applied, provided procedures ensure that both controllers are advised whenever visual separation is applied;

b) the aircraft has landed; or

c) in case of a missed approach, the aircraft is at least 1.9 km (1 NM) beyond the departure end of the runway and separation with any other traffic is established.

Note: *There is no requirement to advise the aircraft that monitoring is terminated.*

11.1.5.2 Deviation towards the NTZ

When an aircraft is observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ, instruct the aircraft to return immediately to the correct track.

11.1.5.3 Penetrating the NTZ - break-out procedure

When an aircraft will penetrate the NTZ and separation cannot be maintained, instruct the aircraft on the adjacent final approach course or track to break-out immediately and climb and turn to the assigned altitude/height and heading in order to avoid the deviating aircraft.

Note: *If required, specify additional break-out procedures in local instructions.*

11.1.5.3.1 Below MVA

For aircraft below the MVA, do not issue a heading instruction in excess of 45 degrees track difference with the final approach course or track unless approved by the ATMSL and detailed in local instructions.

Note: *The ATMSL may approve heading instructions in excess of 45 degrees if supported by a CASR Part 173 obstacle assessment of the additional overflown area.*

11.1.5.3.2 Below 400 FT above the runway threshold

Do not issue a heading instruction to an aircraft below 400 FT above the runway threshold elevation. The aircraft may conduct a missed approach or continue its approach and land provided it is issued a safety alert as appropriate.

11.1.5.3.3 Descending break-out

Only issue a descending break-out in exceptional circumstances.

11.1.6 Dependent parallel approaches

11.1.6.1 Conditions - dependent approaches

Conduct dependent approaches to parallel runways at Brisbane and Sydney provided:

a) approaches are any combination of:
   i) a precision approach procedure; and
   ii) an RNP AR APCH;
b) aircraft are advised that approaches are in use to both runways;

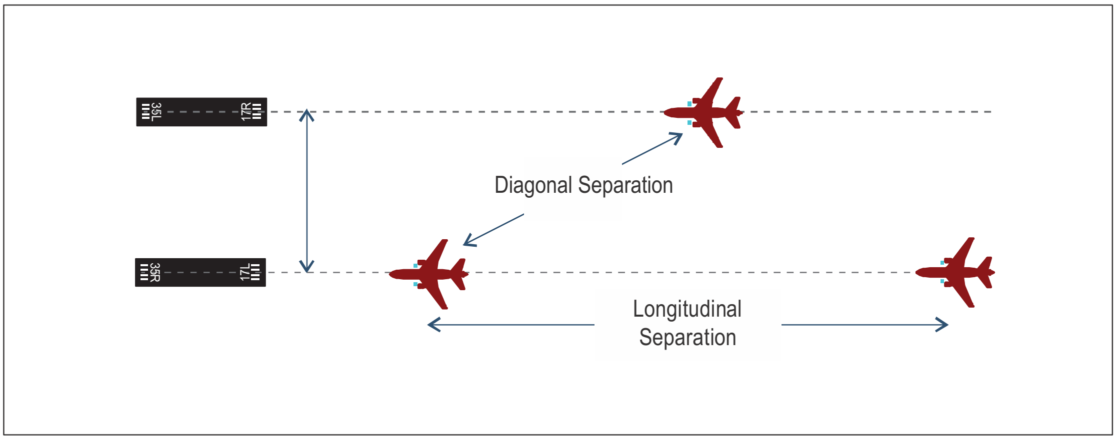
Note: *Advice that approaches are in use to both runways may be via the ATIS.*

c) the final approach course or track is intercepted by use of:
   i) vectoring; or
   ii) a published arrival and approach procedure that intercepts with the IAF or IF;
d) a minimum of 1000 FT or 3 NM separation be maintained until aircraft are established:
   i) inbound on the final approach course or track; or
   ii) on an RNP AR APCH that will not cross the adjacent parallel runway final approach course or track.

Note: *Consider an aircraft established on an RNP AR APCH when it has passed both the IAF and a waypoint on the approach more than 3 NM from the adjacent approach procedure, both as depicted on the situation display.*

e) the TCU has a frequency override capability for the aerodrome control tower;
f) the nominal tracks of the missed approach procedures diverge by at least 30 degrees;
g) when visual separation cannot be applied, ensure the nominal tracks of the departure procedure and the missed approach procedure diverge by at least 30 degrees as soon as practicable; and
h) the minimum diagonal separation between successive aircraft on adjacent final approach courses or tracks is as follows:

Location	Diagonal separation
Brisbane	1.5 NM
Sydney	1 NM



11.1.7 Independent parallel visual approaches

11.1.7.1 Conditions - independent visual approaches

Conduct independent visual approaches to parallel runways provided:

a) centre lines are separated by at least 760 m;

b) the aircraft are making straight-in approaches commencing at the outer marker or 4 NM from the runway threshold;

c) a minimum 1000 FT vertical or 3 NM radar separation is maintained between aircraft until:

 i) one aircraft is established within the furthest IAF when both aircraft are established on their respective localiser or GLS final approach course in visual conditions; or

 ii) one aircraft is established on the localiser or GLS final approach course in visual conditions and the other is established on a heading to intercept final inside the furthest IAF with the runway reported in sight; or

 iii) both aircraft are established on a heading to intercept final inside the furthest IAF with the runway reported in sight; and

d) when vectoring an aircraft to intercept the final course, ensure that the final vector permits the aircraft to intercept at an angle not greater than 30 degrees.

Note: *A pilot should report 'VISUAL' and/or 'RUNWAY (number) LEFT/RIGHT IN SIGHT' as soon as possible after first contact with Approach/Director.*

11.1.7.1.1 Approach anticipation

Advise the pilot, on first contact with Approach, when an independent visual approach is anticipated.

11.1.7.1.2 IVA requirements not met

If the requirements of Clause 11.1.7.1 are not established or are lost (e.g. pilot loses sight of the runway), provide traffic information regarding aircraft on approach using the adjacent centreline. Take immediate steps to establish another form of separation.

See MATS 11.1.7.1 Conditions - independent visual approaches

11.1.7.1.3 Traffic information

When aircraft will be within 1 NM of each other provide abbreviated mutual traffic information with the relative position (ahead, behind or adjacent) and aircraft type.

11.1.7.2 Pilot fails to report

If a pilot does not report the runway in sight by a position 3 NM from the centre line of the adjacent parallel runway, you may vector the aircraft away from the final approach for sequencing for a dependent approach, if necessary.

Note: *Only a VISUAL report is required from an aircraft established on the localiser or GLS final approach course.*

11.1.7.3 Runway change to maintain separation

To avoid a go-around and ensure maintenance of separation, you may offer a change of runway (right to left or left to right) to an aircraft already established on final.

11.1.7.3.1 Conditions for offer

Offer a change of runway only when the aircraft is:

a) in visual conditions; and

b) outside 5 NM from the aircraft's intended threshold.

11.1.7.4 Independent parallel VSA at night phraseology

Use the following phraseology to assign the visual approach at night:

Situation	Phraseology
Independent visual approaches	CLEARED INDEPENDENT VISUAL APPROACH RUNWAY (*number*), NOT BELOW (*altitude*) UNTIL ESTABLISHED ON THE VASIS (*or* PAPI) (*or* GLIDEPATH)

11.1.8 Segregated parallel operations

11.1.8.1 Types of approaches

The following types of approach procedures may be used in segregated operations:

a) precision approach;

b) RNP AR APCH;

c) RNP APCH;

d) surveillance radar approach (SRA) or precision approach radar (PAR) approach; and

e) visual approach.

11.1.8.2 Departure and missed approach tracks

Segregated operations may be conducted on parallel runways provided that the nominal departure track diverges immediately after take-off by at least 30 degrees from the missed approach track of the adjacent approach.

11.1.9 Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS)

11.1.9.1 Conditions - SODPROPS

Conduct SODPROPS when:

a) runway centre lines are separated by a minimum of 860 m;

b) arriving aircraft are conducting instrument or visual approaches;

c) meteorological conditions are equal to or better than the MVA or the lowest minimum commencement level for instrument approaches to the arrival runway, whichever is lower. Without prior approval, the minima are not to be less than cloud base 2500 FT and visibility 8 KM, in the arrival and departure sector concerned;

d) relevant traffic information is passed; and

e) the departure runway course diverges by 15 degrees or more from the approach course of the other runway.

11.1.9.2 SODPROPS - Arriving aircraft

When conducting SODPROPS:

a) ensure the aircraft intercepts the final approach course or track:
   i) at an angle not greater than 30 degrees and is on this heading/track for at least 1 NM before intercepting final; or
   ii) via a published arrival and approach procedure that intercepts with the IAF or IF;

b) retain the aircraft on the approach controller's frequency until established on the final approach course or track; and

c) transfer to Tower frequency no later than 10 NM from touchdown.

11.1.9.2.1 Reduction in distance requirement

Subject to ATMSL approval and incorporation into local instructions, the 10 NM distance requirement may be reduced if the divergence between tracks is greater than 15 degrees.

11.1.9.3 Localiser or GBAS failure

In the event of a localiser or GBAS failure, confirm that the pilot of an aircraft on visual approach has the runway in sight.

11.1.9.4 Traffic information

Pass traffic information to arriving and departing aircraft that includes runway, position of the traffic and may include aircraft type.

11.1.9.4.1 Arriving aircraft

Advise arriving aircraft of all departing aircraft that can be expected to depart off the opposite direction parallel runway and are likely to pass when it is within 10 NM of touchdown e.g. 'TRAFFIC (aircraft type) DEPARTING ON OPPOSITE DIRECTION PARALLEL RUNWAY, TURNING EAST'.

11.1.9.4.2 Departing aircraft

Advise departing aircraft of all arriving aircraft that can be expected on final for the opposite direction parallel runway and are likely to pass when it is within 10 NM of departure e.g. 'TRAFFIC (aircraft type) EIGHT MILES FROM TOUCHDOWN FOR OPPOSITE DIRECTION PARALLEL RUNWAY'.

Note: *Pilots are not required to report traffic sighted.*

11.1.9.5 Monitoring departure track

The tower controller:

a) visually monitors an aircraft’s departure and turn towards the initial departure track; and

b) notifies the appropriate controller if an aircraft fails to comply with departure procedures.

11.1.10 Instrument approach procedures

11.1.10.1 Descent clearance in IMC

Do not issue a clearance which authorises or requires a pilot to descend in IMC below the LSALT for the route segment in a manner different from that specified in:

a) DME, DME or GNSS, or GNSS arrival procedures;

b) the procedures, plan and profile diagram of IAL charts published in AIP/FLIP Terminal;

c) an approved instrument approach procedure published in NOTAM;

d) procedures where a lower minimum altitude has been specified for use when providing ATS surveillance services; or

e) approved RNP AR APCHs.

11.1.10.1.1 GNSS overlay

When requested by the pilot, ATC may clear an aircraft to conduct a published non-precision approach procedure irrespective of the carriage or serviceability of a VOR or ADF/NDB.

Note: *A DME/GNSS arrival is a terminal procedure, not a non-precision approach.*

11.1.10.2 RNP AR APCH terrain clearance

Do not clear an aircraft for an RNP AR APCH procedure unless:

a) the aircraft is joining an RNP AR APCH from a published STAR transition or ATS route; or

b) an aircraft subject to a direct track to an IAF or LIP does not result in a track change greater than:

   i) 30 degrees at the LIP; or

   ii) 90 degrees at the IAF.

Note: *ATC is responsible for terrain clearance until the aircraft is established on the RNP AR APCH.*

See MATS 9.7.10.3 e) Vectoring considerations

11.1.10.2.1 RNP AR APCH phraseology

Use the following phraseology to provide a clearance for the RNP AR APCH when an aircraft is on a direct track to the IAF or the LIP: 'WHEN ESTABLISHED, CLEARED RNP [*identifier*] APPROACH [RUNWAY (*number*)]'.

11.1.10.3 DME/GNSS procedures

When using DME or GNSS arrival procedures, you may assign aircraft:

a) 'CLEARED DME (*or* GNSS) ARRIVAL';

b) the level applicable to the aircraft's position in the procedure; or

c) a lower altitude specified within the procedure using the phrase 'DESCEND TO (*level*) NOT BELOW DME (*or* GNSS) STEPS', provided that the clearance is issued:

   i) after the aircraft reaches the first step of the procedure; or

   ii) prior to the aircraft reaching the first step of the procedure and you specify the distance within the procedure at which the first step commences e.g. 'FROM (*distance*) DME (*or* GNSS), DESCEND TO (*level*) NOT BELOW DME (*or* GNSS) STEPS'.

11.1.10.4 Level occupancy

Do not assume that an aircraft cleared for DME or GNSS arrival is flying at the appropriate step level.

11.1.10.5 Issuing direct DME or GNSS arrival

Select a direct DME or GNSS arrival when:

a) the relative position of the preceding aircraft, planned departures and the ceiling give clear indications of a successful approach; and

b) traffic will flow expeditiously as a consequence.

11.1.10.5.1 Direct DME/GNSS arrival

When selecting a direct DME/GNSS arrival, review the traffic situation before the aircraft reaches 10 NM from the aerodrome.

11.1.10.5.2 Separation not assured

If the required lateral or longitudinal separation cannot be maintained when the aircraft reaches 10 NM, the aircraft may continue on the direct DME/GNSS arrival if vertical separation is maintained with the preceding aircraft in the sequence, until:

a) a visual approach is possible and visual separation has been established by the tower controller; or

b) the preceding aircraft has landed.

11.1.10.6 Use of GNSS in lieu of DME

IFR aircraft that comply with AIP ENR 1.10 sub-section 3.3 and whose flight notification indicates RNP2 or RNP4, may use GNSS in lieu of DME for NDB/DME, VOR/DME, ILS/DME, or LOC/DME approaches, as well as SID and STAR procedures where:

a) the DME required for the approach or procedure is:
   i) able to be selected from the database; or
   ii) co-located with the NDB or VOR where their coordinates exist in the database; and
b) the IAL chart states the use of GNSS in lieu of DME.

See MATS 10.3.5.4 GNSS unavailable

See MATS 9.7.10.4 Issuing system derived distance

11.1.10.7 Unrestricted descent

When an aircraft has been cleared for an instrument approach, do not issue a level instruction that precludes compliance with the published profile or limits descent.

11.1.10.7.1 Exception

You may instruct an aircraft to track via an instrument approach procedure not below a specified level if the aircraft is:

a) in VMC conducting instrument approach training; or
b) a military aircraft conducting a:
   i) non-precision approach procedure; or
   ii) precision approach procedure, provided clearance for the approach is issued in sufficient time for the aircraft to maintain the descent profile for the procedure being flown.

11.1.10.8 ILS approach with displaced threshold

Do not issue an ILS approach to a runway with a displaced threshold. You may issue a localiser approach.

11.1.10.8.1 Glide path

Request the glide path to be removed from service when the threshold is displaced.

11.1.10.9 GLS approach with displaced threshold

Do not issue a GLS approach to a runway with a displaced threshold unless:

a) using a published GLS approach specifically designed for the displaced runway threshold; and
b) no other GLS approaches are radiating for the affected runway while the threshold is displaced.

11.1.11 Visual approach procedures

11.1.11.1 Authorising visual approach

When a flight other than that described in Clause 11.1.11.3 is within 30 NM of an aerodrome, a visual approach may be authorised by day or night for:

a) a VFR flight; or

b) an IFR flight when:

  i) the pilot has established and can continue flight to the aerodrome with continuous visual reference to the ground or water; and

  ii) the visibility along the flight path is not less than 5000 m (or by day, the aerodrome is in sight).

See MATS 11.1.11.3 Visual approach for Heavy jet aircraft

11.1.11.1.1 Exception - ATC initiated deviations

At night, if an arriving aircraft has been vectored or instructed to deviate from track as a result of ATC initiated requirements, you may assign an IFR aircraft a visual approach at any distance from an aerodrome if the:

a) aircraft has been assigned the lowest practicable LSALT;

b) aircraft is given heading or tracking instructions to intercept final or to position the aircraft within the circling area of the aerodrome; and

c) following phraseology is used to assign the visual approach:

Scenario	ATC phraseology
When aircraft are vectored or given tracking instructions for the circling area	WHEN ESTABLISHED IN THE CIRCLING AREA, CLEARED VISUAL APPROACH
When aircraft are vectored or given tracking instructions for VASIS/Glidepath	WHEN ESTABLISHED ON THE VASIS (*or* PAPI) (*or* GLIDEPATH) CLEARED VISUAL APPROACH

Note: *This paragraph does not apply where the deviations are at pilot request, or where the aircraft has been re-established on cleared track or route following ATC-initiated deviations.*

See MATS 11.1.11.3 Visual approach for Heavy jet aircraft

11.1.11.2 Unrestricted descent

Do not limit the descent of aircraft cleared for a visual approach.

11.1.11.3 Visual approach for Heavy jet aircraft

In addition to the requirements of Clause 11.1.11.1, with the exception of Australian and New Zealand operators and aircraft conducting independent visual approaches at Sydney, only assign Super or Heavy jet aircraft a visual approach when:

a) specifically requested by the pilot and the pilot has reported the landing runway is in sight; or

b) the straight-in approach navaid is unserviceable.

See MATS 11.1.11.1 Authorising visual approach

11.1.11.4 Straight-in approach navaid unserviceable

In case of the straight-in approach navaid being unserviceable:

a) vector the aircraft to intercept final no closer than 8 NM from the runway threshold, at an altitude not less than 2500 FT AAL; and

b) assign a straight-in visual approach when:

    i) the aircraft is established on final or a heading to intercept final course at an angle of not more than 30 degrees;

    ii) visual glide slope guidance (VASIS/PAPI) is available; and

    iii) the pilot has reported the landing runway in sight.

11.2 Departing aircraft

11.2.1 Instructions for departing aircraft

11.2.1.1 Departure heading

When a departing aircraft is required to assume a heading following take-off, determine the heading and advise the tower controller as follows:

a) For VFR flights by day or for IFR flights by day in VMC not departing via a SID, using the phraseology 'RUNWAY HEADING VISUAL' or 'RIGHT/LEFT (*degrees*) VISUAL'; and

b) For aircraft departing via a radar SID a three digit numerical radar heading is to be coordinated, using the phraseology 'HEADING/RIGHT/LEFT (*degrees*)'.

Note: *Direction of turn may be omitted from the coordination of heading or tracking instructions in accordance with Clause 11.2.3.1.1.*

See MATS 11.2.3.1.1 Order of instructions

11.2.1.1.1 Alternative coordination requirements

With the exception of numerical radar headings at point b), local instructions may alter the coordination requirements for departure headings in Clause 11.2.1.1.

See MATS 11.2.1.1 Departure heading

11.2.1.2 Runway track - radar SID

When an aircraft departing via a radar SID is required to maintain runway track, advise the tower controller using the phraseology 'TRACK EXTENDED CENTRE LINE (*three digits*) DEGREES'.

11.2.1.2.1 Conditions for use of runway track

Assign runway track to an aircraft departing on a radar SID only when:

a) the runway track and the initial SID track are coincident;

b) there are no subsequent tracks on the SID;

c) terrain clearance requirements are applied as for an assigned heading; and

d) local environmental requirements are complied with.

11.2.1.3 Runway track - cancel procedural SID

In a surveillance environment you may cancel a procedural SID and instruct an aircraft to depart on runway track provided that:

a) a radar SID is published for the location and the runway track and radar SID tracks are coincident until the aircraft reaches the MVA;
b) the obstacle-clearance climb gradient of the cancelled SID is equal to or greater than the obstacle-clearance climb gradient of the equivalent radar SID;
c) the aircraft is provided the same terrain clearance requirements as would be applied under an equivalent procedural SID;
d) local environmental requirements are complied with; and
e) approval is contained in local instructions.

Note: *The aircraft will use the climb gradient specified in the cancelled SID.*

11.2.1.3.1 Phrase for cancel SID

Use the phraseology: 'CANCEL SID, TRACK EXTENDED CENTRE LINE (*three digits*) DEGREES'.

11.2.1.3.2 Exception - RNP SID

Unless requested by the pilot do not cancel an RNAV (RNP) departure procedure until the aircraft is airborne and is at or above the applicable LSALT.

11.2.1.4 Amended SID level

Reissue the assigned level when a previously issued SID is amended.

11.2.1.5 Instructions to pilot

While local instructions may abbreviate the appropriate phraseology, do not abbreviate the instruction to the pilot.

11.2.2 Instrument and visual departures

11.2.2.1 Issuing departure clearance

Issue an appropriate SID or approved RNP departure procedure to IFR aircraft by night, or by day in IMC.

Note: *A SID is appropriate when it services the cleared route and the ATC holds the relevant rating.*

11.2.2.1.1 Exception to SID

Do not issue a SID to an aircraft that has planned below the LSALT.

11.2.2.1.2 Class D aerodromes

Where the SID will result in undue delay, advise the pilot of an alternative clearance and, if the pilot accepts, the SID may be cancelled.

11.2.2.2 VFR departures

If a VFR or Special VFR aircraft is requesting take-off, and conditions as observed from the tower do not meet VMC or Special VFR minima (as appropriate), before issuing the clearance, advise the pilot and request intentions e.g. 'CONDITIONS OBSERVED FROM THE TOWER DO NOT MEET VMC. ADVISE INTENTIONS'.

Note: *It is the pilot's responsibility to ensure a VFR or Special VFR flight is conducted in VMC or Special VFR minima.*

11.2.2.3 SID speed amendment

Do not cancel or amend published SID speed restrictions unless:

a) the aircraft is at or above the applicable LSALT; and
b) noise abatement procedures are maintained.

11.2.2.3.1 Speed amendment exception

You may cancel or amend a published SID speed restriction below the LSALT provided that:

a) the speed is for ATC traffic management only;
b) airspace containment, terrain clearance and noise abatement are not affected; and
c) approval is contained in local instructions.

11.2.2.3.2 Speed restrictions - SID

Consider an ATC-issued speed control instruction to explicitly cancel published speed restrictions.

Note: *Airspace speed limitations still apply.*

See MATS 9.5.1.2 Published speeds

11.2.2.4 Specify compliance

When an aircraft is cleared on a SID and speed or level restrictions remain, indicate SID restriction compliance in all climb instructions e.g. 'CLIMB VIA SID TO A090'.

Note: *For aircraft conducting a radar SID, specifying SID restriction compliance is not required when the aircraft:*

a) has turned onto their assigned heading; and
b) is above the applicable LSALT.

11.2.2.4.1 Level restriction changes - SID

Reiterate which restrictions remain or are cancelled when an aircraft is on a SID and:

1) level instructions are published;
2) ATC level restrictions are issued; and
3) level restrictions are subsequently cancelled e.g. 'CLIMB VIA SID TO A080, CANCEL LEVEL RESTRICTIONS, CLIMB TO REACH A060 BY NUMBA DUE CROSSING TRAFFIC'.

11.2.2.4.2 No remaining published restrictions

If there are no remaining published restrictions on the SID, the phrase 'CLIMB TO *(level)*' should be used.

11.2.2.5 Vectoring or deviations away from a SID

When a departing aircraft is vectored or cleared to deviate away from the SID:

a) reiterate the cleared level;
b) provide speed and level restrictions as necessary; and
c) notify the pilot if there is an expectation the aircraft will subsequently rejoin the SID.

Note: *All published speed and level restrictions of the SID are cancelled.*

11.2.2.6 Rejoining a SID

When instructing an aircraft to rejoin a SID, specify any transition restrictions that must be complied with up to, but not including the waypoint where the SID is rejoined.

Note: *The pilot must comply with all published SID speed and level restrictions at and after the waypoint where the SID is rejoined.*

11.2.2.6.1 Include SID designator

When an expectation to rejoin the SID is not provided, include the SID designator when clearing the aircraft to rejoin the SID.

11.2.2.7 Subsequent headings on a Radar SID

When providing subsequent headings to an aircraft below MVA on a Radar SID:

a) do not turn the aircraft into an area with a higher climb gradient; and
b) reiterate the cleared level e.g. 'CLIMB VIA SID TO (*level*)'.

11.2.2.8 Visual departure in lieu of a SID

You may issue a visual departure in lieu of a SID:

a) by day;
b) in VMC; and
c) provided that the cloud base is such that the pilot can maintain flight in VMC below the applicable LSALT.

11.2.2.9 Tracking instructions

Specify tracking instructions when:

a) there is no appropriate SID;
b) a SID is cancelled;
c) a visual departure clearance is issued in lieu of a SID;
d) aircraft or ground based navaid(s) are not available;
e) requested by Australian military aircraft; or
f) requested by foreign military aircraft approved by Defence or subject to a Letter of Agreement.

11.2.3 Control of departing aircraft

11.2.3.1 Departures instruction

The Departures Controller issues appropriate instructions on receipt of a NEXT call.

See MATS 6.3.5.2 Coordination exchanges

See MATS 12.4.1.1 Next call

See MATS 12.4.2.1 Directed frequency transfer

11.2.3.1.1 Order of instructions

Issue departure instructions in the following order:

1) Callsign;
2) Heading or tracking instructions, including turn requirements, except that a turn requirement may be omitted from the coordination where:
   i) already specified in SID instructions;
   ii) for a radar SID, the assigned heading is within 5 degrees of the SID track from which this turn is made; or
   iii) the departure track for a non-SID aircraft is within 5 degrees of the runway bearing; and
3) Altitude restrictions or the word 'UNRESTRICTED' if there is no altitude restriction ('UNRESTRICTED' is not transmitted to the aircraft).

11.2.3.2 Independent departures

Independent IFR departures may be conducted from parallel runways at Brisbane and Sydney provided a suitable ATS surveillance system capable of identification of the aircraft within 1 NM from the end of the runway is available and the nominal departure tracks diverge by at least:

a) 15 degrees immediately after take-off; or
b) 10 degrees where:
    i) both aircraft are flying an RNAV or RNP instrument departure; and
    ii) the turn commences no more than 2 NM from the departure end of the runway.

11.2.3.3 Separation of departing aircraft - surveillance

You may apply ATS surveillance system separation between an aircraft taking off from an aerodrome depicted on a situation display and a preceding departing aircraft or other ATS surveillance system controlled traffic, provided:

a) there is reasonable assurance that the departing aircraft will be identified within 1 NM of the end of the runway or HLS; and
b) the disposition and relative performance of the aircraft are such that, under normal operation, or with the provision of an initial heading to the aircraft about to depart, ATS surveillance system separation will exist.

See MATS 10.2.1.2.1 Exception, direct communications do not exist

11.2.4 Auto release

11.2.4.1 Auto release procedures

ATC units may use auto release procedures to vary departure procedures. Where auto release procedures are used, specify in local instructions:

a) agreed SIDs and headings associated with a runway configuration;
b) transfer and surveillance coupling requirements; and
c) any additional procedures.

11.2.4.2 Application of auto release

Only apply auto release procedures:

a) for:
    i) civil units - to fixed wing IFR aircraft; or
    ii) Defence units - to all aircraft;
b) to departure runways nominated on the ATIS; and
c) when using same direction runway operations or SODPROPS.

11.2.4.3 Coordination during auto release

Auto release procedures do not preclude necessary voice coordination between the ADC and DEP. Voice coordination for any departure does not suspend auto release procedures.

11.2.4.4 Suspension of auto release procedures

Coordinate the suspension of auto release procedures:

a) when necessary, e.g. during weather deviation; and

b) prior to a runway change.

11.2.4.4.1 Suspension phraseologies

Use the following phrases when suspending auto release procedures:

Use	Phrase
Initiating unit suspending auto release	SUSPEND AUTO RELEASE [RUNWAY(S) (*number*)] (*reason*)
Responding unit readback	AUTO RELEASE SUSPENDED [RUNWAY(S) (*number*)]
ADC advising DEP of an auto release aircraft already issued with a line-up or take-off clearance	(*Callsign*) RELEASED

11.2.4.4.2 Coordinate after suspension

Once auto release is suspended, coordinate all departures.

11.2.4.4.3 Display status

Display auto release status at affected positions when auto release procedures are suspended.

11.2.4.5 Resumption of auto release procedures

Use the following phrases when resuming auto release procedures. Include the runway number(s) if the runway configuration has changed:

Use	Phrase
DEP resuming auto release	RESUME AUTO RELEASE [RUNWAY(S)…]
ADC acknowledging auto release resumption	RESUME AUTO RELEASE [RUNWAY(S)…]

11.2.4.6 Conditional auto release

Do not use conditional instructions for resumption or cancellation of auto release in INTAS Towers.

12 Aerodrome control

12.1 Aerodrome control functions

12.1.1 Aerodrome control functions

12.1.1.1 Performing aerodrome control functions

When performing aerodrome control functions, issue information, clearances and instructions to achieve a safe, orderly and expeditious flow of air traffic on and in the vicinity of the aerodrome, with the object of preventing collisions between:

a) aircraft flying in the aerodrome traffic circuits around an aerodrome;
b) aircraft operating on the manoeuvring area;
c) aircraft landing or taking off;
d) aircraft and vehicles operating on the:
    i) manoeuvring area; and
    ii) helicopter movement area, but excluding HLS situated on apron areas or beyond the sight of the tower controller; and
e) aircraft on the manoeuvring area and obstructions on this area.

12.1.1.2 Primary function

Maintain a visual observation of operations on and in the vicinity of the aerodrome.

12.1.1.3 Thrust stream turbulence

Consider hazards caused by thrust stream turbulence when issuing instructions and clearances on the movement area. Issue a caution to other aircraft, vehicles and personnel when thrust stream turbulence hazards may not be obvious.

12.1.1.4 Serviceability of movement area

Where doubt exists as to the safety or serviceability of the movement area:

a) immediately advise the aerodrome proprietor delegate or FLTCDR;
b) request an inspection of the suspect area; and
c) if necessary, close the aerodrome.

See MATS 4.3.7 Airfield closure

12.1.1.4.1 Aerodrome contacts for NOTAM

Ensure that aerodrome operator contact details for both normal and out-of-hours duty are available in the Tower.

Note 1: *The aerodrome operator is responsible for the inspection and serviceability of an aerodrome. These responsibilities may be delegated to the Aerodrome Reporting Officer(s).*

Note 2: *The aerodrome operator is responsible for NOTAM action with respect to aerodrome serviceability.*

12.1.1.5 Provision of service maps

Provide maps and/or diagrams in the Tower to delineate between manoeuvring and apron areas.

12.1.1.6 Aerodrome control services on aprons

Establish LoA with affected parties when providing aerodrome control services on aprons.

12.2 Runway selection and aerodrome information

12.2.1 Selection of runway in use

12.2.1.1 Nomination

The tower controller nominates the runway(s) or direction to be used after coordination with approach. Runway nomination may be via ATIS/CATIS/DATIS or verbally to individual aircraft. Either form of nomination must be in accordance with Clause 12.2.1.3 Crosswind/tailwind limitations. This does not preclude ATC from approving a runway, at pilot request, where the tailwind or crosswind criteria are not met.

See MATS 12.2.1.3 Crosswind/tailwind limitations

12.2.1.2 Considerations

Take into consideration:

a) type of aircraft;
b) effective length of runway(s) or direction;
c) wind velocity;
d) weather phenomena, including wind gradient, wind shear, wake turbulence effects and position of the sun;
e) in near minima conditions, availability of approach aids;
f) disposition of other traffic;
g) taxiing distances;
h) braking action; and
i) if workload and/or traffic conditions permit, implement 'preferred runway' systems in certain wind conditions to:
    i) provide the optimum traffic management configuration; and
    ii) comply with noise abatement procedures.

12.2.1.3 Crosswind/tailwind limitations

Do not nominate a runway for use when:

Runway conditions	Wind
Completely dry	Crosswind exceeds 20 kt including gusts
	Tailwind exceeds 5 kt including gusts
Not completely dry, or contaminated runway	Crosswind exceeds 20 kt including gusts
	There is a tailwind component

12.2.1.3.1 Wind in excess of criteria

Except during LAHSO, you may nominate a runway when crosswind or tailwind exceeds the specifications of Clause 12.2.1.3 if:

a) required by noise abatement legislation;

b) an alternative runway does not exist; or

c) a take-off or landing, as applicable, is not possible on an alternative runway.

See MATS 12.2.1.3 Crosswind/tailwind limitations

12.2.1.4 Use most suitable runway

Confine operations to the runway most suitable for the majority of traffic.

12.2.1.4.1 Exception

You may use more than one runway:

a) to avoid undue delay to aircraft;

b) to satisfy particular operational requirements; or

c) when LAHSO are in progress.

12.2.1.5 Operationally-required runway

When a pilot advises requirement for an alternate runway for operational reasons, using the phrase 'REQUIRE RUNWAY (*number*)', provide an alternate runway without loss of priority subject to the following conditions:

a) if departing:
   - i) when requesting a clearance where a discrete frequency is available; or
   - ii) prior to taxiing;

b) if arriving - wholly within controlled airspace:
   - i) prior to 80 NM (120 NM for jet aircraft) from a destination capital city aerodrome (including Essendon); or
   - ii) at 30 NM from other primary controlled aerodromes; and

c) if arriving - entering controlled airspace, on first contact with ATC within:
   - i) the distances specified above in point b);
   - ii) a control area step; or
   - iii) a CTR.

12.2.2 Aerodrome information

12.2.2.1 Essential aerodrome information

Ensure all aircraft under your control are given the appropriate details when essential aerodrome information has not been fully covered by NOTAM.

12.2.2.1.1 Includes

Essential aerodrome information includes:

a) construction or maintenance work on, or immediately adjacent to, the movement area;
b) rough or broken surfaces on the movement area whether marked or not;
c) water or contaminants on a runway (including a Runway Condition Report), a taxiway or an apron and, when appropriate, braking action as reported by other aircraft;
d) other temporary hazards, including parked aircraft and animal hazards on the ground or in the air;
e) full or partial failure or irregular operation of the aerodrome lighting system, approach aids or emergency equipment; and
f) any other pertinent information including changes to traffic management initiatives such as LAHSO.

12.2.2.1.2 Possible obstruction

Use the following phrase when there is doubt as to the integrity of the landing area or associated runway strips:

CAUTION POSSIBLE OBSTRUCTION DUE (*object, position and any necessary advice*). ADVISE INTENTIONS.

See MATS 12.3.2.16 Cancelling take-off clearances
See MATS 12.5.3.2 Landing area occupied or obstructed

12.2.2.1.3 Aerodrome operator advice

When providing advice to the aerodrome operator or delegate:

a) If relevant, provide additional details relating to an animal strike incident, such as registration and type of aircraft; or
b) If unable to contact the aerodrome operator, submit an ATS Occurrence report including this information.

Note 1: *The aerodrome operator will, where practical, report incidents occurring within their jurisdiction to ATSB.*

Note 2: *The aerodrome operator or delegate will determine any required action regarding animals or animal carcass(es).*

12.2.3 Movement area surface conditions

12.2.3.1 Runway surface conditions

When a change to runway surface conditions not associated with a contaminant, is observed or reported to the tower, ensure all affected aircraft are notified.

12.2.3.1.1 GRF - Runway Condition Codes

For a paved runway at locations using GRF, provide three runway condition codes with each number representing the surface condition for consecutive thirds of the runway in the direction of landing/take-off.

See MATS 12.2.3.5 Runway Condition Assessment Matrix (RCAM)

Note: *The aerodrome operator is responsible for assessing aerodrome surface conditions and disseminating this information to the relevant ATS unit via a runway condition report.*

12.2.3.1.2 GRF exception - aerodrome operator responsibility

Towers may assess wet and dry runway conditions by agreement with the aerodrome operator and provide RWYCC 5 or 6 as appropriate. Specify in local instructions:

a) when the tower is assessing wet and dry conditions on behalf of the aerodrome operator;

b) when the aerodrome operator must advise the tower of any relevant factors that may affect the runway condition code for a wet runway; and

c) where conditions are observed or reported that contradict the information provided by the aerodrome operator, ATC will relay information to affected aircraft using the runway surface condition descriptors and/or braking action descriptors.

12.2.3.2 Contaminated runways

On becoming aware of a change to the runway surface conditions associated with a contaminant, or of significant conditions on a taxiway or apron, ensure all affected aircraft are notified.

12.2.3.2.1 Advise the aerodrome operator

When a contaminant is known or suspected to exist on a runway, ensure the aerodrome operator is aware.

12.2.3.3 Taxiway and apron conditions

Only advise pilots of the surface conditions on taxiways and aprons when:

a) advice of significant conditions is received from the aerodrome operator; or
b) significant conditions are observed from the tower.

Note: *For locations using GRF, information on the surface condition of a taxiway or apron is only provided in an RCR if assessed as 'poor'.*

12.2.3.4 Runway surface condition descriptors

Use runway surface condition descriptors to describe the surface condition(s) of a runway.

See MATS 1.1.1.20 R 'Runway Surface Condition Descriptors'.

12.2.3.4.1 GRF - paved runway descriptions

At locations using GRF, describe the surface condition(s) of each third of a paved runway in the direction of use. When conditions are the same across contiguous thirds of the runway, provide a description for a two-thirds section of the runway or the whole runway as appropriate.

See MATS 3.1.1.5.1 Exceptions - Defence ATIS

Note: *Aerodrome operators will not provide a RWYCC for unpaved runways.*

12.2.3.4.2 Description of a contaminated runway

When a contaminant is present on a paved runway, provide advice of the depth and coverage or that the depth and coverage are unknown. Do not describe a runway as 'CONTAMINATED' in ATIS or voice broadcasts.

Note: *At locations using GRF, contaminant depth and coverage will be described in the RCR.*

See MATS 3.1.1.5.1 Exceptions - Defence ATIS

12.2.3.4.3 Surface conditions order of information

When contaminants are present or the runway is slippery wet, describe the surface conditions as (*part of runway*) followed by:

a) (*contaminant*) (*depth*) for contaminants; or
b) SLIPPERY WET (*coverage*) for slippery wet.

12.2.3.4.4 Advice of dry runway

When the entire runway is dry, only provide advice of 'DRY' when this differs from the previous advice, or on pilot request.

12.2.3.4.5 GRF - advice by voice

When informing aircraft about changes to information provided on the ATIS:

a) for a paved runway, provide only the revised RWYCC. On pilot request, you may provide the surface condition descriptor and/or other elements of an RCR; and

b) for an unpaved runway, provide the surface condition descriptor and any other relevant details.

See MATS 12.2.3.5 Runway Condition Assessment Matrix (RCAM)

12.2.3.5 Runway Condition Assessment Matrix (RCAM)

At locations using GRF, determine or interpret the runway condition code as per the following table:

<table>
<tr><th>RWYCC</th><th>Runway surface description</th><th>Pilot report of runway braking action</th></tr>
<tr><td>6</td><td>DRY</td><td>--</td></tr>
<tr><td>5</td><td rowspan="2">WET
FROST
Up to and including 3 mm depth of:
SLUSH
DRY SNOW
WET SNOW</td><td>GOOD</td></tr>
<tr><td>4</td><td>GOOD TO MEDIUM</td></tr>
<tr><td>3</td><td>SLIPPERY WET
More than 3 mm depth of:
DRY SNOW
WET SNOW</td><td>MEDIUM</td></tr>
<tr><td>2</td><td rowspan="3">STANDING WATER</td><td>MEDIUM TO POOR</td></tr>
<tr><td>1</td><td>POOR</td></tr>
<tr><td>0</td><td>LESS THAN POOR</td></tr>
</table>

Note: *The aerodrome operator may upgrade or downgrade the RWYCC based on other relevant information.*

12.2.3.5.1 Advice of RWYCC 6

When all thirds of a runway are dry, only provide advice of runway condition code 6 when this differs from the previous advice, or on pilot request.

12.2.3.6 Braking action reports

When the runway is not dry, request pilot reports on braking action at intervals dependent on factors such as the drainage characteristics of the runway and the intensity of the rain.

Note: *Pilots may initiate braking action reports and may provide these by AIREP special.*

12.2.3.7 Advice of braking action

Pass reports of braking action to:

a) affected aircraft; and
b) to the aerodrome operator when:
   i) contaminants are present; or
   ii) the braking action is reported as less than GOOD.

12.2.3.8 Braking action descriptors

Use the following terms to describe braking action:

Term	Description
GOOD	Braking deceleration is normal for the wheel braking effort applied **and** directional control is normal
GOOD TO MEDIUM	Braking deceleration **or** directional control is between Good and Medium
MEDIUM	Braking deceleration is noticeably reduced for the wheel braking effort applied **or** directional control is noticeably reduced
MEDIUM TO POOR	Braking deceleration **or** directional control is between Medium and Poor
POOR	Braking deceleration is significantly reduced for the wheel braking effort applied **or** directional control is significantly reduced
LESS THAN POOR	Braking deceleration is minimal to non-existent for the wheel braking effort applied **or** directional control is uncertain

12.2.3.8.1 Advice of good braking action

Only advise braking action as GOOD for a runway previously advised as having a reduced braking action or on pilot request.

12.2.3.9 Obstructions

On becoming aware of obstructions, or that an animal strike may have occurred:

a) advise the aerodrome operator or delegate;

b) advise affected pilots; and

c) if applicable:

   i) attempt to determine which aircraft may have been involved; and

   ii) advise the pilot and/or company/unit involved.

Note: *Obstructions include:*

a) any object which may have fallen from an aircraft;

b) animals, including birds or animal carcasses, in numbers or of a size likely to be a hazard to aircraft operations, on or in the vicinity of the runway or runway strip.

12.3 Movement area

12.3.1 Taxi and pre-taxi instructions

12.3.1.1 Clearance delivery

ACD issues the:

a) airways clearance;
b) transponder code; and
c) DEP or other airborne frequency, as necessary.

12.3.1.2 Start approval

As far as practicable, implement start approvals to avoid excessive queuing at the holding point.

12.3.1.2.1 Start approval notifications

When start approvals are implemented:

a) notify the TCU and NOMC; and
b) broadcast the start approval requirement on the ATIS.

12.3.1.3 Push-back

Issue push-back approvals that are appropriate to the traffic situation.

12.3.1.4 Apron traffic

When issuing push-back approval and taxi instructions, provide traffic information on other aircraft entering, leaving or moving on the same apron.

12.3.1.5 Taxi instructions

Provide concise taxi instructions that:

a) give adequate information to assist pilots in determining correct taxi routes and avoid collision with other aircraft or obstructions; and
b) regulate entry to and movement on taxiways.

Note 1: *Taxi instructions do not relate to movement on apron areas.*

Note 2: *Aircraft are required to obtain a taxi instruction when vacating the runway strip after landing.*

See MATS 10.9.9.1 Responsibilities

12.3.1.5.1 Vehicle authorisations

Provide vehicle authorisations in the same manner as for aircraft taxi instructions.

Note: *Vehicle authorisations substitute the word 'PROCEED' for the word 'TAXI'.*

See AIP

12.3.1.6 Sectional TWY lighting

If sectional TWY lighting is available, you may activate section by section progressively, providing a clear indication of the desired route.

12.3.1.7 Time check

At pilot request issue a time check to the nearest half minute.

12.3.1.8 Visiting aircraft

When providing taxi instructions to visiting aircraft:

a) specify route progressively; and

b) avoid local terminology.

12.3.1.8.1 Frequency details

Advise all international aircraft of the next tower frequency and when to make the change to that frequency.

12.3.1.9 Jet aircraft

Avoid stopping a jet aircraft while it is taxiing, due to the probability of high breakaway thrust levels.

12.3.1.10 Taxiing on grassed areas

For aircraft taxiing on grassed areas other than defined taxiing and landing areas, restrict anti-collision services to providing traffic information and visual signals.

12.3.1.11 Taxiing on the runway

Do not permit aircraft to taxi on runways in use unless an alternate route is unavailable and, if radio communication is not available, only after pre-flight arrangement.

12.3.1.12 Taxiing across runways

When surface traffic is required to hold short of a runway intersecting the taxi route, issue a taxi instruction limit of the runway-holding position associated with the intersecting runway.

12.3.1.12.1 Intermediate holding positions

Do not include positions beyond the required intermediate holding position in taxi instructions.

12.3.1.13 Cross runway instruction

Include a 'CROSS RUNWAY (*number*)' instruction where a taxi instruction contains a taxi limit beyond the runway.

12.3.1.13.1 Previously held

Issue departing and arriving aircraft with instructions to 'CROSS RUNWAY (*number*)' if they were previously issued with:

a) a taxi instruction limit of the runway-holding position of a runway intersecting the taxi route; or

b) an instruction to 'HOLD SHORT' of a runway.

12.3.1.14 Point of crossing

Include the point of crossing when authorising surface traffic to cross a Runway in Use.

12.3.1.14.1 Point of entry

Include the point of entry when authorising surface traffic to enter a Runway in Use, except when issued to a departing aircraft in conjunction with a clearance to line-up or enter the Operational Readiness Platform.

12.3.1.14.2 Point of exit

Include the exit point with the runway crossing instruction when the exit route is not obvious or could be confused with other close proximity exit routes.

See MATS 12.3.1.5 Taxi instructions

12.3.1.15 Stop bars

When issuing a clearance to cross or enter a runway in use, the ADC with control of that runway must switch off the stop bar to indicate that traffic may proceed.

12.3.1.15.1 Switching off stop bars

Do not switch off the stop bar until the aircraft is approaching the runway-holding position to cross the runway.

12.3.1.16 Stop bar switching faults

When a fault occurs which prevents one or more globes from being extinguished on a stop bar:

a) cancel any issued clearance to cross the affected stop bar and instruct the aircraft to hold at the runway-holding position;
b) commence fault reporting action; and
c) do not implement stop bar contingency procedures in the first 15 minutes following recognition of the fault.

12.3.1.17 Pre-contingency measures

Prior to implementing stop bar contingencies procedures and if the fault cannot be quickly rectified, request that:

a) power to the stop bars is disabled;
b) the stop bar lights are obscured; or
c) for a fault affecting an individual stop bar, the associated taxiway is closed.

Note: *Disabling power, obscuring the stop bar (e.g. with tape) or closing the affected taxiway (for a fault on an individual stop bar) is preferable to implementing contingency procedures.*

12.3.1.18 Stop bar contingency advice

If stop bar lighting cannot be switched off:

1) Advise affected aircraft and update the ATIS using the phrase:
'STOP BAR SWITCHING [AT HOLDING POINT(S) (*name of runway-holding position(s)*)] UNSERVICEABLE, STOP BAR CONTINGENCY PROCEDURES IN FORCE';
2) For aircraft not in receipt of the updated ATIS, issue individual advice. Do not use an 'all stations' broadcast; and
3) Authorise entry to the runway using the phrase:
'AT (*runway-holding position*), CROSS THE ILLUMINATED STOP BAR, LINE UP (*or* CLEARED FOR TAKE-OFF *or* ENTER *or* CROSS) RUNWAY (*number*)'.

12.3.1.18.1 Stop bar contingency procedures

Apply the following during stop bar contingency:

a) Only issue clearances to cross an illuminated stop bar at runway-holding positions that are visible to the tower;
b) Use a suitable alternate runway-holding position with a serviceable or deactivated stop bar in preference to crossing an illuminated stop bar;
c) As far as practicable, avoid the simultaneous use of multiple runway-holding positions for departure;
d) Do not issue conditional clearances to cross an illuminated stop bar; and
e) Do not apply stop bar contingency procedures when the RVR is less than 550 m.

Note: *(for point a)) This requirement may be satisfied by use of AGSS.*

12.3.1.18.2 ARFF and airport arrangements

Detail procedures for ARFF and the airport authority in local instructions.

12.3.2 Runway and take-off instructions

12.3.2.1 Line up clearances

You may instruct an aircraft to line up when a take-off clearance cannot be given immediately.

See MATS 12.3.2.4 Line up and wait - runway occupied

12.3.2.2 Multiple line up clearances

When aircraft are authorised to line up on the same or intersecting runways simultaneously, provide mutual traffic information and include the following in the line up clearance:

a) runway number;
b) intersection (if applicable); and
c) number in the departure sequence.

12.3.2.2.1 Use same ADC frequency

Issue line up instructions on the same aerodrome control frequency.

12.3.2.2.2 Continuous visual reference (pilots)

When utilising the same runway for departure, or simultaneous backtracking, flight crew must be able to maintain visual reference to any other aircraft they are following.

12.3.2.2.3 Continuous visual reference (ATC)

Do not issue multiple line up or simultaneous backtrack instructions unless the controller can continuously observe all relevant aircraft.

12.3.2.2.4 Delayed by traffic

When aircraft are delayed by the traffic situation, issue traffic information if appropriate followed by any of:

a) an instruction to hold position off the runway;
b) a conditional line up clearance; or
c) an instruction to line up and wait.

12.3.2.2.5 Any other restrictions

Local instructions must detail any restrictions relating to size of aircraft, MTOW or position on runway where a multiple line up may occur.

12.3.2.3 Conditional clearance

For movements affecting a runway, only issue a conditional clearance to aircraft or approved vehicles:

a) when you, the pilot and/or the vehicle driver can see all aircraft or vehicles concerned;

b) when you can visually monitor this traffic until the condition no longer applies;

c) when the aircraft or vehicle causing the condition is the first to pass in front of the other traffic; and

d) if applicable, after the take-off or landing clearance has been issued to the conditional traffic, to avoid confusion with traffic operating on the runway prior to the conditional traffic.

12.3.2.3.1 Exception - stop bars

Do not issue a conditional clearance to an aircraft or approved vehicle at runway-holding positions with installed and operating stop bars.

12.3.2.3.2 Approved vehicles for conditional clearances

Specify approved vehicles in local instructions.

12.3.2.3.3 Order of information

In all cases, give a conditional clearance in the following order:

1) Identification – callsign;
2) The condition – including position of the subject of the condition;
3) The clearance; and
4) Brief reiteration of the condition.

12.3.2.3.4 Expand position information

Where the position of the traffic causing the condition is not readily apparent, expand the position information.

12.3.2.4 Line up and wait - runway occupied

Issue a WAIT instruction when a pilot is instructed to line up while the runway is/will be occupied by a preceding, arriving or departing aircraft or other obstruction.

See MATS 12.3.1.15 Stop bars

12.3.2.4.1 Exception

Where it is expected that the preceding, arriving or departing aircraft or other obstruction will have vacated the runway prior to the departure requiring to stop in the lined up position, a 'WAIT' instruction need not be issued.

See MATS 12.3.2.5 Line up and wait - departure instruction issued

12.3.2.4.2 Reason for delay

Advise the pilot of the nature of the obstruction if it is not apparent.

12.3.2.5 Line up and wait - departure instruction issued

When an instruction to line up does not include a take-off clearance and is issued with the departure instructions, issue the departure instructions at the beginning of the instruction and give the appropriate holding instruction at the end e.g. 'ASSIGNED HEADING RIGHT 050, LINE UP RUNWAY 01 AND WAIT'.

See MATS 12.3.1.15 Stop bars

12.3.2.6 Departure instructions, Radar SIDS or headings

Do not issue Radar SID departure instructions or assigned headings to an aircraft unless in association with any of:

a) an instruction to line up and wait;

b) a 'HOLD SHORT' instruction; or

c) a take-off clearance.

12.3.2.7 Runway number in line up clearance

Include the runway number in the line up clearance whenever more than one runway is in use or when aircraft are authorised to line up on the same runway.

12.3.2.7.1 Runway number not required

Class D aerodromes, operating two or more ADC positions with discrete frequencies, need not specify the runway number for parallel runway operations.

12.3.2.8 Backtrack clearance

When the pilot has requested backtrack with the 'READY' or 'REQUEST LINE UP' report, give the instruction to 'BACKTRACK RUNWAY (*number*)' before the line up instruction.

Note: *An ATC clearance to line up does not authorise the pilot to backtrack on the runway.*

See MATS 12.3.1.15 Stop bars

12.3.2.8.1 Cross runway or hold short

When a backtrack on the runway will involve crossing an intersecting runway, include either a 'CROSS RUNWAY (*number*)' instruction or an instruction to 'HOLD SHORT' of that runway in the backtrack instruction.

12.3.2.9 Ascertain pilot intentions

When entry to the runway will be from a position that is not adjacent to the runway threshold and a pilot reports 'READY' without requesting or accepting an intersection departure, or requesting backtrack, ascertain the pilot's intentions prior to authorising entry to the runway.

12.3.2.10 Intersection departure

When a pilot is offered an intersection departure, include the take-off distance remaining if this information is not readily available to the pilot.

12.3.2.11 Take-off clearances

Issue a take-off clearance when:

a) the aircraft is at or approaching the runway in use;
b) the traffic situation permits;
c) the aircraft has reported 'READY';
d) a visual check of the take-off path has been completed;
e) no obstructions or collision risk exists; and
f) there is reasonable assurance that the prescribed separation standard will exist when the aircraft commences take-off.

12.3.2.11.1 Repeat visual check

Visually check the take-off path again immediately before the take-off commences.

12.3.2.11.2 Runway number

Whenever more than one runway is in use, include the runway number in the take-off clearance.

12.3.2.11.3 Runway number not required

Class D aerodromes, operating two or more ADC positions with discrete frequencies, need not specify the runway number for parallel runway operations.

12.3.2.12 Take-off

Use the words 'TAKE-OFF' only for clearing an aircraft for take-off or when cancelling a take-off clearance.

12.3.2.12.1 Order of instructions

Use the words 'TAKE-OFF' as the last words of the take-off clearance, except when the following information must be added:

a) an instruction specifying a turn or circuit direction; or
b) when required, the state of the arrestor system.

12.3.2.12.2 Arrestor system position

Where installed, the position of the arrestor system must be included with the take-off clearance when:

a) it is not in the normal operating position for that aircraft type; or
b) requested by the pilot.

12.3.2.13 Initial turn

Do not vary the initial turn after take-off from that specified except:

a) in an emergency; or

b) after prior agreement.

12.3.2.14 SID or route name cancelled

When a SID and/or route name is cancelled, issue the new tracking instructions and any altitude restrictions and/or requirements separately from the take-off clearance.

12.3.2.15 Clearance for immediate take-off

You may issue a clearance for immediate take-off to an aircraft before it enters the runway.

12.3.2.16 Cancelling take-off clearances

Only cancel a take-off clearance once an aircraft has commenced take-off roll in circumstances where an aircraft is in imminent danger e.g. 'STOP IMMEDIATELY (repeat aircraft callsign) STOP IMMEDIATELY (reason)'. Accompany any instruction to cancel take-off with a description of the nature of the emergency.

Note: *The decision to reject take-off remains with the pilot.*

12.3.2.17 Military aircraft

Where you believe a formation take-off may impair safety, you may issue control instructions to individual aircraft.

Note: *Military aircraft engaged in operations or operational training exercises may require a multiple aircraft take-off.*

12.3.2.17.1 Fighter scrambles

Grant priority for take-off to aircraft involved in fighter scrambles, and keep other traffic clear of their take-off path and first heading.

12.4 Departing aircraft

12.4.1 Coordinating departing aircraft

12.4.1.1 Next call

When a departing aircraft approaches the runway-holding position and is anticipated to be airborne within two minutes, advise the subsequent Controller using a NEXT call. Also include:

a) the additional period of delay if the aircraft is not anticipated to be airborne within two minutes, by specifying either:
   i) the additional number of minutes delay; or
   ii) the airborne time; and

b) the runway, if the aircraft is departing from other than the duty runway, or more than one runway is nominated for departure.

See MATS 6.3.5.2 Coordination exchanges

12.4.1.1.1 Advise airborne time changes

Advise the subsequent Controller whenever it becomes apparent that the aircraft will be airborne later than the anticipated or pre-coordinated airborne time.

12.4.1.1.2 Next call from Procedural Tower

Where a NEXT call is unable to be completed by a Procedural TWR to an en route control sector, the aircraft may be allowed to depart and maintained within the Tower airspace until coordination is completed.

See MATS 6.3.4.6 Approach/Tower (procedural) to en route control (surveillance or procedural)

See MATS 6.3.5.2 Coordination exchanges

12.4.2 Transfer of departing aircraft

12.4.2.1 Directed frequency transfer

Unless otherwise coordinated, transfer frequency for departing aircraft:

a) as soon as possible after becoming airborne as indicated by the NEXT call; and

b) in surveillance, when correctly coupled.

See MATS 12.4.1.1 Next call

See MATS 4.2.3.1 Emergency phases and time sequence

12.4.2.1.1 Exception - local transfer

Specify local transfer differences and/or requirements in local instructions.

See MATS 11.2.4 Auto release

12.5 Arriving aircraft

12.5.1 Information for inbound traffic

12.5.1.1 Instructions to arriving aircraft

Issue the following information and instructions, as applicable, when a pilot requests clearance to enter the aerodrome traffic circuit:

a) The altitude at which to enter the circuit;
b) Route instructions/clearance limit;
c) Landing information;
d) Significant traffic information;
e) Essential aerodrome information; and
f) A position at which the aircraft pilot is to report for further instructions.

12.5.1.1.1 Circuit entry instructions

Include the discrete runway designator when issuing circuit entry instructions.

12.5.2 Reciprocal Runway Operations (RRO)

12.5.2.1 Detail use of RRO

Except for ad hoc approvals, specify approved RRO use in local instructions.

12.5.2.1.1 Standard tracking arrangements

Detail the following RRO arrangements in TWR/TCU/Approach agreements:

a) Standard tracking to facilitate separation assurance; and
b) Procedures for the holding of low-level arrivals.

12.5.2.2 Ad hoc approval

For other than operational requirements, only approve the use of a reciprocal runway when:

a) aircraft using the duty runway will not be delayed;
b) with mutual agreement between TWR and TCU/Approach where applicable; and
c) the non-duty, reciprocal runway is equal to or higher in the order of preferred runways specified in AIP DAP, when the use of the preferred runways is applicable.

12.5.2.3 Auto-release

Do not use auto-release procedures during RRO.

12.5.2.4 Traffic information

Provide timely traffic information to affected aircraft to ensure that situational awareness is maintained when RRO are in progress, but not on the ATIS.

12.5.3 Issuing landing clearances

12.5.3.1 Landing clearance

Only issue a clearance to land after:

a) the aircraft has commenced final approach of a straight-in instrument approach or has been sighted by the tower controller:
   i) on the late downwind leg of the circuit pattern;
   ii) on base leg; or
   iii) on final in the case of a straight-in visual approach;

b) a visual check of the landing path has been completed; and

c) no obstructions or collision risk exists.

Note: *A clearance to land authorises a pilot to go-around or carry out a missed approach.*

See MATS 12.5.4 Go-around or missed approach

12.5.3.1.1 Runway occupied - preceding aircraft

When the runway is occupied by a preceding aircraft landing or taking-off, you may clear an aircraft to land only if there is reasonable assurance that the prescribed separation standard will exist when the aircraft crosses the threshold to land.

12.5.3.1.2 Use of radar

Observation by radar satisfies the sighting requirement in Clause 12.5.3.1 a).

See MATS 12.5.3.1 Landing clearance

12.5.3.1.3 Repeat visual check

Visually check the landing path again immediately before the aircraft crosses the runway threshold to land.

12.5.3.1.4 Arrestor system position

Where installed, the position of the arrestor system must be included with the landing clearance when:

a) it is not in the normal operating position for that aircraft type; or

b) requested by the pilot.

12.5.3.2 Landing area occupied or obstructed

When the landing area is occupied by another aircraft or is obstructed, you may issue arriving aircraft with a clearance to:

a) continue approach if there is no immediate assurance that the landing areas will become available; or
b) go-around, or orbit if in a position to do so, should the landing area not be available. When required, issue a clearance to commence a second approach or hold following these instructions.

12.5.3.2.1 Advise pilots

Advise pilots of the nature of the obstruction if it is not apparent.

12.5.3.3 Change of runway

Do not offer a change of runway to an aircraft below 500 FT on final.

12.5.3.3.1 Pilot request

You may approve a pilot request for change of runway for an aircraft established on final.

12.5.3.4 Not in sight

If an arriving aircraft reports at a position where it should normally have been seen but has not been sighted, advise the aircraft that it is not in sight when clearing it to land.

12.5.3.5 Denied or cancelled clearance

If denying an aircraft a clearance to land or cancelling a landing clearance, give an instruction to go-around before the aircraft is committed to a landing.

12.5.3.6 Multiple runway operations

Whenever more than one runway is in use, include the runway number in the landing clearance.

12.5.3.6.1 Runway number not required

Class D aerodromes, operating two or more ADC positions with discrete frequencies, need not specify the runway number for parallel runway operations.

12.5.4 Go-around or missed approach

12.5.4.1 Missed approach

Subject to terrain clearance requirements, you may direct that a pilot conduct other than the published instrument missed approach procedure.

12.5.4.1.1 Onwards clearance

Issue an onwards clearance prior to the aircraft reaching the end of the missed approach procedure.

12.5.4.2 Visual approach in VMC

In the event of go-around from a visual approach, issue an onwards clearance as soon as practicable.

Note 1: *The pilot will be remaining visual and awaiting ATC instructions.*

Note 2: *Due to individual airline SOP and certain location specific requirements, a go-around from a visual approach may have to be conducted in accordance with the published instrument missed approach procedure for the primary instrument approach for the runway the aircraft is using.*

12.5.5 Gear checks, formations and military aircraft

12.5.5.1 Undercarriage status

Confirm that an aircraft's undercarriage is down when:

a) doubt exists as to whether an aircraft's gear is fully extended;

b) issuing a landing clearance to a general aviation aircraft with retractable undercarriage that has experienced abnormal operation; or

c) for a military aircraft, the pilot indicates the undercarriage is down and locked, when issuing the clearance to go-around or for any type of landing.

Note: *Military pilots normally respond with a landing system tone or landing light indication e.g. 'THREE GREENS'. When in formation, each pilot will reply in turn.*

12.5.5.1.1 Transmit callsign

When all elements of a formation have reported landing gear down, acknowledge satisfactory compliance of the check by transmitting the formation callsign.

12.5.5.2 Military formation - circuit entry and landings

When military aircraft land in formation, allocate one landing sequence number to the formation. For the provision of sequence numbers to subsequent aircraft, count each aircraft in the formation separately.

Note 1: *The leader of a formation is required to obtain permission to join the traffic circuit, provide a positive position report and to obtain a landing clearance on behalf of the whole formation. All pilots in the formation are required to maintain a listening watch on the tower frequency.*

Note 2: *A formation landing may involve a stream landing where aircraft land on the same runway in quick succession, a pair's straight-in approach or an in-trail straight-in approach.*

12.5.5.2.1 Stream landing circuit

You may provide clearance for formations to conduct a stream landing circuit.

Note: *Military pilots intending to land at airfields where the standard circuit is in force and wishing to carry out a stream landing circuit, are required to comply with standard procedures unless specifically cleared to carry out the stream landing circuit.*

See MATS 12.5.7.2 Military stream landing circuit

12.5.5.2.2 Individual control instructions

Maintain a close watch on multiple aircraft landings. You may, in the interest of safety, issue control instructions to individual aircraft.

12.5.5.3 Formation broken

Consider the formation broken and process aircraft individually when the formation aircraft:

a) elect to carry out touch-and-go landings;
b) are required to go-around; or
c) elect to carry out individual activities.

12.5.5.4 Military full-stop

At Defence aerodromes, do not instruct a military aircraft to make a full-stop landing, however, a pilot may be requested to make a full-stop landing due to traffic.

12.5.6 Circuit operations

12.5.6.1 Expedite traffic flow

You may expedite traffic flow by approving or requiring aircraft to enter the traffic circuit at a point which affords the shortest circuit entry to the runway being used.

12.5.6.2 Landing sequence considerations

When spacing aircraft during a landing sequence, consider differing speeds and circuit requirements.

12.5.6.2.1 Smooth landing flow

To achieve a smooth landing flow you may instruct aircraft to:

a) extend via a circuit leg e.g. 'EXTEND DOWNWIND';
b) make a wide (or close) circuit;
c) make a long approach; or
d) make a short approach.

12.5.6.2.2 Runway designator

Include the runway designator (left, right or centre) with sequencing instructions when parallel runways with contra-rotating circuits are in use, and aerodrome control is provided from a single ADC position. For example:

'ABC NUMBER TWO FOLLOW THE CESSNA ON BASE RUNWAY LEFT'

'DEF NUMBER ONE RUNWAY CENTRE'.

12.5.6.3 Asymmetric training approval

Dependent upon other operations and priorities, provide approval to pilots requesting to conduct asymmetric training within 5 NM of a controlled aerodrome.

12.5.6.4 Authorisation - low level flights over aerodromes

Do not authorise civil low level flights over aerodromes, for publicity and demonstration purposes, at levels below the normal circuit altitude for the type of aircraft concerned.

12.5.6.4.1 Exception

You may grant approval in exceptional circumstances, but only following prior agreement with local authorities.

12.5.6.5 Tower fly pasts

Do not initiate tower fly pasts.

12.5.6.5.1 Enable visual assessments

On pilot request, you may approve tower fly pasts to enable visual assessments when there is suspected damage to, or malfunction of, undercarriage or other components.

12.5.6.6 Training approaches

You may approve an aircraft making a training approach to overfly an aircraft, vehicle or pedestrian within the runway strip at a controlled aerodrome provided:

a) the training aircraft is in VMC or a military aircraft in IMC at a military aerodrome;

b) you instruct the training aircraft not to descend below:

   i) 300 FT AGL or the relevant minimum altitude for the approach if higher; or

   ii) 300 FT AGL in the case of a practice visual approach; and

c) you pass traffic information to:

   i) the other aircraft before it enters the relevant runway strip; and

   ii) vehicles and pedestrians operating within the relevant runway strip.

See MATS 9.4.2.1 Issuing levels below LSALT

12.5.6.6.1 Exception

You need not pass traffic information:

a) to the vehicles and/or pedestrians operating within the works area associated with a displaced threshold; or

b) if the aircraft on the training approach will not descend below:

   i) 500 FT AGL, if it is 7000 kg MTOW or less; or

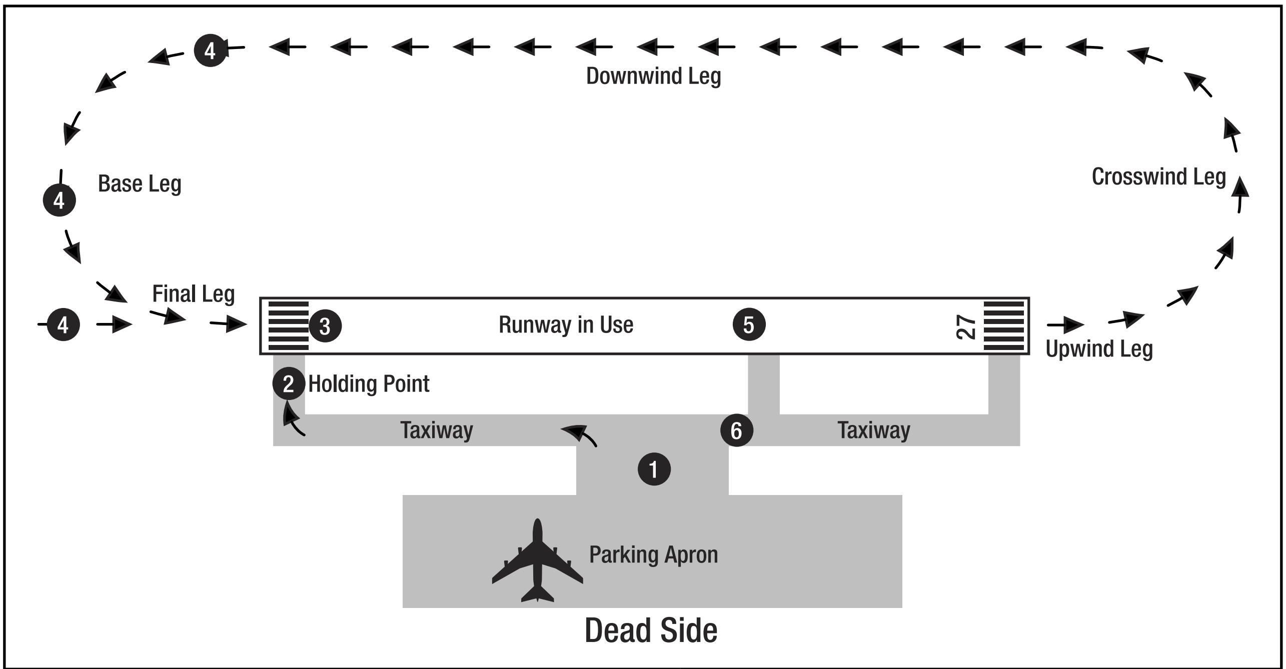
   ii) 1000 FT AGL.

12.5.6.6.2 Military aircraft operating in IMC

When a military aircraft is conducting an instrument approach in IMC at a military aerodrome and is unlikely to become visual with the landing environment, ATC should avoid clearing large tailed aircraft or civilian aircraft to enter the runway strip.

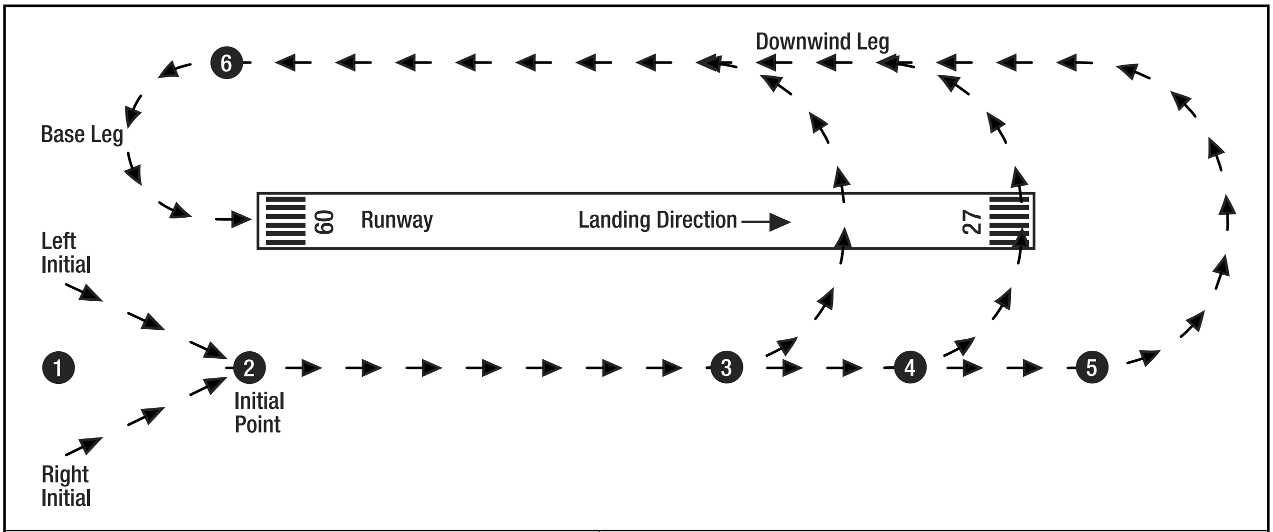
12.5.7 Circuit patterns

12.5.7.1 Standard circuit pattern



1 Aircraft initiates call to taxi for departing flight. Cleared to runway holding position.	4 Landing Clearance issued here. At late Downwind / Base Leg position for normal circuit or Final for Straight in approach.
2 Line-up or Take-off clearance issued here. Details of Air Traffic Clearance passed when necessary.	5 Taxi Instructions, if required.
3 Take-off clearance issued if not at position 2.	6 Parking information if necessary issued here.

12.5.7.2 Military stream landing circuit



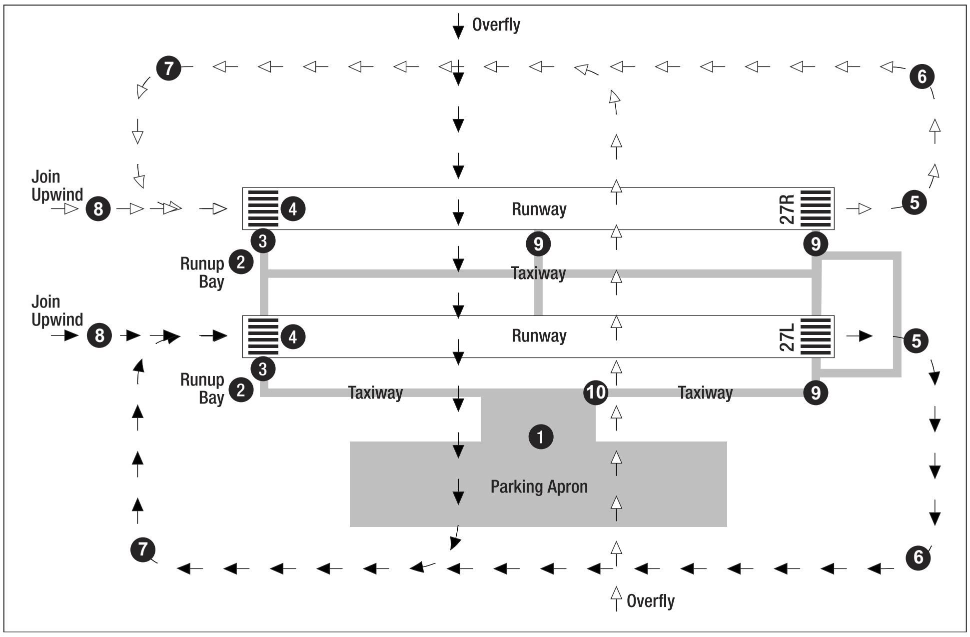
1 First call on run-in to Initial Point.	4 Second aircraft in section pitches out and positions Downwind behind the first aircraft - no call.
2 Commence Initial.	5 Third aircraft in section pitches out and positions Downwind behind second aircraft - no call.
3 First aircraft pitches out no call made.	6 Aircraft call Base Leg - landing clearance given here.

12.5.7.3 Circuit direction considerations

When selecting circuit direction, consider traffic separation and non-operational matters such as noise abatement.

12.5.7.4 High volume VFR aerodrome

Use the following diagram to determine the circuit pattern at Archerfield, Bankstown, Camden, Jandakot, Moorabbin and Parafield:



1	Aircraft initiates call to taxi - clearance provided	6	Downwind leg
2	Aircraft vacating the bay give way to aircraft on the taxiway	7	Base leg
3	Line up or take-off clearance issued here	8	Final (joining upwind) leg - Landing clearance issued here unless issued on downwind/base leg
4	Take-off clearance issued if not issued at position 3	9	Taxi instructions, if required
5	Crosswind leg	10	Parking information issued if necessary

12.6 Helicopters

12.6.1 Clearance procedures

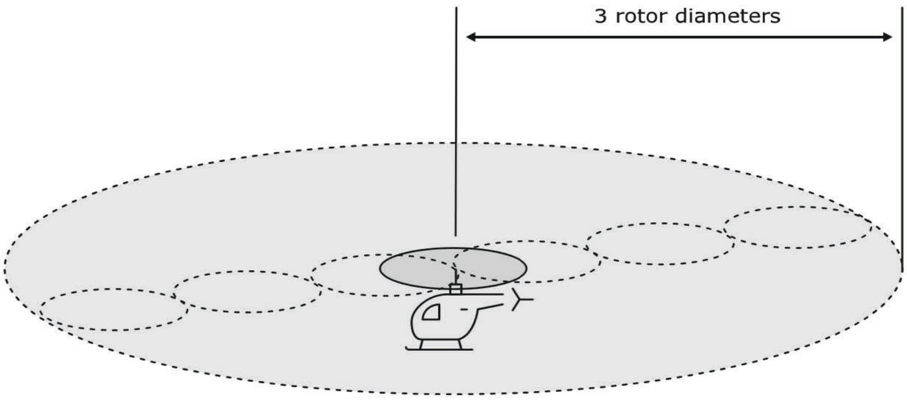
12.6.1.1 Rotor wash effect

When issuing taxi, take-off or landing clearances to a helicopter, take into account the turbulence associated with helicopter rotor wash and its effect on other aircraft, vehicles and personnel operating within the affected area.

Note: *When hovering or air taxiing, a helicopter directs a forceful blast of air downwards which then rolls out in all directions. This downwash and associated turbulence can drift a substantial distance downwind and may affect an adjacent runway or taxiway.*

12.6.1.1.1 Downwash caution

Issue a downwash caution to light aircraft that operate in an area comprising three times the rotor diameter of a helicopter that is hover taxiing or in a stationary hover.



12.6.1.1.2 Wheeled helicopters

Encourage wheeled helicopters to ground taxi on prepared surfaces to minimise rotor wash and its effects.

12.6.1.2 Take-off in lieu of taxiing

Whenever possible, issue take-off clearances in lieu of extended air taxiing or air transit operations.

12.6.1.3 Helicopter relocations

Authorise helicopter to relocate from one position to another by using the appropriate phrase:

a) 'AIR TAXI';
b) 'AIR TRANSIT'; or
c) 'GROUND TAXI'.

12.6.1.4 Tailwind limits

Unless requested by the pilot, do not issue a take-off or landing clearance to a helicopter when the tailwind exceeds 5 kt.

12.6.1.5 Take-off and landing clearances

At locations within controlled airspace, issue a take-off or landing clearance to a helicopter operating on a runway or any HLS visible to the tower and located on a manoeuvring area subject to ATC and assessed by the pilot as being suitable as a HLS.

12.6.1.5.1 HLS not visible or subject to ATC

Where a HLS is not visible from the tower or not on the manoeuvring area provide instruction to report airborne or on the ground.

12.6.1.6 Circuit patterns

Helicopters are not always required to comply with standard circuit pattern.

12.6.1.7 Helicopter access corridors

The tower controller is the controlling authority for helicopter access corridors associated with controlled aerodromes.

Note 1: *Helicopter traffic normally complies with the procedures detailed in AIP ENR 1.1. However, the use of specific routes and/or altitudes may be available to direct helicopters to gates prior to circuit entry/arrival to expedite traffic flow. When gates are established, procedures for their use are promulgated in ERSA.*

Note 2: *The optimum location for a helicopter gate is ½ NM abeam the mid-point of the Runway in Use. Arriving and departing helicopters are required to enter or exit the 'gate' on a track at 90 degrees to the centre line of the nominated runway and at the altitude specified.*

12.6.1.8 Single-pilot helicopters

Whenever possible, avoid issuing frequency changes to single-pilot helicopters during taxiing, hovering or low level flight.

12.7 Control of manoeuvring area

12.7.1 Clearance procedures

12.7.1.1 Issue clearances

Issue clearances for manoeuvring area access to:

a) pedestrians, excluding designated pedestrian paths or areas; and
b) vehicles to enter or operate on taxiways, runways and HLS.

Note: *Vehicles using a service road and crossing a taxiway at a designated live taxiway crossing point do not require a clearance unless Low Visibility Procedures are in effect.*

12.7.1.1.1 Crossing runways

When issuing clearances to pedestrians or vehicles to enter runway strips, include:

a) instructions to cross an intersecting runway; or
b) clearance limits that are clear of intersecting runways.

See also MATS 12.3.1.15 Stop bars

12.7.1.1.2 Frequency procedure

Instruct aircraft, vehicles and pedestrians operating on a runway in use, or within the runway strip of a runway in use, to operate on the appropriate ADC frequency except when:

a) the aircraft/vehicle/pedestrian is crossing a runway in use;
b) a facility failure (console or aircraft/vehicle) requires use of SMC frequency; or
c) an emergency situation requires use of SMC frequency.

12.7.1.2 Driver or pedestrian readback

Obtain a readback of key elements of the following ATC clearances and instructions to drivers or pedestrians on the manoeuvring area:

a) any route specified in a clearance or instruction;
b) any clearance, conditional clearance, or instruction, to operate on, enter, stop on, wait on, hold short of, cross, or vacate, any runway, taxiway or HLS; and
c) any radio frequency instructions.

12.7.1.2.1 Readback discrepancies

Correct readback discrepancies immediately.

12.7.1.3 Control of runway in use

Retain under the control of the ADC, the entire serviceable length of the runway when any portion is being used by an aircraft for take-off or landing.

12.7.1.4 Runway release and resumption

When the ADC resumes control of a runway released to the SMC, the SMC verbally acknowledges the resumption by using either phrase 'RWY (*number*) NO TRAFFIC', or 'RWY (*number*) TRAFFIC IS ... (*aircraft, vehicles, pedestrians*)'.

12.7.1.5 Runway End Safety Area (RESA)

Do not authorise any personnel or mobile object to operate in the associated RESA when the runway is being used for take-off or landing.

Note: *Unless a specific authorisation has been issued by ATC, it is the aerodrome operator's responsibility to ensure the RESA is protected.*

12.7.2 Aerodrome works

12.7.2.1 Facilitation

During rostered hours of duty of ATC, the ADC facilitates the performance of time-limited works during normal aircraft operations, and any works carried out under a Method of Working Plan (MOWP).

Note: *After consultation with ATS, the aerodrome operator or delegate may close all or part of a runway strip on which work is required if aircraft operations will cause unacceptable delays or inconvenience to the work.*

12.7.2.2 Current MOWP

Ensure you are familiar with the safety precautions and/or operating procedures applicable to any aerodrome works or MOWP current during your rostered hours of duty.

12.7.2.3 Works inside the runway strip

By day, you may approve workers using hand tools only to carry out minor maintenance works within the runway strip up to the runway side stripe marking, or runway edge where no side stripe marking exists, during aircraft operations provided:

a) a Works Safety Officer (WSO) has control of the works and maintains continuous voice contact with ATC on the nominated frequency;
b) the maximum crosswind component does not exceed 20 kt;
c) the visibility is equal to or greater than 5000 m, the ceiling is equal to or greater than 1000 FT and the working party can be visually monitored at all times;
d) the runway surface is dry;
e) advice of the works is provided to pilots; and
f) if the works are within 23 m of the runway:
   i) the WSO will remain at the site at all times;
   ii) work will take place on one side of the runway only; and
   iii) work will not continue during Super or Heavy aircraft operations on the runway.

Note: *Works required to take place outside the requirements of the above paragraphs, e.g. in a number of locations on different sides of a runway, must be subject to a MOWP agreed to by ATC and the aerodrome operator.*

12.7.2.3.1 Varying requirements

During periods when there are no expected aircraft movements, the requirements of Clause 12.7.2.3 Works inside the runway strip and may be varied when agreed to by ATC and the aerodrome operator.

See MATS 12.7.2.3 Works inside the runway strip

12.7.3 Signals for controlling aircraft aerodrome traffic

12.7.3.1 Radio or light signals

Control airborne operations and ground movements by radio or light signals.

12.7.3.1.1 Light signals to aircraft

Light signal	Meaning in flight	Meaning on aerodrome
Steady Green	Authorised to land if pilot satisfied no collision risk exists	Authorised to take-off if pilot satisfied no collision risk exists
Steady Red	Give way to other aircraft and continue circling	Stop
Green Flashes	Return for landing	Authorised to taxi if pilot satisfied that no collision risk exists
Red Flashes	Aerodrome unsafe - do *not* land	Taxi clear of landing area in use
White Flashes	No significance	Return to starting point on aerodrome

12.7.3.1.2 Light signals to vehicles and pedestrians

Light signal	Meaning
Green Flashes	Permission to cross landing area or to move onto taxiway
Steady Red	Stop
Red Flashes	Move off the landing area or taxiway and watch out for aircraft
White Flashes	Vacate the manoeuvring area in accordance with local instructions
Flashing runway or taxiway lighting	Vacate the runway or taxiway and observe the Tower for light signal. Used in emergency conditions or if the above signals are not observed.

12.8 Low Visibility Procedures

12.8.1 Applying Low Visibility Procedures

12.8.1.1 Initiating LVP

When the visibility on any part of the manoeuvring area is insufficient for ATC to exercise control on the basis of visual surveillance, initiate measures in accordance with the aerodrome's low visibility procedures.

12.8.1.2 Implementing LVP

Ensure low visibility procedures are fully implemented when:

a) an instrument approach operation will take place when the ceiling or visibility is less than the precision approach CAT I minima for the runway being used;

b) a take-off operation will take place when the RV/RVR is less than 550 m for the runway being used; or

c) for a runway without a precision approach:
   i) the RV/RVR is 800 m or less; or
   ii) the ceiling is 200 FT or less.

Note: *In order to continue unrestricted operations for as long as possible whilst weather conditions deteriorate and to minimise delay when weather reaches the LVP criteria a staged implementation process may be used.*

12.8.1.2.1 Aerodrome operator notification

Notify the aerodrome operator when LVP measures are to be initiated.

12.8.1.2.2 Aerodrome operator requirement

Do not declare LVP in force until the aerodrome operator has advised that preparations necessary for the management of ground activities are completed.

12.8.1.3 LVP notification

Notify pilots and approach control when low visibility procedures are in force using the phrase 'LOW VISIBILITY PROCEDURES IN FORCE'.

Note: *Notification of LVP to pilots indicates that the relevant critical and sensitive area protections are in place.*

12.8.1.4 Procedure to protect landing and arriving aircraft

Do not permit aircraft to land or take-off unless the position of vehicles and other aircraft with a specific ATC clearance is positively established clear of the runway to be used.

12.8.1.4.1 Establishing clear

Establish vehicles and other aircraft clear of the runway by:

a) visual means;
b) surveillance; or
c) a report from the driver or pilot.

12.8.1.4.2 Restrict vehicles

Cancel blanket clearances. Vehicles and persons operating on the manoeuvring area should be restricted to the essential minimum.

12.8.1.5 Separation on taxiways

Apply procedures for separation on taxiways as specified in local instructions.

12.8.1.5.1 Taxiway intersections

Do not permit an aircraft or vehicle at the intersection of taxiways to hold closer to the other taxiway than the holding position limit.

12.8.1.6 Procedure when visibility is less than 550 m

Do not allow more than one aircraft at a time on the manoeuvring area when visibility is less than 550 m.

12.8.1.6.1 Exception - more than one aircraft allowed

More than one aircraft is allowed on the manoeuvring area when:

a) stop bar lighting is available; or
b) if the visibility is 350 m or more, appropriate aids and procedures designed to prevent the inadvertent incursion of aircraft or vehicles onto the runway are:
    i) agreed with the aerodrome operator;
    ii) detailed in local instructions; and
    iii) in force.

12.8.1.6.2 Manoeuvring area limit and stop bar faults

When a fault occurs on an individual stop bar, operations may continue with more than one aircraft at a time on the manoeuvring area provided:

a) as soon as practicable:
   i) the affected taxiway is closed, including deployment of appropriate markers; and
   ii) the closure information is included in the ATIS; and

b) no additional departing traffic is allowed on the manoeuvring area until the requirements of point a) have been completed.

12.8.1.7 Critical and sensitive area protection

Protect critical and sensitive areas by the control of traffic on the manoeuvring area and, at CAT II/III or SA CAT I/II locations, by the application of minimum sequencing intervals between:

a) arriving and a departing aircraft; and

b) successive approaching aircraft.

See MATS 12.12.1 Protection of ILS critical and sensitive areas

12.8.1.7.1 Sequencing intervals

Detail applicable minimum sequencing intervals in local instructions.

12.8.2 Runway Visual Range and Runway Visibility

12.8.2.1 RVR/RV advice

Advise pilots of the RVR/RV by ATIS broadcast.

12.8.2.2 ATIS RVR/RV revision

Maintain the ATIS RVR/RV as accurately as practicable.

12.8.2.2.1 RVR

Ensure the ATIS RVR is amended when reported RVR changes to or passes values corresponding to applicable approach minima.

12.8.2.3 Instrumented RVR pilot update

Update pilots of arriving aircraft of the instrumented RVR on first contact with the tower.

12.8.2.4 RVR BoM approval

Detail in local instructions any BoM approval conditions for the use of RVR data derived from transmissometers.

12.8.2.5 RVR averaging

Ensure the averaging period for RVR values is one minute.

12.8.2.6 RVR reporting scale

Report RVR increments in accordance with the following table:

RVR (metres)	Step (metres)
>800	100
800 - 400	50
400 - 50	25

12.8.2.6.1 Rounding

Round down an RVR value to the nearest step in the scale.

12.8.2.6.2 RVR less than 50 metres

Report RVR as 'less than 50 metres'.

12.8.2.7 RVR/RV not assessed

Advise pilots when RVR/RV has not been assessed on the take-off or landing runway.

12.8.2.8 Information not available

If RVR/RV information on any one position is not available, include this in the appropriate sequence.

12.8.2.8.1 RVR/RV example phraseologies

Use	ATC phraseology
Including the runway number indicates that the RVR/RV has been assessed in the direction for take-offs and/or landings, on that runway, at the touchdown zone	(RVR or RUNWAY VISIBILITY) RUNWAY (*number*) (*distance*) METRES
Advice to pilots when RVR/RV has not been assessed on the take-off or landing runway	(RVR or RUNWAY VISIBILITY) RUNWAY (*number*) NOT REPORTED
Multiple RVR/RV observations always represent the TDZ, MID and END. Where reports for three locations are given, the indication of these locations may be omitted, provided the reports are passed in the order of TDZ, MID and END	(RVR or RUNWAY VISIBILITY) [RUNWAY (*number*)] (*first position*) (*distance*) METRES, (*second position*) (*distance*) METRES, (*third position*) (*distance*) METRES
When RVR/RV information on any one position is not available, include this in the appropriate sequence	(RVR or RUNWAY VISIBILITY) [RUNWAY (*number*)] (*first position*) (*distance*) METRES, (*second position*) NOT AVAILABLE, (*third position*) (*distance*) METRES

12.8.3 Low Visibility Operations at Defence aerodromes

12.8.3.1 Report RVR/RV <1500 m

You should report RVR/RV when either horizontal visibility or RVR/RV is observed to be less than 1500 m.

12.8.3.1.1 RVR/RV <800 m

You must report RVR/RV when either horizontal visibility or RVR/RV is observed to be less than 800 m.

12.8.3.2 Aerodrome manoeuvring area

When applying low visibility procedures, ensure that the position of all aircraft or vehicles manoeuvring on the aerodrome manoeuvring area can be positively determined to ensure there is no increased risk of collision.

12.9 Use of surveillance equipment

12.9.1 ATS surveillance equipment and aerodrome control

12.9.1.1 Using an ATS surveillance system

Only use the ATS surveillance system as detailed in this chapter, unless otherwise specified.

Note 1: *The ATS surveillance system is an aid available to Aerodrome Controllers in meeting their responsibilities for the provision of aerodrome control services.*

Note 2: *Tower ATS surveillance services do not meet the requirements for the full provision of ATS surveillance services.*

12.9.1.1.1 Restriction

Do not allow use of the ATS surveillance system to impinge upon the primary function of visual observation.

See MATS 12.1.1.2 Primary function

12.9.1.1.2 Correlate with visual

Correlate ATS surveillance system-derived decisions in relation to the control of circuit traffic with visual observation whenever possible.

12.9.1.2 Identification advice

Do not advise aircraft when identification is established unless vectoring.

12.9.1.2.1 Termination of control

Where an aircraft that has not been advised of identification exits controlled airspace, advise the pilot 'CONTROL SERVICE TERMINATED'.

12.9.1.3 Use of situation display

Tower Controllers may use the situation display to:

a) determine aircraft identification, location or spatial relationship to other aircraft;

b) assist in the assessment of traffic in the provision of:

   i) aerodrome control;

   ii) traffic information;

   iii) sequencing; and

   iv) information and assistance to aircraft during emergencies;

c) determine the altitude, position or tracking of aircraft to establish or monitor separation; and

d) vector when necessary.

12.9.1.4 Direction, suggested heading or tracking

Provide a direction, suggested heading or tracking:

a) as an advisory aid to navigation; and

b) to effect aerodrome control.

12.9.2 Vectoring - tower controllers

12.9.2.1 ATS surveillance system

Only vector an aircraft using an ATS surveillance system.

See MATS 9.7.10 Vectoring

12.9.2.2 Permit self-navigation

Whenever possible, permit aircraft to self-navigate and achieve requirements by instruction based on visual and flight path monitoring.

12.9.2.3 VMC by day only

You may provide an IFR or VFR aircraft with a vector in VMC by day to ensure separation or assist with traffic management, when necessary.

See MATS 9.7.11.2 Approving pilot terrain clearance

See MATS 9.4.2.1 Issuing levels below LSALT

12.9.2.4 Considerations prior to vectoring

Prior to vectoring an aircraft, ensure that the commitment to provide a vectoring service will not be detrimental to other responsibilities and requirements. Consider:

a) disposition of other aerodrome traffic;

b) current and expected traffic levels; and

c) the extent of the vector.

12.9.2.5 Uncoordinated vector

Provide, if necessary, an uncoordinated vector to an aircraft to initiate separation and traffic management prior to the transfer of aircraft to the approach controller e.g. go-around, missed approach.

12.9.3 Aerodrome Ground Surveillance System

12.9.3.1 Augment visual observation

You may use AGSS to augment visual observation of traffic on the manoeuvring area and to provide surveillance of traffic on those parts of the manoeuvring area that cannot be observed visually.

Note: *Use of AGSS does not change existing pilot and ATC responsibilities for separation on the manoeuvring area.*

12.9.3.2 Application

You may use information displayed on an AGSS to assist in:

a) monitoring of aircraft and vehicles on the manoeuvring area for compliance with clearances and instructions;
b) determining that a runway is clear of traffic prior to a landing or take-off;
c) providing information on essential traffic on or near the manoeuvring area;
d) determining the location of aircraft on the movement area and vehicles on the manoeuvring area;
e) providing directional taxi information to aircraft when requested by the pilot or deemed necessary by the controller; and
f) providing assistance and advice to emergency vehicles.

12.9.3.2.1 Exception to point e)

Except under special circumstances e.g. emergencies, do not issue such information in the form of specific heading instructions.

12.9.3.3 Taxi guidance instructions

Provide the same taxi guidance instructions as those used for visual control.

12.9.3.4 Ensure identification

Ensure:

a) correct aircraft identification when using AGSS information for the guidance of aircraft; and
b) surface traffic numbers are compatible with the maintenance of target identification.

12.9.3.5 Identification methods

Establish identification by one of the following methods:

a) Correlate the position of a visually observed target to an AGSS position symbol;
b) Correlate an identified radar position symbol to an AGSS position symbol;
c) Correlate an AGSS position symbol complying with an ATC instruction for a specific manoeuvre;
d) Correlate the displayed target to an aircraft or vehicle position:
   i) entering a runway or taxiway intersection;
   ii) abeam a building or airfield feature depicted on the situation display; or
   iii) on a taxiway or runway, provided that there are no other unidentified vehicles or aircraft on that runway or taxiway segment;
e) Correlate an alpha-numeric label with an aircraft's AGSS position symbol provided the correlation is consistent with the aircraft's expected position; or
f) Observe compliance with an instruction to change to a specific code.

12.9.3.5.1 Identification advice

Do not advise aircraft or vehicles when identification is established.

12.9.4 Tower Situational Awareness Display (TSAD)

12.9.4.1 TSAD use

To assist in meeting their responsibilities for the provision of procedural aerodrome and/or approach control services, tower controllers may use TSAD to:

a) determine or confirm an aircraft’s:
   i) identification;
   ii) location;
   iii) spatial relationship to other aircraft;
   iv) position outside an area of conflict in accordance with Clause 12.9.4.2 Outside area of conflict - TSAD; and
   v) position outside controlled airspace in accordance with Clause 12.9.4.3 Outside controlled airspace; and
b) assist in the situational awareness of traffic in the provision of:
   i) aerodrome control;
   ii) traffic information;
   iii) traffic sequencing; and
   iv) information and assistance to aircraft during emergency.

See MATS 12.9.4.2 Outside area of conflict - TSAD and 12.9.4.3 Outside controlled airspace

12.9.4.2 Outside area of conflict - TSAD

Consider lateral separation to exist when a TSAD position symbol is observed beyond an area of conflict exit point based on a DME/GNSS lateral separation point displayed on the screen provided the aircraft is:

a) identified;
b) tracking in accordance with the navigation method referenced in the construction of the area of conflict; and
c) moving away from the area of conflict.

12.9.4.2.1 Eligible tolerances

Only apply this procedure to an area of conflict based on navaid or area navigation tolerances.

12.9.4.3 Outside controlled airspace

A TSAD position symbol at least 1 NM beyond a controlled airspace boundary displayed on the ASD is confirmation that the aircraft has positively left controlled airspace provided the aircraft:

a) is identified; and
b) moving away from the airspace boundary.

12.9.4.4 Not for surveillance separation

Unless approved in local instructions do not use TSAD to provide ATS surveillance system separation services.

12.9.4.5 Primary functions

Maintain a visual observation of operations on and in the vicinity of the aerodrome and apply procedural standards and procedures.

12.9.4.5.1 Restrictions

Do not allow use of the TSAD to impinge upon these primary functions.

12.9.4.6 Correlate with visual observation

Correlate TSAD-derived decisions in relation to the control of circuit traffic with visual observation.

12.9.4.7 Aircraft identification

Only use the following methods to identify aircraft with TSAD:

a) Correlate a full alpha-numeric label with an aircraft’s TSAD position symbol, provided the correlation is consistent with the aircraft’s expected position;

b) Observe compliance with an instruction to change to a specific, discrete code or Code 0100. Do not initiate a change in code to an aircraft displaying a full numeric label that has been assigned by another unit;

c) When operating in Bypass mode, observe compliance with an instruction to operate the SPI. Avoid nearly simultaneous requests for SPI transmissions from aircraft in close proximity to reduce the likelihood of possible misidentification; or

d) Correlate a particular TSAD position symbol to the position of an aircraft observed visually.

12.9.4.7.1 Do not advise

Do not advise aircraft that they are identified.

12.9.5 Visual Surveillance Systems

12.9.5.1 Visual Surveillance System (VSS) use

Obtain ATMSL or SO1 CM ANSP approval to use a VSS in the provision of an Aerodrome Control Service.

12.9.5.2 Visual Surveillance System - Movement area (VSS-M) use

Only use a VSS-M to supplement direct out-of-the-window visual observation for parts of the movement area that are obscured from direct tower line of sight.

12.9.5.2.1 Magnification

Define in local instructions the standard magnification at which the VSS-M must be used when applying runway, HLS or taxiway separation.

12.10 Tower Flight Progress Strips

12.10.1 Data entry procedure

12.10.1.1 Times

Enter times on strips immediately after aircraft:

a) taxi;
b) take-off; and
c) land.

12.10.1.2 Aerodrome control reports

Enter the following aerodrome control reports on receipt:

a) The time of transfer of control and, if the report is at other than the standard transfer point, an abbreviation for the position at transfer;
b) Departure time;
c) The time the aircraft began final approach;
d) Reports made at scheduled reporting times; and
e) Other reports which are considered necessary to record.

12.10.1.3 Aerodrome control instructions and clearances

Record the following aerodrome control instructions and clearances when issued:

a) runway;
b) time aircraft cleared for final approach, or when aircraft will begin final approach;
c) instructions relating to changes of levels (if required); and
d) other instructions which are considered necessary to record e.g. restriction of area of operation or altitude limitations imposed on a local flight.

12.11 Operation of aerodrome lighting

12.11.1 Operation of lighting procedures

12.11.1.1 Aerodrome lighting

Operate aerodrome lighting:

a) during the hours of darkness; and
b) at any other time when their use, based on meteorological conditions, is considered desirable for the safety of air traffic.

12.11.1.1.1 Exception - aerodrome lighting

Runway and approach lighting may be extinguished at pilot request to facilitate NVG/NVIS operations.

12.11.1.1.2 Runway lighting

Only operate runway lighting for a runway not nominated on the ATIS/CATIS/DATIS for the purposes of:

a) landing, take-off or taxiing;
b) circuit operations;
c) runway inspections or maintenance;
d) assistance in the navigation of airborne aircraft; or
e) assistance to ground based operations.

12.11.1.2 Minimum period runway lighting operation

Situation	Switch on	Switch off
Departure	Prior to aircraft entering the runway	5 min after departure
Arrival	10 min before ETA	Once aircraft has taxied clear of the landing surface

12.11.1.3 Stop bar operation

Operate stop bars continuously at all holding positions associated with a runway in use.

12.11.1.3.1 Exception - multiple stop bars

Where both CAT I and CAT II/III stop bars are available on the same taxi route, you may switch off stop bars at CAT II/III holding positions when low visibility procedures are not in force.

12.11.1.4 Taxiway lights

Operate taxiway lights as required for the guidance of taxiing aircraft.

12.11.1.5 Aerodrome beacon

Operate the aerodrome beacon as warranted by traffic density:

a) at night; and
b) by day, during conditions of reduced visibility.

12.11.1.5.1 Time before ETA

Operate the beacon 20 minutes before ETA if not continuously displayed.

12.11.1.6 HIAL and HIRL

Operate HIAL and HIRL as follows:

a) select initial intensity in accordance with the table below;
b) vary settings in accordance with pilot requests; and
c) advise pilots when equipment is operating in visibility of 5000 m or less.

12.11.1.6.1 Initial intensity for HIAL and HIRL

Visibility	**Intensity stage**	
	Day	**Night**
Not greater than 2000 m	6	4
Greater than 2000 m, but not greater than 4000 m	5	3
Greater than 4000 m, but not greater than 5000 m	4	2
Greater than 5000 m	-	1

12.11.1.7 VASIS systems

Operate the visual approach slope indicator systems (VASIS):

a) whenever RWY lights are activated;
b) by day, for all approaching RPT, jet and military aircraft and for all other approaching aircraft on request;
c) in accordance with the table below; and
d) by varying settings in accordance with pilot requests.

Note 1: *In the event of a failure of the VASIS, the decision to make an approach rests with the pilot.*

Note 2: *Some ATC procedures (e.g. straight-in approach navaid unserviceable) require the VASIS to be operational.*

12.11.1.7.1 Initial intensity stages for VASIS

Condition	Intensity stage
Bright clear day	6
Bright day - cloudy	5
Fine day - overcast	4
Clear day - twilight	4
Clear night - moonlight	3+
Fine night - overcast	2+
Fine night - overcast, little or no extraneous lighting	1+
The stages specified should be increased by one when the visibility is less than 8 KM, or when any other unusual light condition occurs e.g. an approach into a setting or rising sun.	

12.11.1.8 Lighting fault reports

Report aerodrome lighting faults:

a) to the aerodrome operator, as specified in local instructions; and

b) Airservices only: to the Service Desk, Airways, except the failure of a single light globe when the operational status of the facility is not affected.

Note: *Reporting criteria for aerodrome lighting outage is located in CASR MOS Part 139, Aerodromes, Chapter 9.*

12.11.1.9 Test operation of Pilot Activated Lighting (PAL)

Test the operation of the PAL system using the tower handheld radio at non continuous towers at, or prior to, tower close. Testing is not required:

a) for INTAS towers;

b) when PAL system lights automatically switch on by other means e.g. TWR OFF button; or

c) when the PAL is connected to photoelectric cells and the tower closes before last light.

See MATS 2.5.2.5 Journal entries

12.11.2 Portable lighting

12.11.2.1 Responsibility

List officers responsible for laying portable lighting in local instructions.

12.11.2.2 Advise responsible officer

When portable lighting is required, advise the responsible officer of the:

a) runway direction for night operations;
b) type of portable lighting to be laid;
c) requirements for lighting taxiways and taxi paths;
d) time by which the laying of the portable lighting and associated lighting must be completed;
e) time at which the portable lighting and associated lighting may be removed; and
f) any aspect of the lighting which is unsatisfactory.

12.11.2.3 Portable and emergency light timings

Situation	Switch on	Switch off
Departure	10 mins prior to departure ***Note:*** *Planned departure time may not always be notified or available to ATC*	A minimum of 30 minutes after departure
Arrival	30 minutes before ETA	Until aircraft closed down

12.11.3 Aerodrome lighting observation

12.11.3.1 Monitor aerodrome lighting

Monitor aerodrome lighting serviceability to facilitate fault reporting and ensure timeliness of corrective action.

12.11.3.2 Interleaved circuitry lighting failure

When one electrical circuit fails on a runway equipped with interleaved circuitry lighting, notify pilots that the space between the runway edge lights has doubled.

12.12 ILS signal interference

12.12.1 Protection of ILS critical and sensitive areas

12.12.1.1 Causes of ILS signal disturbances

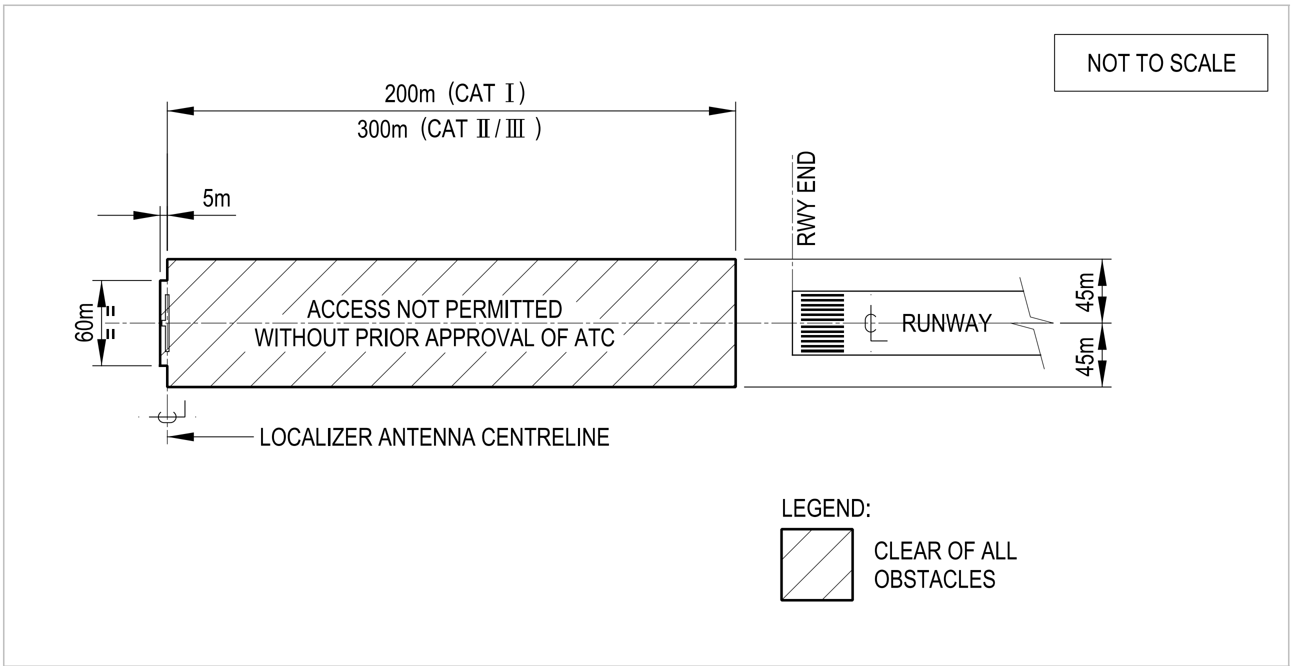
Disturbances to ILS localiser and glide slope courses may occur when vehicles or aircraft are operated near the localiser or glide slope antennas. To prevent these disturbances, ILS critical areas are established near each localiser and glide slope antenna. These areas are known as the Glide Path Critical Area, Localiser Critical Area and the Vehicle Critical Area. For CAT II/III and SA CAT I/II capable ILS installations, an ILS sensitive area is also established.

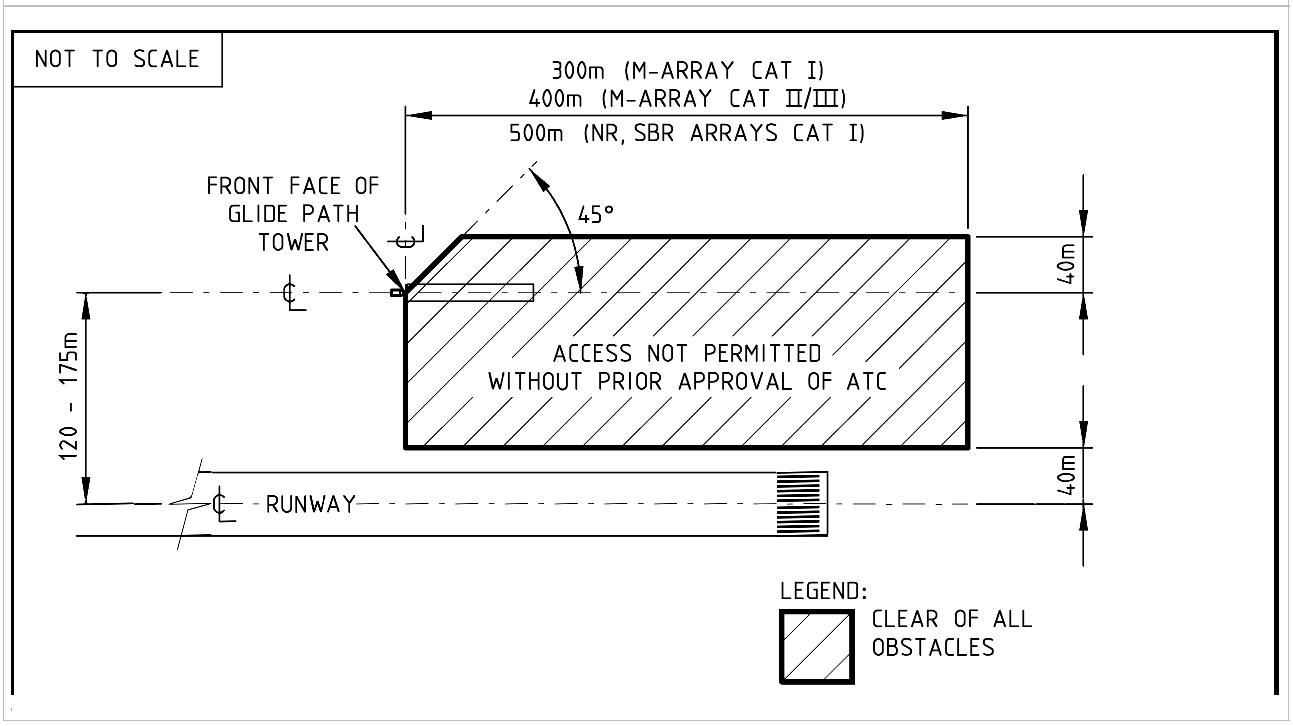
12.12.1.2 GBAS signal interference

Disturbances of GBAS signals are unlikely to occur in the normal course of operations.

12.12.1.3 Vehicle critical area protection

Protect the following generic vehicle critical area at all times you are notified that the ILS signal is being utilised by aircraft.





Note: *The ILS critical infringement area for vehicles is a volume of airspace encompassing the lateral dimensions of the defined 'vehicle critical area' from ground level up to a height of 100 FT AGL.*

12.12.1.3.1 Location specific vehicle critical areas

Location specific vehicle critical areas approved by the technical authority may be used in lieu of generic vehicle areas. Detail location specific vehicle critical areas in local instructions.

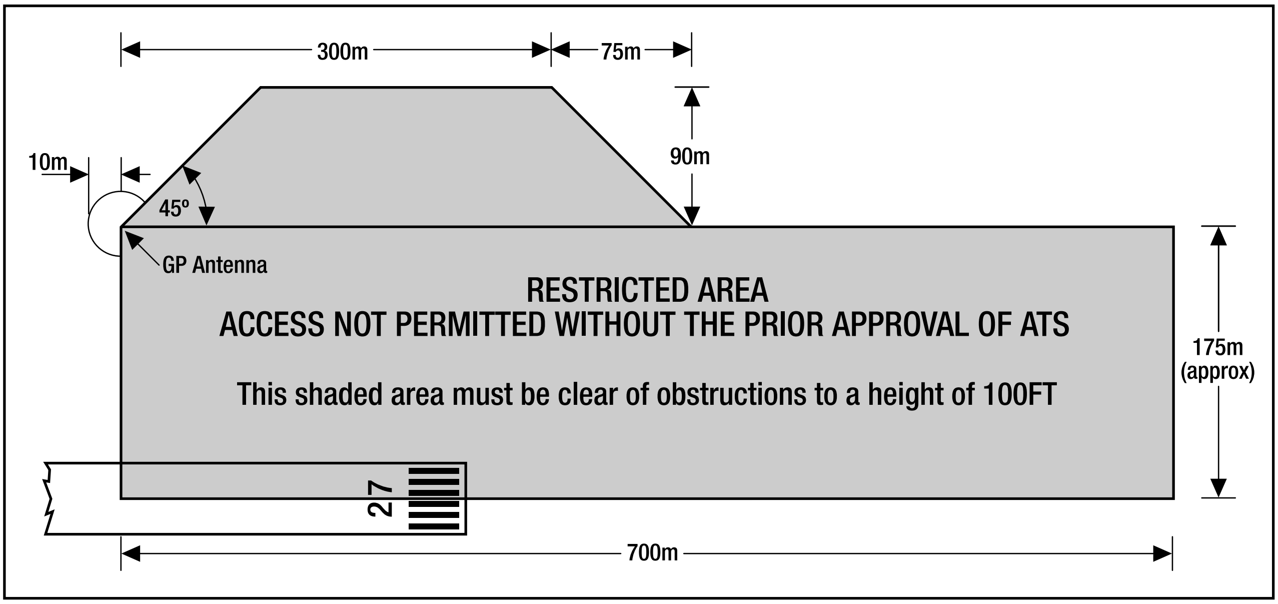
12.12.1.3.2 Safety vehicle exception

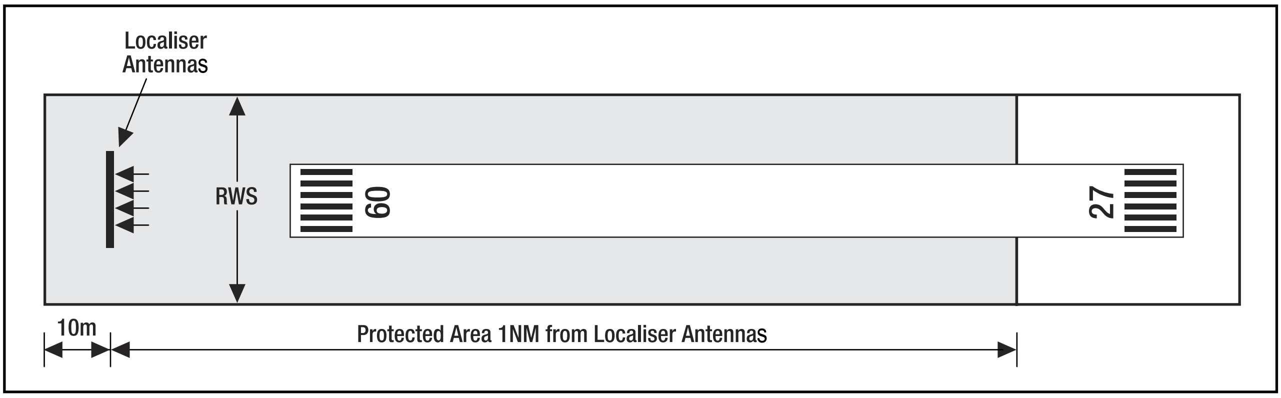
When the meteorological conditions do not require protection of the Glide Path or Localiser critical areas a safety vehicle may enter the vehicle critical area to complete a safety related task. Advise aircraft that the critical area is infringed.

See MATS 12.12.1.5 Critical area protection

12.12.1.4 Glide path and localiser critical areas

Protect the following generic glide path and localiser critical areas in accordance with Clause 12.12.1.5 Critical area protection:





Note 1: *The glide path critical area is a volume of airspace encompassing the lateral dimensions of the defined critical area from ground level up to a height of 100 FT AGL.*

Note 2: *The localiser critical area is that area bounded by the runway strip within 1 NM of localiser antennas on or over the runway strip of the appropriate runway extended to include the localiser antennas.*

See MATS 12.12.1.5 Critical area protection

12.12.1.4.1 Location specific critical areas

Location specific critical areas approved by the technical authority may be used in lieu of generic critical areas. Detail location specific critical areas in local instructions.

12.12.1.5 Critical area protection

When the ceiling is at or below 600 FT or the visibility is 2000 m or less, ensure no aircraft enter the glide path or localiser critical areas when an arriving aircraft is within:

a) the outer marker; or

b) 4 NM from the threshold if no outer marker exists.

12.12.1.5.1 Protection exceptions

During CAT I ILS operations, when an arriving aircraft is within the distance specified in 12.12.1.5 Critical area protection you may allow a preceding aircraft on the same or another runway to infringe the glide path or localiser critical areas when:

a) landing or exiting the runway, provided a warning is issued to the arriving aircraft e.g. 'ILS CRITICAL AREA(S) INFRINGED, FALSE INDICATIONS POSSIBLE'; or

b) departing or making a missed approach.

See MATS 12.12.1.5 Critical area protection

12.12.1.6 CAT II/III and Special Authorisation (SA) CAT I/II critical and sensitive areas

At locations conducting CAT II/III or SA CAT I/II precision approach procedures or localiser guided take-offs, specify procedures to protect ILS critical and sensitive areas in local instructions.

12.12.1.6.1 Location specific critical and sensitive areas

Detail location specific critical and sensitive areas, approved by the technical authority, in local instructions.

12.12.1.7 CAT II/III and Special Authorisation (SA) CAT I/II critical and sensitive areas protection

At CAT II/III and SA CAT I/II capable locations when the ceiling or visibility is below the CAT I minima and/or LVP has been notified, ensure aircraft and vehicles do not enter:

a) the relevant ILS critical areas — once an arriving aircraft has passed the ILS outer marker or, if an outer marker is not available, is within 4 NM of the landing runway threshold; and

b) the ILS sensitive areas — once an arriving aircraft is within 2 NM of the landing runway threshold.

12.12.1.7.1 Sensitive area protection - arrivals

Only protect that portion of the ILS localiser sensitive area ahead of the landing aircraft. Consider a preceding departing aircraft to be clear of the sensitive area when it has passed over the localiser antenna.

12.12.1.7.2 Critical and sensitive area infringement

If an aircraft or vehicle penetrates the critical and/or sensitive areas, advise the arriving aircraft: 'ILS CRITICAL AREA AND SENSITIVE AREA(S) INFRINGED FALSE INDICATIONS POSSIBLE'.

Note: *Decision to continue is at pilot discretion.*

12.12.1.8 Critical and sensitive areas protection for guided take-off

When the visibility is less than 550 m and a pilot notifies a requirement to conduct a localiser guided take-off, ensure the applicable ILS localiser critical and sensitive areas are protected. Do not allow aircraft or vehicles into the applicable ILS localiser critical and sensitive areas from the time of issuing the take-off clearance until the take-off is complete.

12.12.1.8.1 Sensitive area protection - guided take-off

Only protect that portion of the ILS localiser sensitive area ahead of the aircraft conducting a guided take-off. Consider a preceding departing aircraft to be clear of the sensitive area when it has passed over the localiser antenna.

12.12.1.9 ILS category downgrade

Notify pilots of any degradation to the available ILS category e.g.:

'ILS APPROACH RWY (*number*) DOWNGRADED [TO (*category*)] DUE TO (*reason*)'.

12.12.1.9.1 ILS downgrade effect

Detail downgrade effect due to equipment malfunction in local instructions.

12.12.1.10 ILS critical and sensitive areas not protected

When conditions are such that ATC is not protecting the ILS critical and sensitive areas, inform aircraft of possible disturbances to the ILS signal when conducting:

a) an 'Autoland' approach;
b) an approach with minima less than Category 1 during non-LVP; or
c) a localiser-guided take-off.

12.12.1.10.1 Example ILS critical and sensitive areas

Use the following phrase to advise when ILS critical and sensitive areas are not protected: 'ILS CRITICAL [AND SENSITIVE] AREAS NOT PROTECTED'.

12.13 Operation of standby generating plant

12.13.1 Standby power plant facility

12.13.1.1 Facility specification

Where the facility to activate standby power plant is directly available to the tower controller, specify the following details in local instructions:

a) Unit;
b) Facility activated by each switch;
c) Circumstances requiring operation of each switch; and
d) The delay in provision of airport standby power where it exceeds 15 seconds.

12.13.1.1.1 Conditions

Where the delay in provision of standby power exceeds 15 seconds, activate standby power plant serving precision approach aids and runway lighting prior to aircraft operations:

a) whenever the cloud base reaches 200 FT above the minima specified for the precision approach procedure or the visibility reduces below 2000 m;
b) during periods of known or anticipated hazardous weather phenomena likely to affect airport operations e.g. thunderstorm activity; or
c) during such other circumstances that warrant the activation of standby power plant e.g. planned interruptions to power supply.

12.13.1.1.2 Restricted visibility operations

Where the delay in the provision of standby power exceeds 1 second, activate standby power serving precision approach aids, stop bars and runway lighting when the following operations are intended:

a) CAT II/III or SA CAT I/II precision approach procedures; or
b) Take-off in RVR/RV conditions less than a value of 800 m.

13 Forms

13.1 MATS forms

13.1.1 Forms location

13.1.1.1 Access to forms

Access forms related to the MATS document at the following website:

https://www.airservicesaustralia.com/mats/default.asp?mats=7